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UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

AD HOC WORKING GROUP ON FURTHER COMMITMENTS FOR ANNEX I PARTIES UNDER THE KYOTO PROTOCOL
Fifth session
Bangkok, 31 March to 4 April 2008, and Bonn, 2–12 June 2008

Item 3 of the provisional agenda
Analysis of means to reach emission reduction targets and identification of ways to enhance their effectiveness and contribution to sustainable development

Views and information on the means to achieve mitigation objectives of Annex I Parties

Submissions from Parties

1. At its third session, the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG) invited Parties and accredited observer organizations to submit to the secretariat, by 15 February 2008, information and views on the means to achieve mitigation objectives of Annex I Parties referred to in document FCCC/KP/AWG/2006/4, paragraph 17 (b).[1] At the first part of its fourth session, it invited Annex I Parties to include in these submissions information on the potential environmental, economic and social consequences, including spillover effects on all Parties, in particular developing country Parties, of available tools, policies, measures and methodologies available to Annex I Parties.[2] At its resumed fourth session, the AWG further invited Parties to include in these submissions their views on the topics to be covered and the experts/organizations to be invited to participate in the in-session thematic workshop referred to in document FCCC/KP/AWG/2007/5, paragraph 19 (a).[3]

[1] FCCC/KP/AWG/2007/2, paragraph 24. Paragraph 17 (b) (i) of document FCCC/KP/AWG/2006/4 reads: "Analysis of means that may be available to Annex I Parties to reach their emission reduction targets, including: emissions trading and the project-based mechanisms under the Kyoto Protocol; the rules to guide the treatment of land use, land-use change and forestry (LULUCF); the greenhouse gases (GHGs), sectors and source categories to be covered, and possible approaches targeting sectoral emissions; and identification of ways to enhance the effectiveness of these means and their contribution to sustainable development". Paragraph 17 (b) (ii) reads: "Consideration of relevant methodological issues, including the methodologies to be applied for estimating anthropogenic emissions and the global warming potentials of GHGs".

[2] FCCC/KP/AWG/2007/4, paragraph 24.

[3] FCCC/KP/AWG/2007/5, paragraph 19 (b) (ii).

2. The secretariat has received eight such submissions. In accordance with the procedure for miscellaneous documents, these submissions are attached and reproduced* in the language in which they were received and without formal editing.

3. The secretariat has also received submissions from intergovernmental and accredited non-governmental organizations. In line with established practice, the secretariat has posted these submissions on the UNFCCC website at <http://unfccc.int/parties_and_observers/igo/items/3714.php> and <http://unfccc.int/parties_and_observers/ngo/items/3689.php>.

* 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.

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* This submission is supported by Albania, Croatia, Bosnia and Herzegovina, Serbia, The former Yugoslav Republic of Macedonia, Turkey and Ukraine.

PAPER NO. 1: BELARUS[1]

ИНФОРМАЦИЯ И СООБРАЖЕНИЯ ОТНОСИТЕЛЬНО СРЕДСТВ ДЛЯ ДОСТИЖЕНИЯ ЦЕЛЕЙ ПО СМЯГЧЕНИЮ ВОЗДЕЙСТВИЯ НА КЛИМАТ, ВКЛЮЧАЯ ИНФОРМАЦИЮ ОТНОСИТЕЛЬНО ПОТЕНЦИАЛЬНЫХ ЭКОЛОГИЧЕСКИХ, ЭКОНОМИЧЕСКИХ И СОЦИАЛЬНЫХ ПОСЛЕДСТВИЙ И СОПУТСТВУЮЩИХ ЭФФЕКТОВ

в соответствии с документами
FCCC/KP/AWG/2007/2, параграф 24
FCCC/KP/AWG/2007/4, параграф 24
Специальной рабочей группы по дальнейшим обязательствам для Сторон, включенных в Приложение I к Рамочной конвенции ООН об изменении климата

[1] Belarus has been invited to provide an informal translation in English, which will be posted, when available, on the website at <http://unfccc.int/meetings/intersessional/awg-lca_1_and_awg-kp_5/items/4288.php>.

Аннотация

В соответствии с заключением, принятом Специальной рабочей группой по дальнейшим обязательствам для Сторон, включенных в Приложение I к Рамочной конвенции ООН об изменении климата на своей итоговой четвертой сессии, проведенной на Бали, 3-11 декабря 2007г., касающегося пересмотра программы и методов работы, а также плана последующих сессий, Республика Беларусь в настоящем национальном отчете представляет информацию и соображения в отношении средств для достижения целей в области предотвращения изменения климат, включая информацию о потенциальных экологических, экономических и социальных последствиях с учетом национальных обстоятельств и сопутствующих эффектах для других стран.

Введение

Республика Беларусь - страна регионального значения. В виду своего географического положения она оказывает влияние на формирование экологической ситуации в Европе через систему перераспределения трансграничных воздушных и водных потоков. Леса и водно-болотные экосистемы Республики Беларусь вносят существенный вклад в поглощение традиционных загрязняющих веществ, а также парниковых газов в Европе. В экономической области Республика Беларусь также занимает положение страны, оказывающей влияние на транзитные потоки грузов и энергоносителей между западными европейскими странами, Россией и странами среднеазиатского региона и, соответственно, страной, зависимой от этих потоков.

Беларусь относится к странам с переходной экономикой, основной характеристикой которых является заметный спад производства валового внутреннего продукта (ВВП) в 90-х годах прошлого века, связанный с началом процесса реформирования планово-административной экономики. Рыночные механизмы, включившие принцип экономической и энергетической эффективности, и сознательная политика правительств на экономию ресурсов в условиях кризиса привела к тому, что большинство этих стран, выходя из периода спада и наращивая ВВП до докризисного уровня, стабилизировало выбросы парниковых газов на уровне 40-60% от уровня выбросов, имевших место до начала реформ.

Республика Беларусь первой из бывших республик Советского Союза достигла и превысила уровень ВВП докризисного 1990 года по паритету покупательной способности (ноябрь 2003 года). В то же время, для достижения уровня социально-экономического развития, намеченного основными национальными программными документами, необходимо преодолеть отставание от наиболее индустриально развитых стран по ряду экономических параметров, таких как, например, ВВП и энергопотребление на душу населения, энергоемкость ВВП и др. Намеченные цели развития требует высоких темпов роста экономики. В стране за период с 2000 по 2005 год объем ВВП увеличился в 1,5 раза. По темпам роста ВВП (по паритету покупательной способности) Республика Беларусь в 2005 году занимала 7-е место в мире (в 2004 году – 5-е). Такие темпы начали отражаться на увеличении выбросов парниковых газов, не смотря на продолжающиеся тенденции к снижению энергоемкости экономики (рис. 1).

При сохранении нынешних темпов роста ВВП без дополнительных мероприятий по снижению энергоемкости ожидается, что потребление топливно-энергетических ресурсов к 2012 году увеличится более чем на 20% по сравнению с 2005 годом, что, с учетом необходимости диверсификации видов топлива, приведет к увеличению выбросов парниковых газов примерно на четверть. Следовательно, определяя средства достижения целей и мероприятия в области предотвращения изменения климата, необходимо учитывать факторы экономического роста, приводящие к увеличению выбросов и снижению поглощения парниковых газов, предусмотреть стратегические меры по стабилизации выбросов и увеличению поглощения парниковых газов.

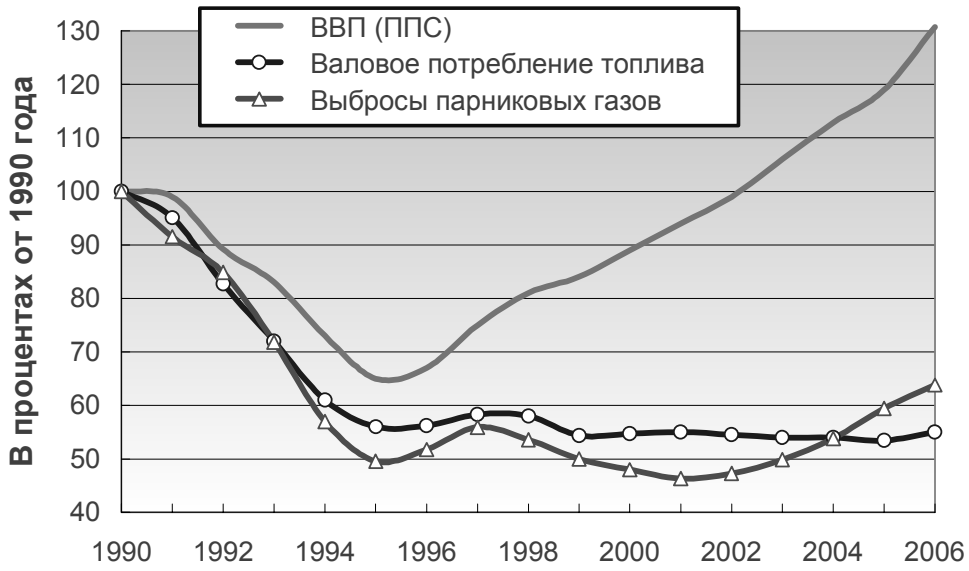


Рисунок 1: Тренды ВВП, валового потребление топливно-энергетических ресурсов и выбросов парниковых газов

В Беларуси серьезное внимание уделяется проблеме изменения климата, о чем говорит ее присоединение ко всем основным международным соглашениям в этой сфере. Республика Беларусь 11 июня 1992г. подписала Рамочную Конвенцию Организации объединенных наций об изменении климата (РКИК ООН), ратифицировала ее 11 мая 2000г. и стала полноправной стороной РКИК ООН 9 августа 2000г.

26 августа 2005г. страна пописала документ о присоединении к Киотскому протоколу к РКИК ООН и 24 ноября 2005г. стала полноправной стороной протокола. Решением 10/CMP.2 принята первая поправка к Киотскому протоколу, устанавливающая количественные обязательства по ограничению выбросов парниковых газов Республике Беларусь в размере 92% от уровня выбросов 1990 г. Включение Беларуси в Приложение В является основным условием, которое даст стране возможность использовать дополнительные инструменты в своей национальной политике достижения целей смягчения воздействия на климат.

Задержка с ратификацией указанного решения странами не позволяет Республике Беларусь активизировать политику модернизации энергетической отрасли, износ основных фондов которой достиг 60%, и привлечь возобновляемые источники энергии; тормозит внедрение наилучших доступных технологий в промышленности и сельском хозяйстве, способствует дальнейшему укоренению установившейся практики с ее низкой энерговооруженностью при высоких энергетических затратах. Энергоемкость ВВП (по паритету покупательной способности) в республике остается примерно в 2 раза выше, чем в ряде развитых стран со схожими климатическими условиями, что свидетельствует о значительных резервах сокращения выбросов парниковых газов.

С момента присоединения к Киотскому протоколу в стране активно ведутся работы в области создания условий для выполнения страной своих обязательств. Сформирована законодательная, институциональная и техническая базы для полноправного и эффективного участия Беларуси в механизмах гибкости, предусмотренных Киотским протоколом, утвержден Национальный план действий по изменению климата и Стратегия снижения выбросов и

увеличения абсорбции поглотителями парниковых газов в Республике Беларусь на 2007-2012 годы. Республика Беларусь выполняет свои обязательства и по предоставлению необходимой информации. Своевременно направлены в секретариат РКИК ООН Первое и Четвертое Национальные сообщения, доклады о кадастре парниковых газов, Доклад о прогрессе, Начальный отчет о расчете установленного количества и Первый ежегодный отчет согласно статье 7.1 Киотского протокола.

Настоящий отчет представлен в соответствии с заключением, принятым Специальной рабочей группой по дальнейшим обязательствам для Сторон, включенных в Приложение I к РКИК ООН на своей итоговой четвертой сессии, проведенной на Бали, 3-11 декабря 2007г., касающегося пересмотра программы и методов работы, а также плана последующих сессий, и имеет целью информировать Специальную рабочую группу в отношении доступных национальных средств для достижения целей по смягчению воздействия на климат, включая информацию о потенциальных экологических, экономических и социальных последствиях и сопутствующих эффектах с учетом национальных обстоятельств.

Глава 1. Национальные обстоятельства и их влияние на выбросы парниковых газов

1.1. Демографические и социальные показатели

На 1 января 2007г. численность населения составила 9,7 млн.. чел., средняя плотность населения 46,7 чел./км^2, городское население составляет 70,2%. Динамика демографических и других сопутствующих социальных показателей представлена в таблице 1, из которой следует вывод о росте основных социальных благ в расчете на душу населения начиная с 2000 года.

Таблица 1. Демографические и социальные показатели

	1990	**1995**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Численность населения (на конец года), тыс. человек	10190	10177	9990	9951	9899	9849	9800	9751	9714
Среднегодовая численность занятых в экономике, тыс. человек	5151	4410	4441	4417	4381	4339	4316	4350	4402
Реальные денежные доходы населения, в процентах к предыдущему году	112,4	66,4	114,1	128,1	104,1	103,9	109,8	118,4	117,8
Ввод в действие общей площади жилых домов, тыс. м^2	5282	1949	3528	3009	2811	3019	3501	3786	4101
Индекс потребительских цен (декабрь к декабрю предыдущего года; в процентах)	…	344,0	207,5	146,1	134,8	125,4	114,4	108,0	106,6
Учащихся в учреждениях среднего специального образования, на 10 тысяч человек населения	141	144	150	156	163	165	162	158	157

Учащихся в учреждениях высшего образования, на 10 тысяч человек населения	185	262	282	303	324	343	370	393	409
Численность врачей всех специальностей на 10 000 человек населения	38,9	42,7	45,8	44,9	44,8	45,0	45,3	45,6	46,4
Число больничных коек на 10 000 человек населения	132,6	125,1	126,3	126,0	119,7	113,7	107,4	111,6	112,0

Источник: http://belstat.gov.by/homep/ru/indicators/

Население оказывает прямое и косвенное влияние на эмиссию парниковых газов в атмосферу. Сельское население остается основным потребителем дров, торфяных брикетов и другого печного топлива, использование которого в индивидуальных домашних хозяйствах характеризуется меньшим коэффициентом полезного действия по сравнению с эксплуатацией тепловых электростанций в городах. Кроме того, производство бытовых видов топлива для сельского населения связано с отрицательным воздействием на состояние поглотителей парниковых газов (леса и торфяные болота). Городские жители более интенсивно пользуются услугами транспортных средств, имеют более высокие доходы, спрос со стороны городского населения сильнее стимулирует потребление топливных ресурсов и сельскохозяйственной продукции, рост объема разлагающихся и органических отходов и, как следствие, увеличение выбросов парниковых газов.

1.2. Развитие экономики

Основополагающим средством обеспечения и индикатором устойчивого развития национальной экономики, решения социальных и экологических задач является рост ВВП. В 2005 году по показателю ВВП (по паритету покупательной способности) на душу населения Республика Беларусь занимала 65 место в мире (8541 долл./чел; источник: Всемирный банк www.worldbank.org/data/icp). По темпам роста ВВП в том же году занимала 7-е место в мире (в 2004 году – 5-е). Основные экономические индексы страны и их динамика приведены в таблице 2.

Таблица 2. Основные агрегированные экономические показатели

	1990	**1995**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Валовой внутренний продукт, млрд. руб.	43	121403	9134	17173	26138	36565	49992	65067	79231
Основные индексы в процентах к предыдущему году:									
валовой внутренний продукт	…	89,6	105,8	104,7	105,0	107,0	111,4	109,4	109,9
продукция промышленности	102,1	88,3	107,8	105,9	104,5	107,1	115,9	110,5	111,4

производство потребительских товаров	107,6	75,8	104,1	106,8	104,7	107,8	113,2	111,2	111,5
продукция сельского хозяйства	91,3	95,3	109,3	101,8	100,7	106,6	112,6	101,7	106,0
инвестиции в основной капитал	108,5	69,3	102,1	96,5	106,0	120,8	120,9	120,0	132,2
розничный товарооборот	114,7	77,2	111,8	128,2	111,5	110,3	111,5	120,0	117,4
Индекс потребительских цен (декабрь к декабрю предыдущего года; в процентах)	…	344,0	207,5	146,1	134,8	125,4	114,4	108,0	106,6
Рентабельность реализованной продукции, работ, услуг, процентов	22,3	17,1	15,8	10,9	10,5	12,0	15,3	15,4	15,5

Источник: http://belstat.gov.by/homep/ru/indicators/. Данные в стоимостном выражении приведены в фактически действовавших ценах, за 1995 год – с учетом деноминации 1994 года (уменьшение в 10 раз), за 2000 год - с учетом деноминации 2000 года (уменьшение в 1000 раз). Индексы даны в сопоставимых ценах

1.2.1. Потребление топливно-энергетических ресурсов

Основным источником парниковых газов является сжигание углеродосодержащего топлива. Валовое потребление топливно-энергетических ресурсов до 1995 г. имело устойчивую тенденцию к сокращению, после чего стабилизировалось, и до 2005 г. находилось на уровне 35-37 млн. т у.т. в год, затем, с 2006 года наметилась устойчивая тенденция к росту. Главными проблемами развития энергетического сектора страны являются высокая зависимость от импорта энергоресурсов. Рост импортных цен на сырье вызывает повышение тарифов на энергию, что в свою очередь усугубляет проблему неплатежей. В результате ощущается острый дефицит внутриотраслевых инвестиций в основной капитал топливно-энергетического комплекса. Добыча собственной нефти и попутного газа с 1990 по 2006гг. постоянно сокращалась, указанная тенденция продолжается и в настоящее время, и связана с истощением собственных запасов нефти.

Экономика Беларуси характеризуется высоким уровнем энергоемкости ВВП. За 1990-е годы отмечено падение данного индикатора. К 1995 г. энергоемкость ВВП упала на 14% по сравнению с 1990г., что было вызвано сокращением потребления топливно-энергетических ресурсов в результате экономического кризиса. Во второй половине 1990-х годов энергоемкость сократилась еще на 28% по сравнению с уровнем 1995г., что связано с обновлением ряда отраслей экономики, а также с проведением государством энергосберегающей политики. Именно этим объясняется сокращение выбросов парниковых газов от использования ТЭР в экономике за период с 1990 по 2005 годы (рис. 2).

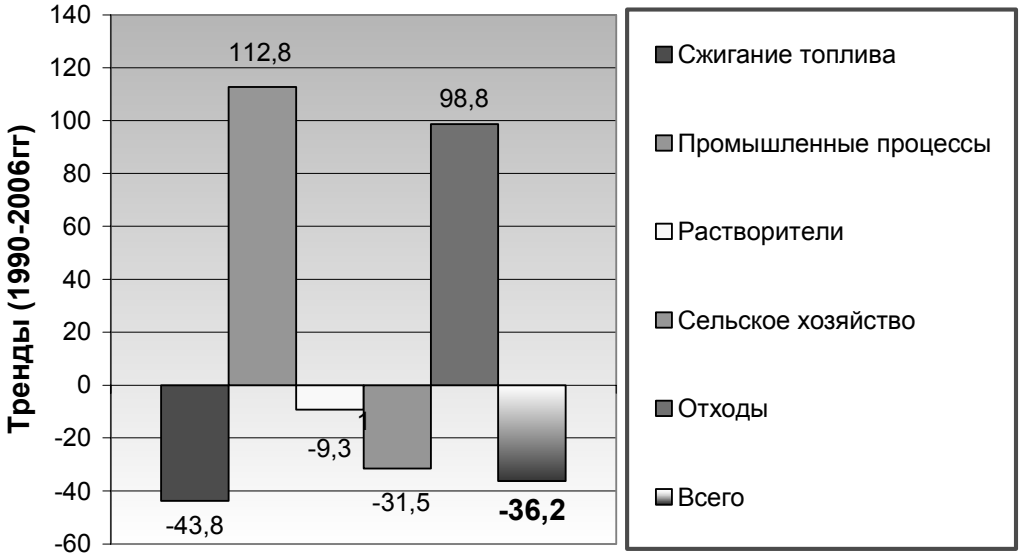


Рисунок 2: Тренды выбросов по источникам, 2006 год в % к 1990 году

Другой очевидной причиной сокращения выбросов является изменение структуры использования топливно-энергетических ресурсов, направленных на энергетические нужды. Доминирующим источником энергии стал природный газ, вытеснив в первую очередь мазут. Сократилась доля угля, который используется для получения тепловой энергии. В то же время, спецификой Беларуси является использование в энергетических целях значительных объемов торфа и производимых из него брикетов. Другой особенностью страны является низкая обеспеченность возобновляемыми ресурсами (кроме биомассы).

Структура использования топлива по основным направлениям потребления существенно не изменилась. Топливные ресурсы в основном используются для получения тепловой и электрической энергии, где политика государства, направленная на повышение энергоэффективности привела к тенденции сокращения выбросов парниковых газов (рис. 3). Углеводородное сырье используется также как технологическое топливо в промышленности, где выбросы наоборот имеют тенденцию к существенному росту (рис. 3) в связи с недостатком инвестиций на технологическое перевооружение, а также бурным ростом строительной индустрии и расширением жилищного фонда.

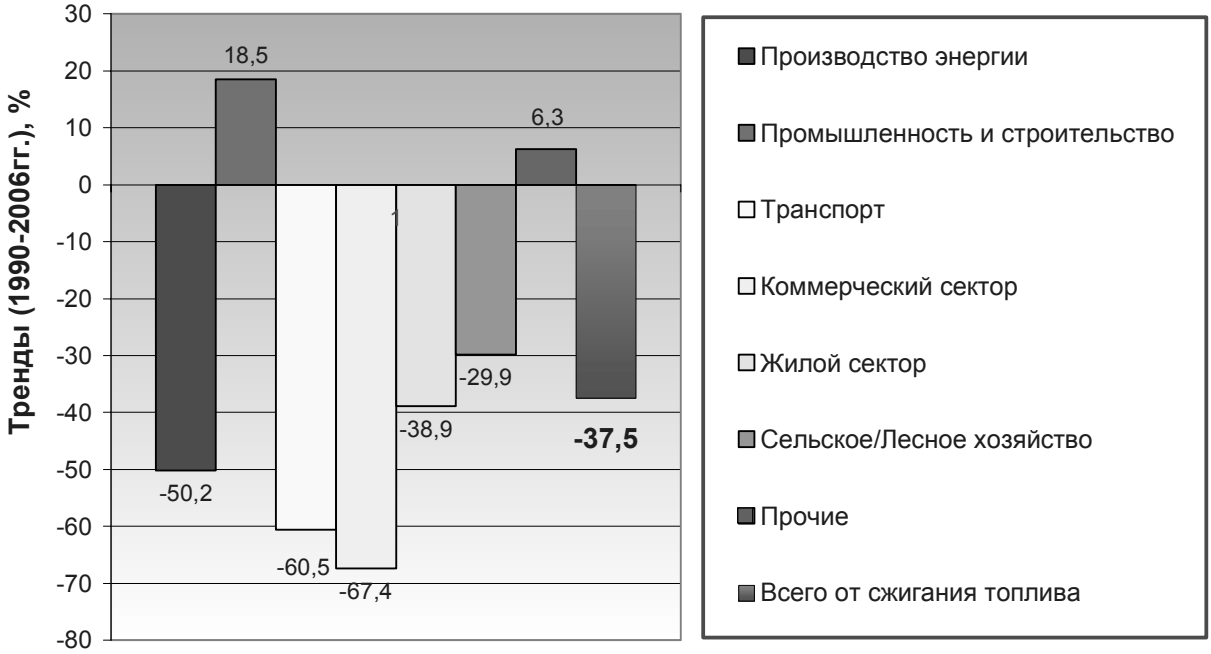


Рисунок 3: Тренды выбросов от сжигания топлива по секторам, 2006 год в % к 1990 году

Дополнительным источником парниковых газов в топливно-энергетическом комплексе являются утечки и выбросы метана и летучих неметановых органических соединений (ЛНОС) при транспортировке и хранении газообразного и жидкого топлива, при нефтепереработке. Транспортировка осуществляется в основном по газопроводам (общая протяженность 6400 км) и нефтепроводам (3007 км), а также по нефтепродуктопроводам. Основные участки трубопроводов эксплуатируются 30 лет и в некоторых местах имеют дефекты. Нефтепродукты производятся на двух нефтеперерабатывающих заводах. Промежуточное распределение нефтепродуктов осуществляется преимущественно железнодорожным транспортом на нефтебазы, а конечное - автомобильным транспортом на заправочные станции. Мероприятия по сокращению фугитивных выбросов путем модернизации газонапорной и газораспределительной арматуры, обновления нефте- и газотранспортных продуктопроводов является наиболее эффективным способом избежать утечки метана в атмосферу.

1.2.2. Промышленность

В Беларуси отраслями промышленности, генерирующими парниковые газы, являются: металлургия, машиностроение и металлообработка (электроплавильное, прокатное и трубное производство, литье металлов, производство и ремонт холодильной техники), нефтехимическая промышленность (производство аммиака, азотной кислоты, капролактама, этилена), промышленность строительных материалов (производство цемента, извести), деревообрабатывающая и целлюлозно-бумажная промышленность, стекольная промышленность.

Ведущими отраслями промышленности в 1990г. были машиностроение (34,2% стоимости промышленной продукции), легкая (17,2%), пищевая (14,9%), а также химическая и нефтехимическая (9%). К 2005г. в структуре промышленной продукции отмечался значительный рост удельного веса электроэнергетики (приблизительно с 3 до 8%), химической и нефтехимической промышленности (с 9 до 18%), черной металлургии (с 1 до 3%), а также строительных материалов (с 6 до 8%)

Главными проблемами промышленного комплекса в целом являются старение основных производственных фондов, технологическое отставание в некоторых направлениях, недостаток инвестиций в отрасль, снижение конкурентоспособности в условиях роста цен на энергоносители. Эти факторы при заметном росте производства являлись причиной тенденции роста выбросов парниковых газов в промышленности (рис. 2 и 3).

1.2.3. Сельское и лесное хозяйство

За период 1990-2005 годов уменьшилось производство продукции сельского хозяйства. Структура посевных площадей за этот период изменилась незначительно. В ней доминируют зерновые культуры (41,2 %) и кормовые культуры (42,3%). В целом в сельском хозяйстве отмечалась тенденция сокращения выбросов основных источников парниковых газов (рис. 2), связанная в основном с сокращением удельных объемов внесения удобрений, снижением поголовья сельскохозяйственных животных. Имеет место также тенденция сокращения выбросов в сельскохозяйственной и лесохозяйственной отраслях, обусловленная сокращением потребления ископаемых видов топлива (рис. 3).

1.2.4. Транспорт

Транспортный комплекс Беларуси включает железнодорожный, автомобильный, внутренний водный и авиационный транспорт. В период 1990-2005 годов в основном развивалась сеть автомобильных дорог, протяженность которых возросла в 1,5 раза, а протяженность железных дорог осталась практически неизменной. Значительно изменилась структура пассажирских перевозок по видам транспорта. Структура грузооборота по основным видам транспорта изменилась незначительно. В ней доминируют железнодорожный (около 78%) и автомобильный (около 22%).

Следует отметить, что, несмотря на высокие темпы роста автомобильного парка страны, суммарное потребление топлива транспортом сократилось, что обусловлено ростом доли более экономичных транспортных средств, оптимизацией грузоперевозок и маршрутизации, в результате чего выбросы парниковых газов от сжигания топлива в транспортном секторе имеют тенденцию к сокращению (рис. 3).

1.2.5. Отходы

В Беларуси захоронение твердых коммунальных отходов осуществляется на объектах размещения отходов в условиях, ведущих к образованию метана. Начиная с 1990 года, отходы не сжигаются, и все объекты размещения коммунальных отходов характеризуются отсутствием «продувки» – вентиляции. За последние десятилетия количество отходов, особенно разлагающихся, выросло в несколько раз, что является причиной сохранения тенденции роста выбросов парниковых газов в этом секторе (рис. 2).

Очистка сточных вод производится на очистных сооружениях биологическим методом в аэробных условиях. Этот метод практически исключает образование парниковых газов.

1.2.6. Поглотители парниковых газов

Основными поглотителями углекислого газа на территории Беларуси являются леса. На объемы и эффективность поглощения углерода влияют организация эксплуатации леса, породный состав древостоя, возраст лесов. Площадь лесного фонда на 1 января 2006 г. составила 9247,5 тыс. га, из которых непосредственно под лесом находится 8892,3 тыс. га, или 37,8 % территории Беларуси.

За период 1990-2005 годов в характере эксплуатации лесных ресурсов произошли положительные сдвиги. Площади сплошных рубок леса сократились на 27,9%. При этом общий объем заготовки древесины по всем видам рубок практически сохранился на уровне 1990г.

Изменилась структура рубок леса: в 1990г. преобладали рубки главного пользования (сплошные), в настоящее время большая часть деловой древесины получена за счет выборочных рубок (рубок ухода за лесом и санитарных рубок) и прочих рубок. Посадка и посев леса увеличились на 663,1 тыс. га по сравнению с 1990 г. Тем не менее, данное обстоятельство не привело еще к росту положительной тенденции в нетто величине выбросов парниковых газов в секторе землепользования и лесопользования (рис. 4).

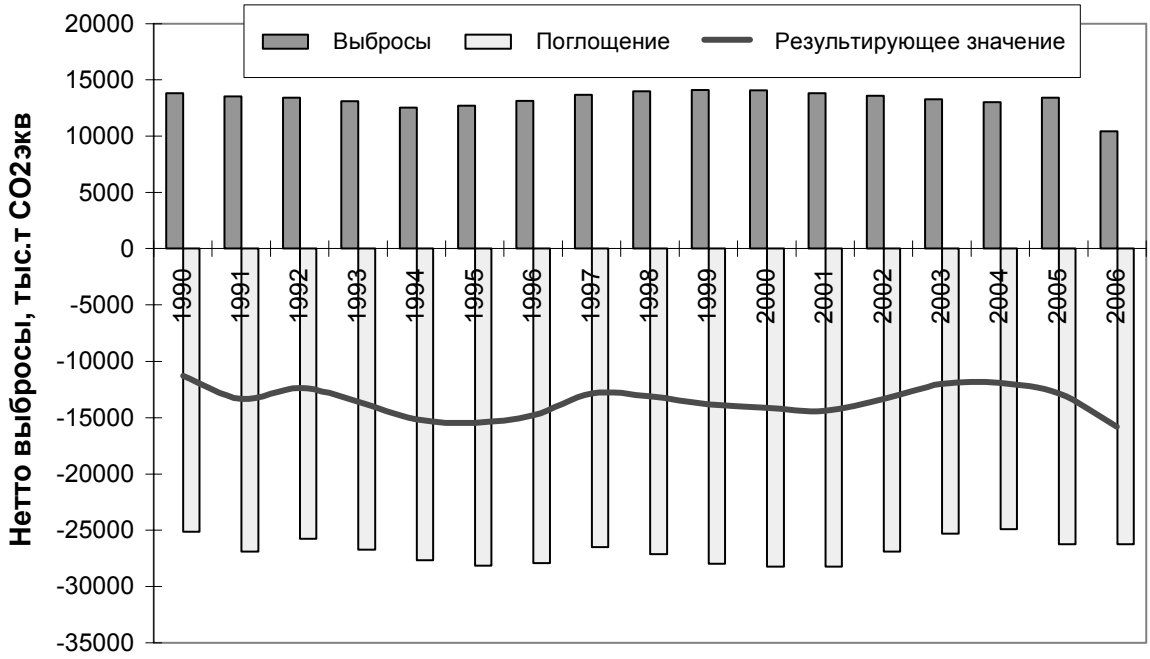


Рисунок 4: Тренды нетто выбросов в секторе землепользования и лесного хозяйства, 2006 год в % к 1990 году

Глава 3. Имеющийся потенциал политики, средств и технологий для достижения целей в области предотвращения изменений климата и их анализ

3.1. Политические меры

В стране принят ряд базовых документов, определяющих социально-экономическое развитие страны на перспективу:

- Национальная стратегия устойчивого социально-экономического развития Республики Беларусь на период до 2020г., одобренная Национальной комиссией по устойчивому развитию Республики Беларусь 6 мая 2004 года;

- Программа социально-экономического развития Республики Беларусь на 2006-2010 годы, утвержденная Указом Президента Республики Беларусь от 12 июня 2006г. № 384.

- Национальный план действий по рациональному использованию природных ресурсов и охране окружающей среды Республики Беларусь на 2006 – 2010 годы, утвержденный Указом Президента Республики Беларусь от 5 мая 2006г. № 302;

Согласно данным документам стратегия развития страны на среднесрочную перспективу определяет темпы роста ВВП, которые должны соответствовать опережающему росту производства и услуг во всех отраслях экономики (рис. 5).

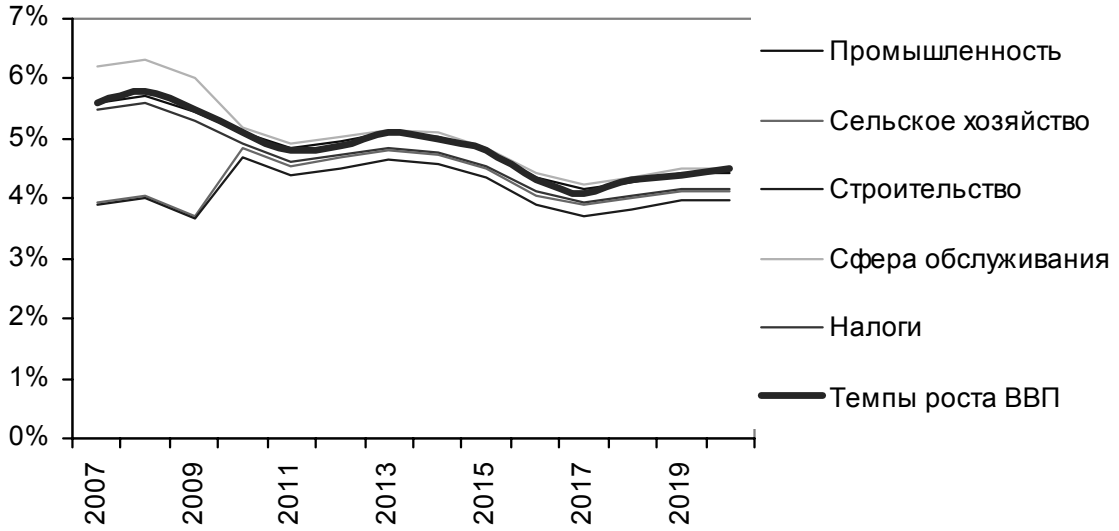


Рисунок 5: Темпы роста ВВП в различных секторах экономики

Исходя из общей стратегии, изложенной в программных документах, среднесрочный путь развития экономики ориентирован на ресурсосберегающий наукоемкий тип воспроизводства, дальнейшее снижение энергонапряженности ВВП, как через реализацию потенциала энергосбережения, так и путем изменения структуры ВВП в сторону менее ресурсоемких отраслей, диверсификацию топливно-энергетических ресурсов, повышение эффективности преобразования топлива, расширение использования возобновляемых источников энергии.

В стране разработан проект Национальной программы мер по смягчению последствий изменения климата на 2008-2012 годы. В проекте программы целевым показателем является сокращение нетто выбросов парниковых газов на 12 млн. т CO2экв за счет выполнения национальных мер в указанный период по сравнению с прогнозируемыми выбросами по сценарию интенсивного развития экономики, не превысив при этом установленного количества выбросов, равного 92% от объема выбросов парниковых газов в 1990 году. Программа представляет собой систему мероприятий правового, финансово-экономического и организационного характера, направленных на сокращение выбросов парниковых газов и включающих:

- усиление роли государства в формировании и реализации политики в области изменения климата,
- организация системы государственного контроля за воздействием на климат,
- создание законодательной базы в области изменения климата, разработка и принятие Закона Республики Беларусь «Об охране климата»,
- разработка новых и совершенствование имеющихся нормативных правовых актов по различным направлениям сферы изменения климата,

- создание методической базы в области изменения климата, разработка технических нормативных правовых актов,

- создание условий для формирования и совершенствования институционального потенциала в области изменения климата,

- создание условий для привлечения бизнеса к участию в деятельности по смягчению и адаптации к изменению климата,

- создание условий для привлечения иностранных инвестиций, в том числе в рамках механизмов Киотского протокола.

Для выполнения всех мероприятий программы требуется приблизительно 1.5 млрд. долл. США. Примерно 70-80% финансирования мероприятий программы предусмотрено привлечь в виде средств республиканского бюджета, других программ и заемных средств. По оценкам разработчиков программы, указанный выше целевой показатель может быть достигнут только при условии привлечения внешнего углеродного финансирования в объеме не менее 300 млн. долл. США.

Анализ возможности использования гибких механизмов Киотского протокола дан в проекте Стратегии участия Республики Беларусь в механизмах гибкости, предусмотренных Киотским протоколом к РКИК ООН, на 2008-2012 годы, разрабатываемой в соответствии с Планом мероприятий по реализации положений Киотского протокола к РКИК ООН на 2005 2012 годы, утвержденном постановлением Совета Министров Республики Беларусь от 30 декабря 2005 года №1582. Показано, что возможности участия Республики Беларусь в механизмах гибкости Киотского протокола и объемы углеродного финансирования, которые могут быть получены от такого участия, зависят от ряда обстоятельств, основными из которых являются:

- выполнение условий доступа страны к механизмам Киотского протокола и операциям по обращению с углеродных единиц;

- вступление в силу поправки к Киотскому протоколу, устанавливающей количественны обязательства для Республики Беларусь на период 2008-2012 годы;

- наличие свободной части установленного количества разрешенных выбросов парниковых газов, с учетом обязательного резерва установленного количества в течение первого периода действия обязательств, а также дополнительного резерва, согласно решениям Конференции Сторон РКИК и Киотского протокола;

- возможность участия в механизме добровольных сокращений выбросов парниковых газов;

- потенциал сокращений выбросов парниковых газов за счет деятельности по проектам совместного осуществления, оцененного на основании Стратегии снижения выбросов и увеличения абсорбции поглотителями парниковых газов в Республике Беларусь на 2007-2012 годы;

- прогнозы развития экономики страны.

Большинство национальных и международных экспертов, а также Стороны Киотского протокола признают (документ FCCC/KP/CMP/2007/L.5), что Республика Беларусь выполняет все условия и находится в высокой степени готовности к тому, чтобы получить доступ к

использованию Киотских механизмов, однако задержка с ратификацией решения 10/CMP.2 не позволит стране использовать эти дополнительные инструменты для достижения поставленных целей смягчения воздействия на климат в течение достаточно длительного промежутка времени периода обязательств по Киотскому протоколу.

3.2. Организационные и экономические меры

Основными организационными и экономическими мерами являются:

развитие новых рыночных механизмов финансирования энергосберегающих направлений в энергетике, промышленности, строительстве, жилищно-коммунальной сфере, транспорте, торговле;

повышение эффективности механизма разработки и выполнения республиканской, отраслевых и региональных программ энергосбережения;

совершенствование государственной экспертизы энергетической эффективности развития отраслей экономики и проектных решений;

обеспечение контроля за своевременным выполнением мероприятий, запланированных по результатам энергетических обследований;

сертификация продукции по энергоемкости и энергопотреблению;

увеличение доли финансирования энергосберегающих мероприятий из средств инновационных фондов на возвратной основе;

создание условий для расширения использования банковских кредитов для реализации энергоэффективных инновационных проектов;

создание экономических и институциональных условий для снижения сроков окупаемости нетрадиционных и возобновляемых источников энергии на основе, например, использования механизма углеродного финансирования, для их последующего масштабного внедрения.

3.3. Мероприятия по внедрению доступных технологий

Основные технологические направления по смягчению воздействия на климат отражены в Стратегии снижения выбросов и увеличения абсорбции поглотителями парниковых газов в Республике Беларусь на 2007-2012 годы, утвержденной постановлением Совета Министров Республики Беларусь №1155 от 7 сентября 2006г. Наиболее значимые из них связаны с повышением эффективности использования топливно-энергетических ресурсов во всех сферах хозяйственной деятельности.

С учетом обеспечения предусмотренных темпов роста ВВП и обеспечения энергетической безопасности республики на период до 2020 года, потребление котельно-печного топлива в республике может вырасти к 2015 году по сравнению с 2005 годом на 25-28 процентов, к 2020 году – 30-35 процентов. При этом произойдут изменения в структуре потребляемого топлива в сторону снижения доли природного газа и увеличения в топливном балансе доли угля и других видов твердого топлива. На рис. 6 показано изменение структуры топливного баланса за период с 1990 по 2005 годы и прогноз структуры потребления топлива в соответствии с принятыми программными документами.

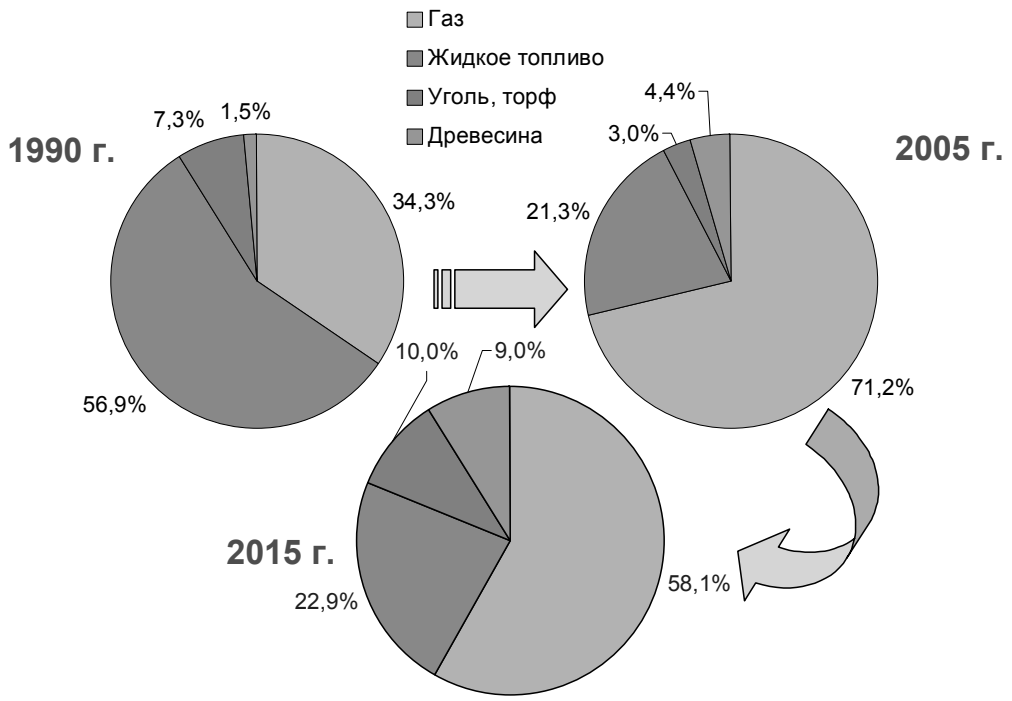


Рисунок 6: Изменение структуры потребления ТЭР

Рост потребления котельно-печного топлива и прогнозируемые изменения в его структуре приведут к заметному увеличению выбросов парниковых газов от энергетических и промышленных установок. В числе приоритетных технологических направлений по смягчению антропогенного воздействия на климат в упомянутой Стратегии снижения выбросов на предстоящий период предусмотрены следующие мероприятия:

- увеличение использования нетрадиционных и возобновляемых источников энергии;
- внедрение новых энергоэффективных технологических процессов производства продукции во всех отраслях экономики;
- модернизация энергогенерирующих источников, ввод в действие электрогенерирующего оборудования в котельных, создание мини-ТЭЦ на возобновляемых видах топлива;
- утилизация высоко- и средне-потенциальных вторичных энергоресурсов с использованием их в схемах теплоснабжения;
- повышение эффективности работы теплосетей и оптимизация схем теплоснабжения;
- утилизация метана полигонов твердых коммунальных отходов с получением энергии; внедрение биогазовых технологий в сфере обращения с органическими отходами, в том числе жидкими;
- повышение эффективности и развитие лесного хозяйства, включая искусственное и естественное восстановление лесов, борьбу с лесными пожарами, организационные

меры лесохозяйственной деятельности (искусственное омоложение леса, рациональное использование лесной биомассы);

- проведение вторичного заболачивания территорий выработанных торфяников и восстановление болот на неиспользуемых мелиорированных землях.

3.4. Меры и целевые показатели по секторам

Большинство из перечисленных мер не являются еще установившейся практикой в Республике Беларусь, и для их реализации необходимы финансовые и технологические ресурсы, способные создать необходимую инфраструктуру. При этом необходимо учитывать другие острые проблемы растущей экономики и различие в приоритетах развития отдельных отраслей. Предлагаемый подход к определению диапазона целевых показателей выбросов и соответствующих мер по их достижению в отдельных секторах экономики республики Беларусь основывается на принятых или разрабатываемых отраслевых программах.

3.4.1. Энергетика

В этом секторе новые экономические условия, вызванные ростом цен на энергоносители, более высокие темпы роста потребления электроэнергии по сравнению с запланированными потребовали принятия комплекса мер на среднесрочную перспективу, основные из которых изложены в следующих программных документах:

- Целевая программа обеспечения в республике не менее 25% объема производства электрической и тепловой энергии за счет использования местных видов топлива и альтернативных источников энергии не период до 2012 года, утвержденная постановлением Совета Министров Республики Беларусь от 30 декабря 2004г. N 1680;

- Концепция энергетической безопасности и повышения энергетической независимости Республики Беларусь, утвержденные Указом Президента Республики Беларусь от 17сентября 2007 г., № 433;

- Государственная комплексная программа модернизации основных производственных фондов Белорусской энергетической системы, энергосбережения и увеличения доли использования в республике собственных топливно-энергетических ресурсов в 2006-2010 годах, утвержденные Указом Президента Республики Беларусь от 15 ноября 2007г. № 575;

- Республиканская программа энергосбережения на 2006-2010 годы, утвержденная постановлением Совета Министров Республики Беларусь от 2 февраля 2006г. № 137;

- План мероприятий по реализации Директивы Президента Республики Беларусь от 14 июня 2007 г. №3 «Экономия и бережливость – главные факторы экономической безопасности государства», утвержденный постановлением Совета Министров Республики Беларусь от 31 августа 2007г. № 1122.

Согласно этим документам в перспективе развитие топливно-энергетического комплекса (ТЭК) будет направлено на решение следующих задач:

- оптимизация структуры топливно-энергетического баланса (увеличение доли вторичных энергетических ресурсов, местных видов топлива, нетрадиционных и возобновляемых источников энергии: ветро-, гелио-, биоэнергетика, малая гидроэнергетика);

- широкое внедрение новых эффективных технологий производства электроэнергии, реализации мер по энергосбережению во всех секторах экономики, включая социальную сферу; развитие прогрессивных технологий переработки нефти, повышающих уровень ее извлечения, использования и качество продуктов ее переработки;

- совершенствование форм взаимодействия ТЭК с окружающей средой в целях снижения негативного влияния на природу.

Оптимизация структуры генерирующих источников электроэнергетической отрасли предусматривается за счет внедрения комбинированного парогазового и газотурбинного циклов, увеличения выработки электрической энергии по теплофикационному циклу, преобразование котельных в мини-ТЭЦ на основе местных видов топлива, газопоршневых и газотурбинных технологий. Все это позволит в максимальной степени удовлетворить возрастающий спрос на электроэнергию и повысить эффективность теплоснабжения населенных пунктов страны, обеспечить ее энергетическую безопасность, повысить энергетическую независимость и обеспечить сокращение выбросов парниковых газов на величину около 2.5 млн. т CO2экв за период 2008-2012 годы. Для того чтобы определить насколько существующие барьеры, связанные в основном с ограниченными инвестиционными ресурсами, повлияют на реализацию этого потенциала, необходимо более глубокое исследование.

3.4.2. Промышленность

Возможный рост использования мазута, образующегося на белорусских нефтеперерабатывающих предприятиях, позволит вытеснить часть газового топлива и увеличить разнообразие энергобаланса по видам. Хотя большинство существующих энергоисточников могут использовать и газ и мазут, рост потребления последнего, а также угля и торфа приведет в ближайшей перспективе к заметному повышению выбросов парниковых газов дополнительно к выбросам, вызванным планируемыми темпами развития отрасли (не менее 11% ежегодного прироста).

Для того чтобы компенсировать увеличение выбросов, необходимо предусмотреть меры по уменьшению антропогенного воздействия на климат, наиболее эффективные из которых – энергосбережение и внедрение возобновляемых источников энергии.

Выполнение мероприятий, предусмотренных Республиканской программой энергосбережения на 2006-2010 годы, позволит наиболее эффективно реализовать потенциал сокращения выбросов парниковых газов за счет повышения эффективности использования топлива во всех секторах экономики и внедрения энергосберегающих мероприятий. Ожидаемый экологический эффект от ее реализации в масштабах страны без учета объектов Министерства энергетики – снижение выбросов парниковых газов в период 2008-2010 годы – составляет не менее 6,5 млн. т CO2экв. В промышленности эта цифра, оцененная на основании отраслевой программы энергосбережения, составит около 1,1 млн. т CO2экв в период 2008-2012 годы.

В строительном комплексе в настоящее время активно внедряются новые материалы, энергосберегающие технологии и ресурсоэкономичные конструктивные системы жилых домов, снижающих ресурсо- и энергопотребление при строительстве и эксплуатации жилья. Ожидается, что сокращение выбросов в этой отрасли промышленности также будет не менее 1 млн. т CO2экв в период 2008-2012 годы.

3.4.3. Жилищно-коммунальный сектор, сельское хозяйство

В жилищно-коммунальном секторе и в сельском хозяйстве, помимо потенциала сокращений от реализации энергосберегающих мероприятий, повышения эффективности работы тепловых сетей, оптимизации схем теплоснабжения, большой потенциал заложен в сокращении выбросов метана на полигонах твердых бытовых отходов и в лагунах животноводческих стоков.

Имеющиеся технологии утилизации свалочного газа позволяют уже сейчас на закрывающихся полигонах построить эффективные схемы утилизации на основе газопоршневых установок и за счет замещения ископаемого топлива обеспечить сокращение выбросов парниковых газов на 1,4 млн.т CO2экв в период 2008-2012 годы.

В Республике Беларусь строительство метантенков с получением биогаза с последующей утилизацией в газопоршневых установках на объектах переработки коммунальных и животноводческих стоков может обеспечить сокращение выбросов парниковых газов за счет замещение биогазом ископаемых видов топлива на величину не менее 2,5 млн. т CO2экв в период 2008-2012 годы.

В этих же секторах, особенно в регионах республики с большим количеством малых и средних населенных пунктов целесообразно использование ветроэнергетических установок, гелионагревательных устройств, производство и использование биодизельного топлива и топливного этанола.

3.4.4. Землепользование, изменение землепользования и лесное хозяйство

Поскольку в настоящее время в этом секторе преобладают стоки, и сколько-нибудь значительных изменений в этом балансе не предвидится, то в рамках настоящей работы целевые показатели в этом секторе рекомендуется установить на уровне многолетних среднегодовых значений - ежегодное поглощение парниковых газов в объеме 13.5 млн. т CO2экв. В дальнейшем при разработке долгосрочной стратегии предотвращения изменения климата необходимо предусмотреть такой значительный элемент землепользования как восстановление деградированных торфяников, который может внести весомый вклад в увеличение поглощения парниковых газов.

Глава 4. Последствия реализации потенциала смягчения

При определении потенциала смягчения воздействия на климат в каждом секторе экономики следует оценить сумму двух прогнозных составляющих:

- вероятное снижение выбросов парниковых газов за счет применения имеющихся в настоящее время политических и экономических решений, включая учет существующих барьеров (нормативная правовая база в области регулирования экологических вопросов, доступность инвестиционных и кредитных ресурсов, общее состояние экономики, другие национальные обстоятельства),

- вероятное снижение выбросов парниковых газов за счет предполагаемых новых дополнительных мер, учитывающих, например, возможности использования Киотских механизмов для удаления существующих барьеров.

Анализ мер и средств по сокращению выбросов парниковых газов по секторам экономики позволяет реализовать несколько сценариев по смягчению воздействия на климат. Реализация потенциала смягчения может иметь как положительные (стимулирующие) так и негативные (ограничивающие) последствия, поэтому, несмотря на наличие очевидных резервов для сокращения выбросов, необходимо оценить возможные отрицательные последствия предлагаемых

мер на экологию, экономику и социальную сферу, которые могут представлять собой существенные барьеры на пути реализации потенциала смягчения.

4.1. Экологические последствия

Наиболее неблагоприятными экологическими последствиями при реализации предлагаемых мер по сокращению выбросов парниковых газов имеются в секторе «Энергетика», которые представляют собой следующие барьеры:

- повышение выбросов твердых частиц при замещении мазута или газа древесным топливом, особенно при отсутствии фильтрации в схеме очистки дымовых газов (превышение установленных пределов выбросов в десятки раз);

- увеличение объема зольных отходов при замещении мазута или газа древесным топливом и отсутствие в стране технологий по их утилизации;

- отсутствие утвержденных санитарно-гигиенических нормативов по обращению с зольными отходами при сжигании древесных отходов лесопиления и деревообработки, особенно в условиях вероятных поставок древесины из регионов, загрязненных радиоактивными изотопами в результате Чернобыльской аварии.

4.2. Социально-экономические последствия

К негативным экономическим последствиям в секторе «Энергетика» можно отнести издержки, которые понесет любой объект, на котором реализуется замещение ископаемого топлива древесным, в связи с необходимостью создания инфраструктуры заготовок, поставок, хранения, кондиционирования (сушки, размельчения) и подачи топлива. Необходимо также учесть увеличение землеотвода, как под золоотвалы так и для размещения топливных складов и иных объектов инфраструктуры. В случае внедрения таких возобновляемых источников энергии, как ветроэнергетические установки, включенные в сеть, необходимо предусмотреть резервирование соответствующих мощностей, приводящее к снижению эффективности использования энергетических мощностей и топлива. Подобная проблема возникает и при переводе районных котельных и малых теплоисточников в мини-ТЭЦ, включение в сеть биогазовых энергоустановок.

Как правило, для других секторов учет негативных последствий, которые в основном представляют собой дополнительные единовременные затраты для создания соответствующей инфраструктуры, не представляет сложности. Более того, этими издержками во многом можно пренебречь.

Оценка социальных последствий реализации большинства технологий и мероприятий по смягчению воздействия на климат указывает на то, что эти последствия имеют в основном положительный характер, открывая возможность увеличения числа рабочих мест, создания более комфортных и безопасных условий труда (кроме мероприятий по энергетической валоризации радиоактивных древесных отходов и перевода газо-мазутных теплоэлектростанций на древесное топливо), повышения квалификации персонала.

4.3. Сопутствующие эффекты

По результатам предварительного анализа предлагаемых мер и технологий, как национальных, так и в рамках Киотских механизмов, возможных отрицательных эффектов на другие страны-стороны Киотского протокола для реализации ими своих потенциалов в области предотвращения изменения климата не выявлены. Право Республики Беларусь на участие в механизмах Киотского протокола не должно рассматриваться как ущемление в какой-либо

степени прав других сторон на реализацию своей политики применения этих механизмов, учитывая их рыночный характер.

Заключение

Достигнутые объемы нетто сокращений выбросов парниковых газов в Республике Беларусь за десятилетний период с 1996 по 2006 годы, составляющие приблизительно 130 млн. т CO2экв, были получены благодаря реализации целенаправленной политики государства в области предотвращения изменения климата путем использования доступных средств и мер по снижению энергоемкости ВВП, повышению эффективности генерирующих источников, повышению доли использования природного газа и древесного топлива в структуре топливного баланса и широкому внедрению энергосберегающих технологий, низким удельным затратам на тонну сокращенных выбросов, которые практически не превышали 50 долл. США.

В последнее время наблюдается рост выбросов парниковых газов с темпами примерно 3-4 млн. т CO2экв в год, что вызвано опережающим ростом экономики при запаздывании необходимых структурных и технологических изменений в инновационной политике, ростом потребления топливных и энергетических ресурсов, снижением доли газового топлива за счет увеличения использования торфа, ростом неперерабатываемых органических отходов.

Анализ доступных мер, средств и технологий позволяет определить минимальный целевой показатель нетто сокращений парниковых газов в Республике Беларусь на период 2008-2012 годы, который установлен в проекте Национальной программы мер по смягчению последствий изменения климата на 2008-2012 годы равным 12 млн. т CO2экв. Имеется вероятность того, что установленный целевой показатель нетто сокращений выбросов может не быть достигнут из-за задержки ратификации Сторонами поправки к Приложению B к Киотскому протоколу. Предварительный анализ показывает, что дополнительные средства и передача наилучших доступных технологий в рамках Киотских механизмов дали бы возможность расширить диапазон указанного целевого показателя до 40 млн. т CO2экв.

В условии достигнутых темпов роста экономики отставание в структурных и технологических изменениях и ограничения в реализации инновационной политики, основанной на привлечении Киотских механизмов, с одной стороны, и нехватка прямых иностранных инвестиций в модернизацию ключевых отраслей с другой стороны в условиях значительного роста цен на газовое топливо, а также при росте удельных затрат на одну тонну сокращенных выбросов (более 200 долл. США) может привести Республику Беларусь к состоянию не возможности принятия адекватных дальнейших обязательств на пост-Киотский период и угрозе устойчивому развитию.

Результаты оценок в рамках секторального подхода показывают, что большую часть целевого показателя можно достичь за счет реализации потенциала сокращения выбросов в сфере производства электроэнергии и в промышленности - около 50% и 12%, соответственно. В области категорий источников наибольший потенциал смягчения воздействия на климат имеют объекты, на которых происходит сжигание углеводородного топлива - более 65%; далее следуют объекты сельского хозяйства и полигоны коммунальных бытовых отходов - более 20% и 8%, соответственно. Примерно такую же картину дает анализ портфеля проектов по сокращению выбросов парниковых газов и мероприятий, включенных в проект Национальной программы мер по смягчению последствий изменения климата на 2008-2012 годы.

Предварительный анализ экономической эффективности затрат на реализацию политики предотвращения изменения климата показывает, что в большинстве случаев мероприятия по сокращению выбросов парниковых газов не окупаются в ближайшей перспективе - внутренняя

норма рентабельности менее 10%. Использование в климатической политике принципов углеродного финансирования, как в рамках киотских так и некиотских механизмов, позволяет минимизировать риск неэффективности затрат.

Предварительные результаты анализа возможных экологических последствий реализации мер по смягчению изменения климата в большинстве случаев не обнаруживают никаких существенных негативных эффектов. Имеет место вероятность воздействия на окружающую среду в случае использования в качестве топлива древесных отходов из регионов Беларуси, загрязненных радиоактивными изотопами в результате Чернобыльской аварии. Такое воздействие может быть минимизировано рядом организационных и технических мероприятий, которые в свою очередь потребуют дополнительного финансирования, например в рамках схемы «зеленых» инвестиций.

PAPER NO. 2: CHINA

CHINA'S VIEWS AND INFORMATION ON THE MEANS TO ACHIEVE MITIGATION OBJECTIVES FOR ANNEX I PARTIES UNDER THE AWG

The Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol at its resumed fourth session in Bali invited Parties to submit, by 15 February 2008, their views and information on the means to achieve mitigation objectives of Annex I Parties referred to in document FCCC/KP/AWG/2006/4, paragraph 17 (b), their views on the topics to be covered and the experts/organizations to be invited to participate in the in-session thematic workshop. China would like to submit the following:

I. Means to achieve mitigation objectives by Annex I Parties:

1. After analysis of mitigation potentials and ranges of emission reduction objectives of Annex I Parties, taking into account the fact that per capita emission in Annex I Parties was 16.1 tons CO2e in 2004 as indicated in AR4 of the IPCC, it is believed that there are substantial mitigation potentials by Annex I Parties and the emissions reduction range for Annex I Parties as a group should be at least 25-40% below 1990 level by 2020 in line with the findings of the IPCC Working Group III in its Fourth Assessment Report.

2. There is a wide range of means to achieve the above-mentioned mitigation objectives by Annex I Parties through:

- Further improving energy efficiency or by deploying the carbon capture and storage technology;
- Developing more renewable energy;
- Changing life style; and
- Cooperative actions with developing countries through technology transfer and financial assistance.

3. It is believed that the Clean Development Mechanism (CDM) should be further enhanced in the second commitment period. CDM provides a great potential for Annex I Parties to achieve those mitigation objectives at very low cost and helps developing countries achieve sustainable development. CDM projects can be further promoted by effective technology transfer in the second commitment period.

4. To ensure continuity and comparability, there should be no substantial changes to the rules that guide the treatment of LULUCF, the greenhouse gases, sectors and source categories to be covered, and methodologies for estimating anthropogenic emissions and the global warming potentials of GHGs as covered by the Kyoto Protocol and the Marrakech Accord.

5. Should there be any change to the rules, the emission reduction ranges for Annex I Parties as a group shall be adjusted accordingly.

II. Views on the topics to be covered:

1. China will actively participate in the discussions on the topics listed in paragraph 17 (b) of document FCCC/KP/AWG/2006/4, but as indicated above, it is not in favor of making substantial changes to the rules and methodologies about these issues which are covered by the Kyoto Protocol and the Marrakech Accord.

2. China believes that it is important to discuss energy efficiency, CCS technology, development of renewable energy, change of life style and enhancement of CDM by technology transfer as means to achieve mitigation objectives by Annex I Parties.

III. Experts/organizations to be invited to participate in the in-session thematic workshop：

1. Energy Research Institute
National Development and Reform Commission
Address: B-1405, Guohong Building, Muxidi Beili, Beijing, 100038, China
Tel: 86-10-6390-8455
Fax: 86-10-6390-8457
E-mail: xuhqing@public3.bta.net.cn

2. Energy Environment Economy Research Institute
Tsinghua University
Address: Energy Science Building, Tsinghua University, Beijing, 100084, China
Tel: 86-10-6278-4828
Fax: 86-10-6277-1150
E-mail: lbinet@tsinghua.edu.cn

3. Research Center for Sustainable Development
Chinese Academy of Social Sciences
Address: No. 5 Jianguomennei Dajie, Beijing, 100732, China
Tel: 86-10-8519-5788
Fax: 86-10-8511-9035
E-mail: cycass@163bj.com

PAPER NO. 3: ICELAND

MEANS TO ACHIEVE MITIGATION OBJECTIVES OF ANNEX I PARTIES

Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol
Means to achieve mitigation objectives of Annex I Parties
- Information and views on the means to achieve mitigation objectives of Annex I Parties referred to in document FCCC/KP/AWG/2006/4, paragraph 17 (b);
- Information from Annex I Parties on the potential environmental, economic and social consequences, including spillover effects on all Parties, in particular developing country Parties, of available tools, policies, measures and methodologies available to Annex I Parties;
- Views on the topics to be covered and experts/organizations to be invited to participate in the in-session thematic workshops (to be held at the first part of the fifth session of the AWG).

Iceland considers that the means to achieve mitigation objectives as laid out in the Kyoto Protocol and subsequent decisions by the UNFCCC are a sound foundation in considering future obligations and the means to achieve them. Full advantage should be taken of the experience gained by Parties and analysis undertaken by intergovernmental organizations, think tanks and others, in order to improve upon the means, and ensure their effectiveness.

The main guiding principle in analysing the means of implementation should be their effectiveness in achieving the ultimate objective of the Climate Change Convention, and contribution towards stabilization of greenhouse gas concentrations in the atmosphere. This means that ideally a all significant sources and sinks should be counted and included. A future climate regime should aim to work towards such a comprehensive system. There are barriers towards moving towards such a comprehensive system, including insufficient scientific knowledge, and complexities in methodology. These barriers should be addressed, so as to improve scientific knowledge and methodology and include new sources and sinks as appropriate, when a level of comfort for accounting is reached.

The means to achieve mitigation objectives should be seen in the wider context of sustainable development, and may not be all seen as equally desirable. Ideally, they should provide co-benefits, but not have negative unintended consequences. The UNFCCC should be a venue for discussions on such issues and concerns, but as a general rule it should be up to the Parties to decide on their preferred means, which may differ according to their national circumstances.

Below is a more detailed discussion on specific means, as well as a brief outline of Iceland's climate change strategy, and the means available to Iceland for mitigation, to provide some context for the comments following.

Iceland's climate change strategy

Iceland launched a Climate Change Strategy in 2007. It includes a long term vision on reducing Iceland's net greenhouse gas emission by 50 to 75% by 2050, compared to 1990 levels. The five key components of the strategy are: 1) Fulfilling international obligations, 2) Limiting greenhouse gas emissions, with particular emphasis on reducing emissions from fossil fuel use from mobile sources, 3) Increasing carbon sequestration, 4) Increasing research and development on climate-friendly technology, as well as support for transfer of technology and know-how, and 5) Adapting to climate change.

Possible mitigation means to reach the 2050 goal, as well as Iceland's present and future international obligations, are further outlined in the strategy, as well as a broad analysis of their feasibility. Reduction of GHG emissions is a primary goal, but it should be acknowledged that in some regards Iceland has a

lower potential in this than many or most other Annex-I Parties, as almost all stationary energy (electricity and space heating), and almost 80% of total energy production, comes from renewable sources, hydro and geothermal. This contrasts with a high potential for carbon sequestration by afforestation, revegetation and other means, and an emphasis on the transfer of climate-friendly technology and know-how, that could be made visible by Icelandic participation in project-based mechanisms.

The three biggest sources of GHG emissions in Iceland are: Industrial processes (e.g. aluminium and ferro-silicon production), fisheries and transport. Big gains have been seen in reducing emissions from industrial processes since 1990, so that emissions per ton of unit production are among the lowest in the world. Nevertheless, new technology holds the promise of further reducing these emissions in the future, and Iceland aims to encourage the development and early employment of such technologies. There have also been some gains in emissions reduction in the fishing industry, but no rapid gains are presently seen in this sector. Emissions from transport have increased in recent years, despite efforts by the government to introduce economic incentives for small diesel cars and low- and zero-emission cars. Further economic incentives for climate-friendly vehicles and transport options are planned, with the aim of Iceland being a front-runner in employing climate-friendly road vehicles as soon as they become more readily available. The long-term vision is to use Iceland's renewable energy to power road vehicles and fishing vessels as soon as it becomes technologically feasible.

The Strategy emphasizes carbon sequestration, in afforestation and revegetation. This fits well with Iceland's efforts to reclaim soil and vegetation lost from centuries of serious soil erosion. The strategy adds restoration of wetlands to the options for carbon sequestration, as recent research has shown that there are significant emissions from wetlands drained before 1990, that can be halted and even reversed by restoration.

The Strategy states that the transfer of technology and knowledge in the field of renewable energy and other climate-friendly technology "is likely the weightiest contribution that Iceland can make to the campaign against climate change". This contribution is a part of Iceland's general development assistance, notably in capacity-building programmes in the field of geothermal energy, but has so far not been a substantive factor in GHG mitigation efforts by participation in project-based mechanisms.

Iceland's long-term strategy is to decarbonize its economy sector by sector. This can be seen as having already been achieved in the field of domestic energy production, which is almost entirely based on renewables. The decarbonization of the transport and fisheries sectors, as well as that of industrial emissions, will probably take decades, even if Iceland succeeds in its ambition of being at the forefront of introducing new climate-friendly technology in these fields. Carbon sequestration and project-based mechanisms therefore allow for flexibility and diversity of approaches, that is especially important for a country like Iceland, with a small economy prone to fluctuations in output and emissions.

Emissions trading and project-based mechanisms

Iceland is of the general view that emissions trading and project-based mechanisms are useful in allowing for flexibility and efficiency in a global mitigation system. Iceland has currently no plans to participate in emissions trading in the first commitment period, although a recent law allows companies in heavy industry to purchase emission permits if they exceed allocated quotas. Iceland also plans to take only a limited advantage of project-based mechanisms in the first commitment period of the Kyoto Protocol, achieving its target by limiting emissions and sequestering carbon by afforestation and revegetation. In the future, Iceland sees project-based mechanisms as a promising option to gain flexibility in its mitigation effort, and to make its efforts in transporting technology and know-how more visible.

Rules guiding the treatment of land use, land-use change and forestry; carbon capture and storage

Iceland believes that in principle, sinks should be included as well as sources in a mitigation regime. This applies to LULUCF as well as carbon capture and storage.

The current LULUCF rules should be reviewed with a view to ensure their scientific and methodological soundness, and to explore further activities that may be included. One key such activity that Iceland wants to see added is wetland restoration. Drained and disturbed bogs, peatland and other wetlands are in many cases a source of significant GHG emissions. The restoration of such drained wetlands can halt or even reverse such emissions, and can have other positive effects, such as on biodiversity.

Carbon capture and storage (CCS) is a promising technology, that could help mitigate climate change. CCS should be considered as an eligible means for mitigation in a future global mitigation regime, with due consideration given to questions of verification, monitoring and guarantee for long-term or permanent storage.

Greenhouse gases sectors and source categories; sectoral approaches

Changes in Parties' GHG emissions may come about by enhanced performance by the Party in question (e.g. by improved energy efficiency, employment of new climate-friendly technology, or increased afforestation), or by a change in the Party's economic situation (e.g. by a movement of industries between countries). A small Party like Iceland is particularly sensitive to changes of the latter sort. The commissioning or decommissioning of one factory can significantly change emissions, as well as fluctuations in industries such as fisheries. Such changes say little about climate performance of a Party.

Sectoral analysis has a key role to play in the calculation and allocation of numerical targets for individual countries, for the sake of fairness and in order to bring pressure on relevant industries in each country to become more efficient. Voluntary or mandatory sectoral targets could complement national targets in future commitments, but short of such efforts a "sectoral approach" can be employed as an analytical tool for increasing transparency and assisting in calculating national targets. An allocation of targets not based on a sound analysis and maximum transparency risks not only becoming politically weak, but also failing to bring sustained pressure on poorly performing sectors and industries. Work by the UNFCCC Secretariat, other international organizations and/or individual parties on carbon-efficiency benchmarks and criteria for individual sectors and industries could be useful. The UNFCCC could consider issuing regular technical papers on sectoral indicators, that can be employed in analysing mitigation potentials in key sectors.

Input to in-session workshop

The IPCC, or relevant experts that contributed to the 4th Assessment report, could provide valuable input on the current state of knowledge on sinks, including issues of carbon accounting and its scientific and methodological soundness, and issues of verification, security of carbon stocks etc. While a comprehensive overview of LULUCF is needed, Iceland would be interested to see the issue of wetlands included in that context. Input from the CBD, the Ramsar Convention and the UNCCD could be useful, inter alia in the context of co-benefits of LULUCF activities in the climate regime. FAO also has extensive expertise in the fields of agriculture and forestry, that can be employed.

PAPER NO. 4: NEW ZEALAND

AD HOC WORKING GROUP ON FURTHER COMMITMENTS FOR ANNEX I PARTIES UNDER THE KYOTO PROTOCOL

NEW ZEALAND SUBMISSION
FEBRUARY 2008

INTRODUCTION & OVERVIEW

1. New Zealand recognises that substantial reductions in global greenhouse gas emissions need to be made, and appropriate means to facilitate and encourage such reductions are of critical importance for the post-2012 climate change framework. New Zealand considers that the means available to Annex I Parties to meet further emissions limitation and reduction commitments under the Kyoto Protocol can and should be enhanced. Means appropriate to achieving domestic emissions reductions are well known and will vary according to national circumstances. In New Zealand, we have chosen to focus on the development of an emissions trading scheme which will progressively include all sectors of the economy and all gases, thereby introducing a price for carbon across the whole economy. This will provide an anchor for a wide range of policies including energy efficiency, renewable energy development, and research into mitigation options, which are all aimed at putting New Zealand on a low-emissions pathway.

2. New Zealand reiterates that commitments by Annex I Parties under the Kyoto Protocol are part of a global effort which will enable greenhouse gas emissions to stabilise at safe levels. This global effort must also include action by Parties under the UNFCCC, including through the Bali Action Plan, otherwise the objective of the UNFCCC will remain out of reach.

3. This submission concentrates on international means developed through the Kyoto Protocol. Enhancement of these international means will notably require some improvements in the rules and procedures governing them – they are particularly for land use, land use change and forestry (LULUCF), where the current rules only apply for the first commitment period, and for international emissions trading and other flexibility mechanisms.

4. Work needs to start without delay because the rules that will apply post-2012 must be decided before further commitments can be made. Some of the issues raised in this submission are also relevant to the second review of the Kyoto Protocol under its Article 9. New Zealand has an open mind as to how the work is divided between the AWG and the review process. Given the complexity and importance of LULUCF, New Zealand considers that it is unlikely that significant progress can be made within the timeframe agreed, unless there is a focused and intensive effort to undertake the necessary work. New Zealand believes that the SBSTA would be an appropriate body to undertake such focused and intensive work.

5. As a general principle, New Zealand advocates moving towards a framework that enables abatement to be undertaken where it is most cost-effective, regardless of sector or geographical location. This will reduce the costs - from both a global and an individual nation perspective – of meeting emissions limitation and reduction commitments, enhancing the ability to meet those commitments.

6. New Zealand recommends broadening the scope of source and sink activities included within Annex 1 Parties' inventories, subject to the following conditions. First, emissions reductions from these activities need to be real, measurable and verifiable. Second, the impact on individual Parties' mitigation potential needs considering to determine a burden sharing agreement between Parties.

7. New Zealand proposes specific improvements to LULUCF rules, in order to enhance their effectiveness and efficiency. With respect to the rules governing international emissions trading, the submission recommends that any changes should be focused on improving the fungibility and transparency of the international carbon market. New Zealand also considers that sectoral approaches could offer a potentially useful complementary approach to national commitments.

8. The submission also addresses the appropriate metric for assessing the radiative forcing of non-CO2 greenhouse gases, and makes recommendations on topics and participants at future AWG meetings.

ANALYSIS OF THE MEANS AVAILABLE TO ACHIEVE MITIGATION OBJECTIVES

Land Use, Land-Use Change and Forestry Rules

9. The LULUCF sector has an important role to play in providing flexible, low-cost abatement of greenhouse gas emissions. However, the Kyoto Protocol's first commitment period treatment of LULUCF has resulted in complexities and challenges for domestic policy implementation. In addition, the current rules create barriers for land use changes that may be necessary for adaptation to climate change and sustainable economic development. Improved rules will maximise the contribution forests and land use activities can make to addressing climate change. They will also lead to other environmental co-benefits that will contribute to sustainable development.

10. Review of LULUCF rules is also necessary given that, under decision 16/CMP.1 paragraph 4, these rules were agreed for application in the first commitment period only. Throughout this decision, specific further references are made that key decisions apply to the first commitment period only.

11. New Zealand believes that our experience in implementing international LULUCF rules in a domestic context, and the better information now available to the international community, can be used to improve current LULUCF rules.

12. New Zealand recognises that LULUCF rules are complex and interlinked and that there may be differing approaches to achieve the same outcomes. We propose some possible solutions to key issues in this submission. We are also open to discussing any alternative approaches with the Parties to achieve improvements, while ensuring environmental integrity.

Key LULUCF issues

Continued use of sinks to meet greenhouse gas reduction commitments

13. A post-2012 LULUCF framework should focus on optimising the contribution of forests and land use activities to addressing climate change. Sinks provide an important contribution to addressing greenhouse gas emissions and towards sustainability objectives

of Parties. They offer important opportunities for flexible, low-cost abatement of greenhouse gas emissions. In addition, forests can act as important reservoirs, a source of renewable bio-energy, and can produce substitutes for materials with high embodied emissions. New Zealand believes that future LULUCF rules should continue to allow Parties the ability to use sinks as a means to meet their greenhouse gas reduction commitments. This is consistent with the UNFCCC commitment to protect and enhance sinks.

Negotiation of rules before quantitative emission reduction commitments

14. The accounting framework and rules that apply post-2012 for the LULUCF sector need to be agreed before the agreement of quantified emission reduction commitments. The negotiation of LULUCF rules after targets were set in the first commitment period caused a number of difficulties and led to perverse outcomes. For New Zealand, the nature of the LULUCF provisions may have significant implications for future commitments under the Kyoto Protocol and for sustainable development. Agreement to the framework and rules to apply post-2012 before the negotiation of quantitative emissions reduction commitments will:

- Ensure that Parties understand the contribution that LULUCF can and would make to quantified emission reduction commitments; and
- Allow for a more open discussion of the contribution that LULUCF could make to stabilise atmospheric greenhouse gas concentrations.

15. In addition, we note that, depending on what happens under the Bali Action Plan process, the issue of reducing emissions from deforestation and forest degradation in developing countries may be relevant to the setting of quantified emission reduction commitments for the post-2012 period.

Consistency and compatibility between the current LULUCF rules and the post-2012 framework

16. There should be a reasonable degree of consistency and compatibility between the current LULUCF rules and the post-2012 framework, where appropriate. Parties have already implemented domestic policies and spent considerable resources in implementing national systems for reporting and accounting under current LULUCF rules. Consistency and compatibility between the current LULUCF rules and the post-2012 framework is important because:
- Parties will have limited time and resources to make the necessary changes in their current systems and policies;
- Significant deviations from current systems will require parallel administration of old and new systems; and
- There would be considerable uncertainty and implementation costs for investors.

Post-2012 Article 3.4 issues

17. New Zealand believes the Kyoto Protocol's first commitment period accounting rules developed under Article 3.4 of the Protocol need to be significantly improved for the post-2012 period. At a minimum, and unless suitable rules can be developed and agreed, New Zealand strongly supports the continuation of voluntary election of activities under Article 3.4.

18. One area where rules can be improved is through a planted forest land-swapping regime. The post-2012 framework should allow for an area of pre-1990 planted forest to be deforested and offset through afforestation elsewhere without incurring emissions liabilities from the temporary carbon stock decrease. Such a mechanism would assist Parties to meet sustainable development objectives, by allowing land use to change where there is a higher value use of the land. It would also improve options available to Parties for climate change adaptation. To adapt to climate change, Parties need land use flexibility so that crops, forests, and animal agriculture can move to locations where they are best suited in new climatic conditions. New Zealand would envisage that a forest land-swapping regime would be restricted to planted forests. In New Zealand's view, such a mechanism would, at least, ensure the overall maintenance of the forest estate in terms of area and the carbon content in that estate in the medium term.

19. An enhanced ability for Parties to elect Article 3.4 activities would result in their greater use, maximising the contribution forests and land use activities can make in addressing climate change. For example, there could be flexibility in electing a base year (or base period) where a Party is unable (due to lack of data or for some other reason) to determine with sufficient accuracy an initial value for net-net accounting for a particular activity. Another possibility would be Parties having the ability to account for additional activities under Article 3.4 on a project basis rather than having to account on all land in each land use classification (grazing land, cropland etc).

20. Other considerations for accounting rules for Article 3.4 activities in a post-2012 framework include:
- Issues associated with accounting for emissions from forest lands that are the result of natural or "force majeure" events (i.e. they extend a Party's liability beyond human induced activity). This acts as a deterrent to Parties electing voluntary additional activities that are beneficial in addressing climate change. This, however, is a complex area which will need careful consideration. New Zealand is open as to the best approach to resolve this issue;
- Artificial caps are impractical to implement into domestic policies. For example, capping the quantity of units allocated under Article 3.4 Forest Management creates domestic allocation difficulties if a Party includes forestry within a domestic emissions trading scheme.

"Fast-growing Forest Fix"

21. New Zealand believes that there should be a continuation and refinement of the "Fast-growing Forest Fix" (Afforestation/ Reforestation Debit Rule)[1]. Carbon accumulated between 1990 and 2008 in post-1989 forests is not credited within the 2008-2012 accounting period. However, at the time of harvest if all carbon stock changes are accounted for this can result in debits resulting from harvesting for land afforested/reforested since 1990 being greater than credits accounted for on that unit of land. For CP1 this was addressed with the Afforestation/ Reforestation Debit Rule (Fast forest fix). This rule ensures that activities that increase carbon stocks in the long term are not counted as debits under Article 3.3.

22. The same arguments that led to its confirmation for CP1, also apply for CP2 and beyond. This was noted during the original negotiations. New Zealand believes that this rule should continue to apply in the future commitment periods.

[1] Paragraph 4 of the Annex to decision 16/CMP.1 refers.

23. In addition, it should be clarified that the Fast forest fix rule applies to deforestation of post-1990 planted forests as well as harvesting. Credit for growth during CP1 needs to be balanced by an equivalent liability. However, New Zealand does not consider it is appropriate for a Party to suffer further debit for deforestation of a forest that did not form part of the 1990 carbon stock. Compared with 1990, no net emission or removal results from post-1990 afforestation with subsequent deforestation, and the accounting rules should reflect this. In fact the use of biomass from Article 3.3 forests, even if the forests are subsequently deforested, can result in increases in the wood products pool (a temporary but potentially long term store of carbon), can be used for bio-energy (thus reducing emissions from fossil fuels), and can be a substitute for greenhouse gas intensive building materials such as steel and concrete (thus reducing emissions associated with the production of these products).

24. Our experience with the development of the New Zealand Emissions Trading Scheme clearly demonstrates that if this rule is not applied to deforestation then it would serve as a disincentive to Parties and investors afforesting and reforesting. This in turn is contrary to the Protocol's intent to protect and enhance sinks.

Harvesting emissions

25. Alternative approaches, such as the Simple Decay approach[2], should be considered for addressing harvesting emissions.

26. New Zealand recognises that emissions from the harvesting of forests and management of existing harvested wood products are related issues. However, approaches to accounting for existing harvested wood products are extremely complicated due to likely impacts of timber trade, administration burden and deforestation in developing countries. Therefore, New Zealand believes that negotiations should address harvesting issues first.

New Zealand's experiences

27. New Zealand's experience in implementing international LULUCF rules in a domestic context and feedback from stakeholders can provide important lessons for other Parties and for future rules. Key feedback from New Zealand stakeholders includes:
- The importance of land use flexibility, in particular the ability to offset the deforestation of planted pre-1990 forest with afforestation elsewhere. Current rules were viewed as locking in current land use;
- Addressing the "instant oxidation" assumption when harvesting;
- Continuation of the "Fast-growing Forest Fix" (Afforestation/ Reforestation Debit Rule);
- A longer commitment period so as to have a greater ability for forest owners to manage the forestry growth-harvest 'saw-tooth' – see Annex I of this submission;
- If pre-1990 forest owners were required to surrender emission units whenever harvesting occurred this would undermine the commercial viability of a number of forestry operations. Many forest owners would be forced to leave their trees *in situ* in perpetuity, or to manage the forests on a selective harvesting basis. This would lead to the owners of pre-1990 forests being locked into a lower-value commercial use and was viewed as unfair.

[2] This approach assumes that emissions from wood products are estimated over time as products decay.

Emissions Trading and Flexibility Mechanisms

28. New Zealand has long been an advocate for international emissions trading mechanisms as a means to enable Parties to meet their emission reduction commitments at least cost and in doing so, to enable Parties to meet more ambitious emission reduction commitments than they otherwise could.

29. The Kyoto Protocol and its Articles 17 (international emissions trading), 12 (the Clean Development Mechanism) and 6 (Joint Implementation), form the building blocks of the international carbon market. Furthermore, these mechanisms now underpin the design of domestic and regional trading schemes (both existing and proposed) in a number of Annex I Parties, including New Zealand.

30. In New Zealand's view, these, or similar, mechanisms must be a fundamental component of any future framework. However, as trading in these markets is fast evolving, now representing a multi-billion dollar industry, and as Annex I Party experience of these markets increases, careful consideration needs to be paid to if and how the rules for these trading mechanisms can be improved.

Emissions Trading (Article 17)

31. Article 17 and its provision "that Parties included in Annex B may participate in emissions trading for the purpose of fulfilling their commitments" is a fundamental construct of the Kyoto Protocol and in New Zealand's view this, or a similar, mechanism must underpin further commitments.

32. Article 17 and the rules for trading of Assigned Amount Units (AAUs) has significance for Annex I Parties both from an international and domestic policy perspective. As Parties develop domestic and regional emissions trading regimes, rules for the trading of emission allowances between Parties become of increasing importance for linking these schemes and achieving greater economic efficiencies.

33. In New Zealand's view improvements are needed to ensure that the international trading system is more fungible (ie that there is greater convertibility between different units of trade) and transparent.

34. The Kyoto Protocol has established a number of different Kyoto units (AAUs, ERUs, CERs, RMUs) now forming a basis for the international carbon market. These units trade at different prices reflecting their country of origin, project type, certainty of delivery, etc. Parties (and market players) are adopting different positions as to the acceptability of these units. The reasons for Parties taking different stances on the acceptability of different Kyoto units vary. Some degree of differentiation is inevitable, in particular if trading mechanisms are to apply to a range of sources and removal activities (and recognising Parties' sovereign right to make decisions as to what sorts of units can or cannot be used for the purpose of compliance with their domestic schemes). However, in the longer term, Parties to the Kyoto Protocol and any future global climate change agreement should strive towards a single international price of carbon.

35. Specific issues, relating to emissions trading, which need to be addressed include:

- **Trading AAUs**: At present the market for trade in AAUs lacks transparency with few reported trades and very little information on prices of these transactions (this may well

improve as we move further into the first commitment period). Parties should consider whether there is a need to improve transparency.

- **Banking AAUs**: New Zealand supports the banking of units between commitment periods. However, the allocation of AAUs to Parties in any future commitment period should not be determined by the number of units which Parties chose to bank from the previous period. This will ensure Parties do not flood the market at the end of each commitment period with cheap units.

- **Commitment Period Reserve:** The Commitment Period Reserve (CPR) is a mechanism designed to prevent over-selling by Parties. It requires a net buying Party such as New Zealand to hold 90% of its assigned amount in its registry at any point in time throughout the first commitment period. Parties such as New Zealand who have implemented, or are in the process of designing, Kyoto compatible domestic emission trading schemes, need to build this constraint into their domestic rules. In New Zealand's view, it is appropriate to re-address whether the level at which the CPR is currently set has any adverse effects on the efficiency of the international carbon market and domestic trading schemes.

Clean Development Mechanism (Article 12)

36. New Zealand considers that the CDM or a similar international offsets mechanism must continue to be a fundamental component of any future international framework to continue financing investment in low cost abatement opportunities in developing countries and in helping countries with commitments to fulfil these at least cost.

37. From a domestic policy perspective, as New Zealand intends to shortly introduce a domestic emissions trading scheme that allows for Certified Emission Reductions (CERs) to be used for compliance purposes, the importance of a stable supply of high quality verifiable 'emission reduction credits' is of increasing relevance both to the New Zealand Government and private sector participants in the New Zealand scheme.

38. The CDM is widely acknowledged as one of the successes of the Kyoto Protocol, and it is now a multi-billion dollar global market mechanism driving significant levels of investment in activities that are reducing emissions and contributing to sustainable development objectives in developing countries. Nevertheless criticisms of the CDM remain. There are substantial concerns as to extent to which these financial flows from Annex B countries to developing countries are generating real, additional, and verifiable emission reductions. At the same time, there are concerns about the perceived administrative complexity of the CDM process and time lags and uncertainties in the project approval process. The CDM Executive Board is charged with the task of meeting these often conflicting concerns about environmental integrity on the one hand and at the same time ensure a predictable, transparent process for approving projects on the other.

39. New Zealand will seek to ensure that issues related to the administration of CDM projects by the CDM Executive Board, designated operational entities etc are addressed under the terms of the second review of the Kyoto Protocol under its Article 9.

40. More fundamentally, New Zealand, while wanting to ensure continuation of the CDM for the reasons noted above, is of the view that, in considering the future of the CDM, attention should be given to the possible implications for nationally-generated action by CDM-host countries, to ensure the CDM complements national action, and does not create a disincentive for such action.

Joint Implementation (Article 4, Article 6)

41. Joint Implementation can be a useful mechanism to incentivise emission reductions in Annex 1 countries where comprehensive domestic policy is yet to be developed. Investment in domestic projects will provide many positive social and economic spill-overs, especially in less-developed Annex 1 countries. We would therefore want to see continuation of JI or another similar mechanism in a future framework.

LULUCF units

42. Specific issues, relating to LULUCF units, which need to be addressed include:

- **Banking LULUCF units**: Units from sink activities undertaken by Annex 1 Parties should be bankable as this provides improved ability to manage the forestry growth-harvest 'saw-tooth'.
- **Generating LULUCF units**: Currently ERUs, RMUs, lCERs and tCERs can each be generated from sink activities, depending on the location. Each unit type has different characteristics, including length of validity (and inherently, its tradable value). A potential market mechanism for reducing emissions from deforestation and forest degradation may create a further type of unit. New Zealand believes that Annex 1 Parties should continue to earn permanent units from sinks (i.e. RMUs and ERUs within their country). Reversibility/non-permanence would continue to be addressed through accounting for subsequent reductions in those carbon stocks, with sovereign governments being ultimately responsible for managing the permanence issue.
- **Devolving LULUCF units:** Currently, removal units earned from the LULUCF sector are only able to be devolved if the LULUCF sector as a whole is a net sink – i.e. removals from LULUCF exceed emissions from deforestation and harvesting during the commitment period. Emissions from the LULUCF sector (e.g. from deforestation and harvesting) should be treated like emissions from other sectors and be considered separately from removals. Doing this would allow Parties to devolve international removal units to domestic entities (for emissions trading) even if the LULUCF as a "sector' is a net source. In turn this provides proper economic signals to investors in new forest establishment and ensures that RMUs and ERUs from forest sink activities are tradable and assigned their proper value.

<u>Greenhouse Gases, Sectors and Sources</u>

International bunker fuels

43. New Zealand supports in principle the consideration of the treatment of emissions from international bunker fuels in the AWG. We note the key conclusion from the October 2007 Oslo Technical Workshop on Emissions from Aviation and Marine Transport that stated "no significant technical issues related to emissions inventory monitoring and reporting are unsolvable, and inclusion of aviation and maritime transport in a future regime is mainly a political issue".

44. New Zealand notes that the current fora tasked with the responsibility for resolving issues associated with international bunker fuels may require assistance to address these political issues. New Zealand would support consideration of how to support these fora to achieve the inclusion of international bunker fuels in a post-2012 framework.

45. New Zealand supports in principle emissions trading schemes as a mechanism for addressing emissions from aviation and maritime sectors. The design of these schemes

should be non-discriminatory, equitable and fair in order to be an appropriate, flexible means of reducing aviation and maritime emissions. New Zealand is showing commitment at a domestic level by proposing an emissions trading scheme that includes emissions from domestic aviation and maritime transport.

Sectoral Approaches

46. New Zealand sees potential for sectoral commitments as a complementary approach to national commitments. As has been identified in a number of reports from the IEA, the OECD, the Annex I Expert Group (AIXG), industry organisations and research organisations (e.g. CCAP, WRI and PEW), clearly some sectors are better suited to sectoral commitments than others, and care would need to be taken to ensure that such commitments are environmentally ambitious and that they are designed to complement and not weaken national level commitments.

Length of Commitment period

47. New Zealand encourages consideration of longer commitment periods than the current model of five years. There are advantages and disadvantages to lengthening the commitment period. Longer commitment periods generally increase predictability and certainty for both governments and business. In the case of LULUCF specifically, a longer period of agreed LULUCF rules would provide greater investment certainty. It would also allow greater ability for forest owners to manage the forest growth-harvest 'saw-tooth' – see Annex 1 of this submission.

48. A longer commitment period, of perhaps 10 years, should not discourage Parties from taking on commitments mid-term, to improve investment certainty and allow greater ability to smooth the forestry growth-harvest 'saw-tooth'. Parties could consider the possibility of a review clause for longer commitment periods. Adopting a longer period agreement should not preclude Parties that do not currently have commitments from taking on commitments within the time frame of the commitment period.

ANALYSIS OF METHODOLOGICAL ISSUES

Global Warming Potential

49. Global warming potential (GWP) is the current metric agreed by the Parties to the Kyoto Protocol to determine what weighting is given to emissions of methane and nitrous oxide (and other Kyoto GHGs) to derive the equivalent CO_2 emissions. It has been agreed that IPCC 1995 100 year GWPs will be used for the first commitment period. Parties will now need to decide which GWPs (or other metric) will be used for the next commitment period (CP2).

50. The issues are:
    a. Is GWP as currently defined, the appropriate way to establish the equivalent CO_2 emissions?
    b. If the current definition of GWP is used, is the 100 year GWP the appropriate one to use for CP2?
    c. If 100 year GWPs are used, what are the correct values?

51. It is essential that Parties agree which GWPs (or alternative metric) will apply in CP2 before individual targets are agreed to. It is also critical that the same agreed metric or revised GWP will be applied to Parties' base year emissions. New Zealand acknowledges that if GWPs continue to be the preferred metric then their values need to be changed, as the IPCC has revised them a number of times since the Kyoto Protocol was concluded, most recently in the 4th Assessment Report.

52. New Zealand is open to consideration of alternative metrics for assessing the radiative forcing of non-CO_2 greenhouse gases.

TOPICS & EXPERTS/ORGANISATIONS AT NEXT AWG MEETINGS

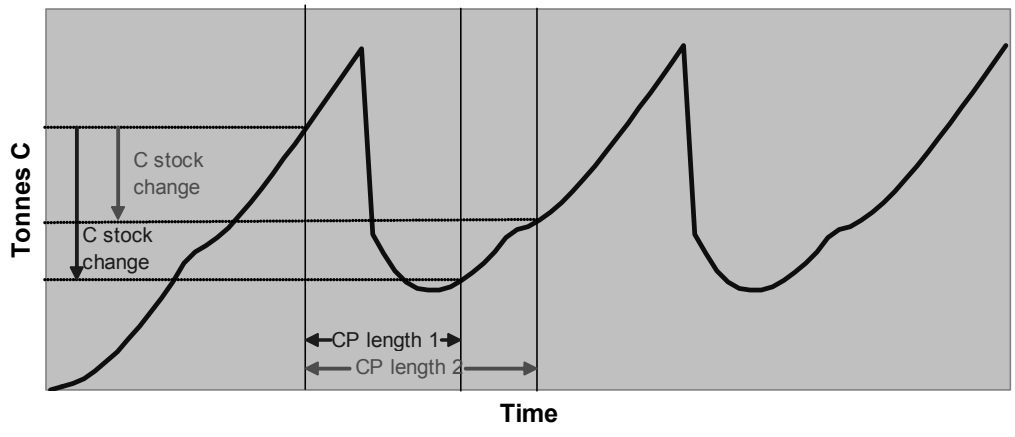
53. New Zealand proposes that the in-session workshop at the fifth session of the AWG should look in more detail at the potential for sectoral commitments, and how such commitments could be implemented alongside national commitments for Parties. The suggested topic would be: "Approaches targeting sectoral emissions: applicability to national commitments". Invitees should include research organisations (e.g. those identified above in paragraph 46) that have been active in this field.

54. Methodologies for assessing the GWP of greenhouse gases are to be considered at a technical workshop during the June 2008 session of the AWG. New Zealand proposes that IPCC representatives be invited to that workshop, to present the latest information on GWPs contained in the IPPC Fourth Assessment Report. Parties should also be invited to present their views on the means for determining equivalence for GHGs.

ANNEX 1 - Explanation of the forestry growth-harvest 'saw-tooth'

Figure 1 shows that a longer commitment period (illustrated by 'CP length 2 ') allows more time for a forest to re-grow following harvest, thus reducing the net carbon stock decrease. As the length and the timing of commitment period influences the net carbon stock change for a forest stand, a longer period may not always result in this outcome, but it still provides greater ability to manage harvesting emissions.

Figure 1: Indicative plantation forestry growth-harvest 'saw-tooth' for a forest stand



PAPER NO. 5: NORWAY

AD HOC WORKING GROUP ON FURTHER COMMITMENTS FOR ANNEX I PARTIES UNDER THE KYOTO PROTOCOL

1 General remarks

Norway welcomes the successful adoption in Bali of a comprehensive work program for the Ad Hoc Working Group (AWG) on Further Commitments for Annex I Parties under the Kyoto Protocol. In the adopted work program, Parties were reminded of its invitation to submit views and information on the means to achieve the mitigation objectives of Annex I Parties. Parties were further invited to submit views on the topics to be covered in the in-session thematic workshop (first part of its fifth session) scheduled 31st March to 4th April 2008 in Bangkok and which experts/organisations that should be invited to participate in the in-session thematic workshop.

Norway welcomes the opportunity to provide views on this important matter and takes the opportunity to inform that we are looking forward to participating in the meeting in Bangkok. Norway is committed to achieving positive results in this process to continue to take the lead together with other Annex I Parties in reducing global emissions, and to ensure that a new global framework succeeds the Kyoto regime without a gap.

The working group recalled in Bali that its work should be guided by a shared vision of the challenge set by the ultimate objective of the Convention. Norway believes that to avoid dangerous climate change, global temperatures must rise no more than 2 degrees above pre-industrial level. According to IPCC this means that global emissions have to peak no later than 2015 and have to be reduced at least by half no later than 2050 compared to 1990. Norway further welcomes the reference in the work program to the first part of this working group's first session where it was recognized that achieving the lowest levels of global emissions on greenhouse gases assessed by the IPCC would require Annex I Parties as a group to reduce emissions in a range of 25-40 percent below 1990 levels by 2020. As stated in the program, achievement of these reduction objectives by Annex I parties would make an important contribution to overall global efforts required to meet the ultimate objective of the Convention. In addition to these efforts, emissions in developing countries have to deviate below their projected baseline emissions within the next few decades.

2 Means covered by the in-session thematic workshop in Bangkok

By 2020 Norway will undertake to reduce global greenhouse gas emissions by the equivalent of 30% of its own 1990 emissions. About 2/3 of emission reductions in 2020 will be cuts in domestic emissions bringing Norway on the path to a low carbon society. In the context of a global ambitious agreement where other developed countries undertake substantial commitments, Norway intends to cut global emissions equivalent to 100 percent of its own emissions, becoming a carbon neutral nation within 2030. To support early mitigation action Norway launched in Bali a plan whereby Norway is prepared to increase its support for efforts to prevent deforestation/forest degradation in developing countries to about three billion NOK (more than 500 million dollars) a year.

Norway's international climate change policy includes working towards achieving a Kyoto agreement that covers greenhouse gas emissions form international aviation and maritime transport as well as emissions from land use, land-use change and forestry (LULUCF) activities, making it possible for Annex I Parties to reach their emission reduction targets by supporting mitigation efforts in these sectors. It is our belief that inclusion of these sectors is essential to limit the increase in global mean temperature to 2 degrees Celsius. Measures undertaken in the LULUCF sector and international transport should come in addition to stronger mitigation efforts in other sectors.

Since deep cuts in global emissions will be required, in addition to a comprehensive approach, Norway emphasizes the need for cost effective tools in global efforts to mitigate climate change, such as strengthening the carbon market. Hence, Norway proposes that the in-session thematic workshop (first part of its fifth session) on means available for annex I parities should cover:

- Expanding the carbon market
- LULUCF
- International maritime and aviation transportation

To enhance synergies between the processes included in the Bali Road Map, meetings and workshops should to the greatest extent possible be scheduled in conjunction with each other.

Norway encourages the involvement of other multilateral bodies, such as the UN bodies for aviation (ICAO) and maritime transport (IMO) in the discussions on including these emissions. Norway would further encourage a close co-operation with the UN Convention on biological diversity (CBD) on matters

relating to deforestration and sustainable forest management. Also stakeholders in the public and private sectors and civil society should be invited to participate in workshops scheduled in the process. It is our view that experiences and views of a broad spectre of stakeholders gives a better understanding of the issues at stake.

3 Expanding the Carbon market

In the development of a global carbon market, existing mechanisms such as CDM, JI and emission trading should, in our view, be further elaborated on. The challenges would be to ensure the environmental integrity and the mechanisms' contribution to sustainable development and technology transfer, as well as enhance the regional distribution and reduce the administrative costs. As well as improving existing mechanisms, innovative approaches, such as operator level emission trading or binding sectoral targets, are necessary to explore the possibility of developing new mechanisms.

Norway supports expanding the carbon market aiming at establishing a global carbon price on emissions, a carbon price that should trigger actions necessary to fulfil a 2 degree goal. It appears technically feasible to enhance the carbon market to include most emissions, possibly also emissions from the LULUCF sectors. One price throughout the whole market would promote cost effectiveness. A global carbon price creates incentives for mitigation and enhanced investments in clean technology development and diffusion. Such a market price will stimulate countries, businesses and individuals to invest in low-carbon assets and push the world towards a more sustainable emission scenario. In Norway about 70 percent of our greenhouse gas emissions are subject to a tax or covered by an emission trading scheme.

4 LULUCF

The LULUCF sector is an important sector in the context of climate change both for developing and for developed countries. According to IPCCs Fourth Assessment Report (AR4) an area of 13 million ha per year is being deforested in tropical forests, contributing to an emission of 6 billion tonnes of CO_2 per year, representing more than 20 percent of fossil CO_2 emissions. At the same time a CO_2 amount of the same order of magnitude is removed from the atmosphere due to expanding forest areas and accumulating woody biomass in the boreal and temperate zone.

IPCC has identified a significant mitigation potential for the forest sector. For costs less than 20 US$ per ton CO_2 the potential is estimated to 1.6-5 billion tonnes CO_2 per year in 2030. For costs less than 100

US$ per ton CO_2 the estimated potential is 2.7-13.8 billion tonnes CO_2 per year. This potential does not include emission reduction through the use of bio-energy. Hence, finding ways to effectively enhance CO_2 sequestration from the LULUCF sector in future commitments under the Kyoto Protocol may contribute significantly to achieving the ultimate objective of the Convention.

The possible utilisation of the mitigation potential in the LULUCF sector will vary considerably depending on the different accounting options and incentives which could be implemented in a future climate regime. It is important for Norway that the magnitude and implications of the possible options are clearly assessed and that sufficient time is set aside to share this information among Parties. Furthermore, in order to ensure that mitigation efforts in the LULUCF sector are additional to efforts in other sector, the implications of the different policy options should be assessed before the overall Annex 1 quantified targets are defined.

Estimation of LULUCF emissions and removals are more uncertain than for fossil fuel emissions. It is important to take this uncertainty into account when assessing and deciding policy instruments. But high uncertainty should not be an excuse for not implementing policy if we know the characteristics and possible implications of the uncertainty and the main effects of the relevant policy options.

Holistic approach

Existing LULUCF commitments under the Kyoto Protocol for the first commitment period are mainly limited to specific activities at national level under Article 3.3 and 3.4. Furthermore, the CDM rules allow for including the effects of afforestation and reforestation (but not deforestation) activities, limited to 1 percent of the Parties' emission in the base year 1990.

In our view the future LULUCF regime under the Kyoto Protocol should be more holistic, and hence strive for a more complete geographical coverage and inclusion of all significant sources and sinks. We also believe that the future LULUCF regime should aim to promote incentives for reducing emissions, enhancing carbon stocks and increasing use of CO_2 neutral bio-energy. The LULUCF regime should also contribute to sustainable forest management, including protection of biodiversity and the rights of local and indigenous communities.

Article 3.3 includes only afforestation, reforestation and deforestation since 1990 and gives Annex 1 Parties incentives to reduce emissions and enhance carbon stocks in relation to land-use change.

Emissions and removals within existing forests are not included. However, Article 3.4 opens for inclusion of forest management, cropland management, grassland management and revegetation. But the current rules under Article 3.4 allow Parties to select only those activities that they expect to give credits, not debits. A more holistic future system drawing more actively on the LULUCF sector in fulfilling its long term goals should give Parties incentives for further mitigation initiatives, related to emissions as well as removals. Further, a system based on complete geographical coverage will reduce the possible leakages of emissions through unreported logging and land-use change.

Limits for accounting removals for forest management under Article 3.4

For the first commitment period the accounting of emissions and removals from forest management under Article 3.4 shall not exceed a specific value identified for each Party. This cap was set in order to avoid inclusion of removals resulting from natural causes (e.g. CO_2 and nitrogen fertilization) or effects of activities taken place before 1990 in the Parties´ fulfilment of their commitments. The country specific limits were guided by an 85 per cent discount factor and a 3 per cent cap related to the base year emissions. The inclusion of this cap reduces or for many countries even excludes the incentives to enhance their carbon stock through changes in forest management practice. For the first commitment period, Norway believes, however, that a cap on forest management was important and clearly needed since the rules for Article 3.4 were decided after the overall quantified targets were set. Without such limitations the effect of the commitments in the first period of the Protocol could have been considerably watered down.

For the second commitment period, however, we believe it is important to establish rules for forest management under Article 3.4 that give the Parties incentives to reduce emissions and enhance carbon stocks, without taking credits for changes due to natural driving forces. A challenge in this regard is that emissions and removals in many countries can vary significantly due to wildfires, diseases and storms. Hence, there is a need to address variation due to natural removals and natural emissions.

Gross-net versus net-net accounting

The rules under Article 3.3 and forest management under Article 3.4 follow the concept of gross-net accounting. This means that emissions and removals are only accounted for during the commitment period 2008-2012, without any comparison to the emissions and removals in the base year. For cropland management, grassland management and revegetation, however, the accounting is net-net and Parties can only get credits for what represents a net removal compared to accounted emissions or removals in the base year. Norway believes a net-net approach normally will be the best way to reflect direct human

induced activities, since the parties get credits only for what is additional to emissions or removals in the base year.

For the first commitment period the final decisions on a gross-net versus a net-net approach for Article 3.3 and forest management under Article 3.4 were made in 1998, after the agreement of country-wise commitments in Kyoto in 1997. One reason why a net-net approach was not chosen in 1998 was the uncertainty many Parties felt about the consequences of such a choice for their ability to fulfil their Kyoto commitments. For the second period we have the opportunity to do this the other way around, by first establishing the rules and afterwards agree on the commitments based on country specific consequences of these rules.

Monitoring and reporting

A comprehensive accounting system requires a monitoring and reporting system that covers all relevant land areas, activities, pools and gases. At the same time there is a need for simplicity to ensure transparency and cost efficiency. The monitoring system should first of all be able to measure effects of policy measures. Norway believes the most recent 2006 IPCC Guideline is a good basis for a monitoring and reporting system, although there is a lack of capacity to undertake detailed national forest inventories in a number of countries. However, depending on the policy options to be agreed, the Guidelines may need to be further elaborated.

Bio-energy

There is a close link between the LULUCF sector and use of bio-energy to substitute fossil fuels in the energy sector. Bio-energy represents a significant mitigation potential when forests are sustainable managed. Hence, the LULUCF sector and the use of bio-energy should be included in a more holistic approach than to day, see views expressed above.

Harvested wood products

In principle all relevant anthropogenic carbon pools, as well as harvested wood products, should be included in a post-2012 regime, provided that the stock change can be measured in a verifiable and transparent way. Harvested wood products were not included in the first commitment period mainly because the Parties could not agree upon the accounting approach.

Two main approaches have been developed. These give significantly different solutions depending on whether the country is a net timber exporting or a net timber importing country. The *stock-change* approach is consistent with how sinks in forests are treated in the Kyoto Protocol, while the *atmospheric-flow* approach is similar to how energy is treated.

If harvested wood products should be included, it is important for Norway that the accounting rules give credits to the enhancement of carbon stock resulting from wood products in all countries, both developed and developing countries. At the same time the rules should ensure that no perverse incentives are created, such as unintended deforestation and unsustainable forest management. Furthermore, the accounting rules should not be too sensitive to variations in import and export of timber and wood products.

More information is needed to facilitate further discussions regarding harvesting and wood products, such as: consequences of the different calculating approaches, the magnitude and source of the global and national stocks of wood products and the magnitude and consequences of wood products trading. There is a particular need for better knowledge on how different calculating approaches will influence the promotion of sustainable development and protection of biological diversity, as well as how effective different policy incentives would be in enhancing the removals and reducing the emissions from harvesting and wood products.

Sinks in CDM

Under the Clean Development Mechanism (CDM), only afforestation and reforestation activities are eligible. For the first commitment period, Annex I countries can use credits from these activities for up to a level of 1 percent of its base year emissions. Furthermore, the emission credits from these projects are of a temporary nature, and have to be replaced after a specified period.

In principle Norway believes that the CDM for the second commitment period should not be limited to afforestation and reforestation, but similar to Article 3.3 for Annex 1 Parties, include also emissions from deforestation activities. We further believe that forest degradation and enhancement of carbon stock as a consequence of sustainable forest management should be included. But more work has to be done to find sound and environmentally safe solutions with regard to outstanding issues such as baselines, leakage and permanence. It is particularly important to find solutions to prevent reduced deforestation and degradation in one region resulting in increased deforestation and degradation in another region, or in

another country. It is our view that monitoring, reporting and accounting of emissions and removals from these activities should be addressed at national level to reduce the risk of leakages.

The development and assessment of methodological issues related to inclusion of deforestation and degradation in a future CDM regime should be considered in connection with the process established under the CP.13 decision on "Reducing emissions from deforestation in developing countries".

Conclusions

The views on land-use, land-use change and forestry (LULUCF) expressed in this submission are of a general nature. At the fifth session of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol – in the in-session thematic workshop - Norway is ready to elaborate further on how the LULUCF sector might be treated in the second period of the Kyoto agreement.

5 International aviation and maritime transport

Greenhouse gas emissions from international aviation and shipping are growing faster than emissions from any other industry. These sectors represent about 5 per cent of the total global greenhouse gas emissions. According to some estimates, their emissions may contribute up to 10-15 per cent of the global total in 2050 if current growth continues. It is the view of Norway that emissions from international aviation and maritime transport should be dealt with in a global context and be included in a new global climate regime.

Information of the Oslo workshop

Norway, together with the European Environment Agency, arranged a technical workshop on emissions from international aviation and maritime transport in Oslo in October 2007. The workshop was attended by participants from Annex I and non-Annex I countries, the UNFCCC, the International Civil Aviation Organization (ICAO), the International Maritime Organization (IMO), the International Energy Agency (IEA) and experts involved in the work of the Intergovernmental Panel on Climate Change (IPCC). The workshop focused on technical issues related to GHG emissions from aviation and maritime transport but also discussed possible regimes for including those emissions into future international mitigation strategies.

The main conclusion from the workshop was that no technical obstacles related to monitoring and reporting of emissions remain that can not be solved. The absence of global policies and measures is

more due to other political barriers than to technical difficulties. Furthermore, data availability and quality are not major obstacles in relation to most allocation options so far discussed, even if some practical issues needs to be solved. It also became apparent that because of differences between the two sectors (e.g. in existing regulations, where planes/ships are registered (Annex I/non-Annex I) what they carry), it could be advantageous to carry out future discussions separately.

ICAO's work on greenhouse gases

The main aim of the ICAO is sustainable growth of aviation. At present aviation activity is growing by 5 per cent per year. Emissions of greenhouse gases are growing at almost the same rate (about 4 per cent), which is greater than for any other sector. In Norway's view, this is alarming, bearing in mind the need for deep cuts in global emissions.

In September last year, the Assembly of ICAO adopted a resolution on limiting aviation's impact on climate change. The resolution contains no concrete action for emission reductions. The resolution requests States to refrain from imposing unilateral charges on aviation emissions, and to refrain from implementing emissions trading schemes unless on the basis of a mutual agreement with other States involved. 42 European States, including the EU and Norway, found this unacceptable and submitted a formal reservation. We support EU's determination to move ahead with an EU emissions trading scheme and to include all flights departing and arriving in the EU.

The ICAO must fulfil its leadership role international aviation matters, and demonstrate its ability to contribute to the solution of the climate problem substantively and expeditiously. As a part of this, ICAO should seek a strengthened and more formalized working relationship with the UNFCCC.

IMO's work on greenhouse gases

IMO adopted an assembly resolution in 2003 with a strategy for reducing emissions of greenhouse gases from shipping. However, so far actions by IMO have not resulted in the development of mechanisms which could lead to emission reductions. It has been decided to update an IMO Study on greenhouse gas emissions from ships from 2000 by 2009, and Terms of Reference for this study have been adopted.

The Maritime Environmental Protection Committee of the IMO (MEPC) aims to identify and further develop options in order to make recommendations to the 2009 IMO Assembly. According to a Work

Plan adopted in 2005, the Committee should consider technical, operational and market based methods for dealing with GHG emissions at its meetings in 2008.

Norway has contributed to the work of the MEPC, e.g. by proposing different reduction mechanisms to be considered by the Committee. Our principal approach is towards the development of a legally binding global regime which includes all international shipping.

We submitted a document to the MEPC 56-meeting in July 2007 on elements for a possible CO2-reduction scheme for international shipping. We also presented this scheme at a side-event in Bali during COP 13. The scheme includes the establishment of a global cap on CO_2-emissions from shipping, a greenhouse gas emission levy on all bunkers sold to ships engaged in international transport, and a global maritime fund. The purpose of the fund would be to allocate financial resources to emissions reduction within the sector, to purchase CO_2-credits on the emissions trading markets including CDM, and to fund adaptation projects in developing countries, e.g. by supporting the Adaptation Fund. The levy would be flat and imposed on all CO_2-emissions from international shipping. It would secure compensation or reduction of CO_2-emissions above an agreed cap on global emissions. It would also be competition neutral. Denmark has presented a similar system combined with a design index for new ships.

The different proposals will be discussed at the next meeting of the Maritime Environmental Protection Committee in April. The Secretary General of IMO indicated the need for an ad hoc working group meeting after MEPC 57. In the view of Norway, there is a need to hold such a meeting, and we have offered to host the meeting. I agreed by the MEPC the meeting will be held 23-27 June 2008.

The IMO must fulfil its leadership role international shipping matters, and demonstrate its ability to contribute to the solution of the climate problem substantively and expeditiously. As a part of this, the IMO should seek a strengthened and more formalized working relationship with the UNFCCC.

Issues to be considered by the Ad hoc Working Group on Article 3.9

For international aviation and maritime transport there are two issues related to targets, ways and means with regard to new Annex I commitments that should be assessed by the AWG. These are 1) Annex I Parties' performance with regard to Article 2.2 of the Protocol, and 2) SBSTA's follow-up of Decision 2/CP3.

According to Article 2.2 of the Protocol, Annex I Parties should work through the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO) to limit or reduce emissions from international aviation and maritime transport. Emissions from international aviation and shipping are not included in Annex I Party commitments in the Kyoto Protocol. It has not been agreed what emissions Annex I countries should be responsible for, since the question of allocation of emissions to countries has not been solved.

In 1997, the COP requested advice from the SBSTA on how to include emissions from international aviation and maritime transport in the overall greenhouse gas inventories of Parties (Decision 2/CP 3[1]). Decision 2/CP.3 is on methodological issues related to the Kyoto Protocol. In its paragraph 4 emissions from fuels sold to ships and aircraft engaged in international transport are addressed. In this paragraph, The COP urges the Subsidiary Body for Scientific and Technological Advice to further elaborate on the inclusion of these emissions in the overall greenhouse gas inventories. SBSTA has so far not been able to resolve this issue.

Follow-up by AWG

We propose that AWG consider the two issues mentioned (Art. 2.2 of the KP and Dec. 2/CP3). In our view, there are several possibilities for how this could be brought forward.

One of the conclusions from the workshop in Oslo was that the three UN organisations dealing with climate change issues linked to aviation and shipping have this topic high on the agenda. However little progress in reducing emissions has been demonstrated and the emissions are projected to rise notably in the future.

With regard to Article 2.2, Norway suggests that AWG considers proposing emissions reduction goals for IMO and ICAO respectively. As a basis for these considerations, AWG could request information from the two organizations on current and projected emissions, and on the potential for emissions reductions.

On Dec.2/CP3, allocation of the responsibility of emissions on countries needs to be discussed. Norway has proposed emissions from these sectors be included in a global scheme, and considered under the

[1] Dec.2/CP.3 Methodological issues related to the Kyoto Protocol. 4. The COP recalls that, under the Revised 1996 Guidelines for National Greenhouse Gas Inventories of the Intergovernmental Panel on Climate Change, emissions based upon fuel sold to ships or aircraft engaged in international transport should not be included in national totals, but reported separately; and urges the Subsidiary Body for Scientific and Technological Advice to further elaborate on the inclusion of these emissions in the overall greenhouse gas inventories of Parties;

Bali action plan. If a global sectoral approach is agreed, there may be no need for allocation of emissions to countries.

The EU's has decided to include aviation in its emissions trading scheme from 2012. The system will cover all flights to and from the EU. Norway supports the system, which we believe is feasible and fair. Since it covers all operators from all countries, it would not give any incentives for companies to change operating country.

We suggest that the AWG considers the allocation options with regard to shipping and aviation respectively, bearing in mind that distortion of competition should be avoided.

PAPER NO. 6: SAUDI ARABIA

MEANS TO ACHIEVE MITIGATION OBJECTIVES OF ANNEX I PARTIES

Saudi Arabia welcomes the opportunity to submit its views on Means to achieve mitigation objectives of Annex I Parties by 15 February 2008 as included in the following documents:

1. FCCC/KP/AWG/2006/4, paragraph 17(b),& FCCC/KP/AWG/2007/2, paragraph 24
2. FCCC/KP/AWG/2007/4, paragraph 24
3. FCCC/KP/AWG/2007/L.6/Rev.1, paragraph 6(b) (ii)

1. FCCC/KP/AWG/2006/4, paragraph 17(b), & FCCC/KP/AWG/2007/2, paragraph 24

I. Saudi Arabia has examined all means mentioned in FCCC/KP/AWG/2006/4, paragraph 17(b) (i) the following are identification of ways to enhance the effectiveness the of the following means and their contribution to sustainable development:

- **Emissions Trading (ET)** – ET is a good mean to achieve mitigation objectives provided that it is among Annex I, non sectoral and does not cause spillover effects. To ensure that spillover effects are addressed, ET should not include vital sectors for developing countries such as Aviation and Marine transports. Unilateral Regional actions will not contribute to international Sustainable Development and should not be allowed under AWG.

- **Project-based mechanizes under the Kyoto Protocol** – Project based mechanisms are good means to achieve mitigation objective provided that:

    - **C**ontinues to be project based and should be done between Annex I and non-Annex I Parties (Bilateral),
    - Takes into account reduction from win-win technological based solution (..ie, CCS),
    - Its share of proceeds should only be used for adaptation and should not be used for administrative purposes,
    - It does not become a burden on non-Annex I Parties. Therefore, Annex I Parties should contribute to the adaptation fund with an equal amount to the collected project share of proceeds since it is coming from non-Annex I source.
    - Any similar mechanisms among Annex I Parties (ie, JI) should also have comparable share of proceeds system that is equal to Annex I non Annex I mechanism (ie, CDM).

- **The rules to guide the treatment of LULUCF** – LULUCF is a very important and relevant emission source that should be treated in a balanced manner to emissions from other source and it will contribute greatly to the mitigation potential. Furthermore, LULUCF is the sector that has the least spillover effects on developing countries that will be impacted most from mitigation actions. Therefore, having adequate rules to guide the treatment of LULUCF is essential to achieve the objective of Sustainable Development

- **Green House Gases** – To ensure that spillover effects are minimized, the following are ways to enhance the effectiveness of the means and contribute to Sustainable Development:

    - Deal with all green house gases in a comprehensive manner,
    - Give priority to those gases that have the highest worming potentials,
    - Give priority to those gases that have the least spillover effects in developing countries (ie, CH4, N2O, HFCs, PFCs, SF6)

- **Green house sectors and sources** – To ensure that spillover effects are minimized, the following are ways to enhance the effectiveness of the means and contribute to Sustainable Development, all sectors and sources are dealt with in a comprehensive manner.

- **Sectoral emissions** – We do not believe that sectoral approaches can contribute effetely to Sustainable Development to the following concerns:

    - **Distributional and Equity Aspects:** Policies and measures under this category, do not:
        - Balance burden across sectors,
        - Balance treatment of emission sources,
        - Minimize impacts on developing countries.

    - **Efficiency and Implementation Aspects:** Policy and measures under this category do not employ instruments and implementation mechanisms that encourage emissions reductions from sources having the least abatement costs.

    - **Technology Aspects:** Policies and measures under this category will:
        - Not avail a leveled playing field for innovation,
        - Create distorted market signals to investment in energy technologies,
        - Not encourage technologies with large emissions abatement potentials.

Another alternative approach is a uniform economy-wide approach. This will ensure far treatment of all sectors.

II. Saudi Arabia has examined all means mentioned in FCCC/KP/AWG/2006/4, paragraph 17(b) (ii), there is a need to develop methodologies on how to reduce the impacts of Polices and Measures on Developing Countries Parties when using:

- Emission Trading,
- A project base mechanisms,
- Rules for the LULUCF,
- Coverage of GHGs, sectors and source categories,
- Sectoral approaches.

2. **FCCC/KP/AWG/2007/4, paragraph 24**

If there are no/or limited submissions from Annex I Parties in this regard, Saudi Arabia suggest the followings:

i. Request submissions by IGOs and NGOs,
ii. Request submissions from All Parties,
iii. The secretariat to prepare a synthesis of views for consideration by the next session of the AWG.

3. FCCC/KP/AWG/2007/L.6/Rev.1, paragraph 6(b) (ii)

Saudi Arabia suggests the following topics to be included:

- Identification of ways, means and methodology to minimize spillover effects from mission trading, project base mechanisms, rules for the LULUCF, coverage of GHGs, sectors and source categories, and sectoral approaches.

Saudi Arabia suggests inclusion of experts from Oil Producing Exporting Countries.

PAPER NO. 7: SLOVENIA ON BEHALF OF THE EUROPEAN COMMUNITY AND ITS MEMBER STATES

SUBMISSION BY SLOVENIA ON BEHALF OF THE EUROPEAN COMMUNITY AND ITS MEMBER STATES

This submission is supported by Croatia, Albania, Bosnia and Herzegovina, Former Yugoslav Republic of Macedonia, Serbia, Ukraine and Turkey

Ljubljana, 14 February 2008

Subject: **Views and information on means that may be available to Annex I Parties to reach their emission reduction targets**
Views on the topics to be covered and expert/organizations to be invited to participate in the round table (to be held at the resumed fifth session of the AWG) on the analysis of means available to Annex I parties to reach their emission reduction targets

I. General remarks

The EU welcomes the successful conclusion of COP 13/CMP 3 in Bali in December 2007. The results of this Conference emphasised the need for a comprehensive post-2012 agreement to be reached by 2009. The EU welcomes the establishment of the Ad hoc Working Group on Long- term Cooperative Action under the Convention (AWGLCA) and emphasises the need to decide on an ambitious and efficient work programme for the group at its first session. The EU welcomes also the conclusions of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG) at its resumed fourth session and the agreement on an ambitious timetable for the further work of the AWG that was achieved. The EU believes that the necessary work should be conducted as effectively as possible for the AWG to be able to complete its mandate as part of a comprehensive global agreement under the UNFCCC.

Based on the solid scientific message provided by the IPCC in its reports throughout the year 2007, Parties reiterated that there is a need for global emissions to peak within the next 10-15 years and to be reduced to very low levels, well below half of levels in 2000 by the middle of the twenty-first century in order to stabilise their concentrations in the atmosphere at the lowest levels assessed by the IPCC to date. Developed countries need to continue to take the lead in reducing global greenhouse gas emissions by seriously considering emission reduction commitments as a group in the range of 25-40% below 1990 levels by 2020. The IPCC's Working Group 3 report mentions that in order to limit the global average temperature increase to not more than 2°C above pre-industrial levels, there is a need for substantial deviations from baseline (business as usual) emissions in several developing regions in addition to the absolute emission reduction commitments of 25-40 % by industrialised countries by 2020 (compared to 1990) [1].

[1] IPCC Working Group 3 report, Chapter 13, page 776.

In addition, the EU emphasises that adaptation to the unavoidable impacts of climate change needs to be addressed as a priority within the negotiations on a post-2012 agreement, especially to enhance the support for adaptation action and capacity building in those developing countries that are most vulnerable to the impacts of climate change. With respect to both mitigation and adaptation, there is a need to discuss the issues of technology cooperation, financing and investment.

The EU believes that with a view to achieving our common goal of a post-2012 agreement by 2009, all relevant processes need to progress as constructively as possible, coordinate with and draw upon relevant results achieved and work under way in other bodies and processes under the Convention and its Kyoto Protocol. In particular, the work of the AGLCA, AWG and the second review of the Kyoto Protocol pursuant to its Article 9 need to progress in harmony and should aim to maximise synergies toward a global and comprehensive agreement in 2009.

II. Views and information on means that may be available to Annex-I Parties

Analysis undertaken so far in the AWG on mitigation potentials has shown that there is considerable economic potential at the disposal of Annex I Parties for mitigation of GHG emissions over the coming decades across a portfolio of mitigation policies and technologies which enables Annex I Parties as a group to deliver the emission reduction commitments as indicated by the range of 25-40 per cent below 1990 levels by 2020.

The EU has said at various occasions that Annex-I Parties as a group should commit to an absolute reduction of emissions by 30% below 1990 levels by 2020 in the context of a fair and effective international agreement, and through domestic and international efforts. The extent, effectiveness and the conditions under which existing and additional means may be available will have a considerable influence on the cost and feasibility for Annex I countries to commit to and to achieve such ambitious emission reduction objectives.

It is therefore necessary for Annex-I Parties to develop a clear understanding of possible means, including emissions trading and flexible mechanisms for international efforts, the treatment of the LULUCF sector, the greenhouse gases, sectors and source categories to be covered, in particular, addressing emissions from international aviation and maritime transport. For each of these means consideration needs to be given to their contribution to achieving the ultimate objective of the Convention.

This submission therefore outlines the views of the EU on which topics should be covered in the work of the AWG on means in 2008, which issues need to be addressed under each of these topics and possible expertise that the AWG could draw upon. The EU emphasises that while the work of the AWG will cover a broad range of issues, there are some important issues of relevance to its work currently being dealt with in different processes under the Convention and its Kyoto Protocol. This includes issues related to the carbon market, such as equitable regional distribution of CDM projects and the role of the carbon market as a source of funding in the context of a post-2012 agreement. The EU is looking forward to considering these aspects in the context of the second review of the Kyoto Protocol pursuant to its Article 9 and will submit its views on these issues in that context.
In addition, this submission deals with land use, land-use change and forestry (LULUCF) in Annex I countries only. Afforestation and reforestation (AR) CDM project activities need to be addressed in the context of the review of the flexible mechanisms. The EU further recognises that actions and incentives for reducing emissions from deforestation could be of relevance to the work of the AWG. This issue is, however, dealt with in a separate submission according to the Bali Action plan and Decision x/CP.13.

II.1 Expanding the carbon market, building on the flexible mechanisms and exploring new mechanisms

The establishment of a global carbon market is a key tool to achieve global mitigation objectives in a cost-effective, flexible way to ensure private sector participation in that effort by making the price of carbon being felt worldwide. At the same time, the carbon market can be an important driver in delivering finance and incentives for technology innovation, development, deployment, and transfer, as outlined in the Financial Flows paper produced by the Secretariat. The EU therefore believes that the expansion of the carbon market in the post-2012 period, including through enhanced flexible mechanisms, is a crucial element for any future climate regime.

Improving the existing mechanisms

The EU has been a key driver of the development of the global carbon market. First of all by creating the world's largest regional company-based emissions trading scheme - the EU Emissions Trading Scheme (EU-ETS). In addition, numerous other national and regional company-based emissions trading systems already exist or are being developed. The EU believes that international emissions trading of AAUs as per Article 17 of the Kyoto Protocol should continue to be a flexible instrument and a crucial element to abate greenhouse gas emissions in a cost-effective manner.

Alongside efforts of other Parties, the EU has been a main driver in the implementation of the project-based Kyoto mechanisms (JI and CDM) by linking the EU-ETS with these mechanisms (see Annex, Box 1). In 2007 the value of the global carbon market has been about €40 billion, €12 billion of which related to projects in developing countries.[2] The Clean Development Mechanism (CDM) is stimulating investments in countries without mitigation targets, thereby becoming a valuable catalyst for leveraging substantial financial flows for clean technologies in developing countries. CDM and JI are providing real and measurable benefits. The CDM has changed emission trends in some sectors and considerably contributed to capacity building and awareness raising on climate mitigation opportunities in developing countries. Nevertheless, the CDM has not yet realised its full potential and concerns regarding its environmental integrity, efficiency, contribution to sustainable development and the regional distribution of projects have been raised.

The EU underlines the importance of a continuing role for projects under the CDM and JI beyond 2012 and the need to thoroughly discuss improvements to the CDM and JI in order to realise their full potential while increasing their environmental integrity, efficiency, contribution to technology transfer and sustainable development, and regional distribution.

[2] Point Carbon, Carbon Market Europe, 25 January 2008.

Exploring new mechanisms and approaches

The EU acknowledges that the carbon market can make a significant contribution to enhance the cost-effectiveness of global efforts to reduce greenhouse gas emissions. Since efforts by Annex-I Parties alone will not be sufficient to reach the ultimate objective of the Convention, the post-2012 agreement needs to build on ambitious absolute emission reduction targets by industrialised and enhanced mitigation actions in developing countries, while being consistent with the principle of common but differentiated responsibilities as considered in the context of the Bali Roadmap. For the carbon market this implies that emission reduction targets of Annex-I Parties need to be complemented with substantial deviations from baseline emissions in advanced developing regions and that offsetting approaches that provide for crediting reductions against business-as-usual emission may only be suitable for some sectors and countries. New mechanisms need to be explored to provide incentives for enhanced mitigation actions and policies in developing countries. The EU is looking forward to further discussing these ideas – especially the potential in devising cost-effective approaches moving beyond the project-based offsetting approach of the CDM, e.g. on a sectoral basis. This could include sector-based approaches such as no-lose targets or binding sectoral targets. In addition, project-based approaches should still play a significant role and many developing regions should still benefit from these incentives in enhancing their sustainable development and the transfer of technology to these countries.

EU experience in building a worldwide carbon market

Emissions trading schemes generate a price signal that creates incentives for greenhouse gas mitigation, helps to steer public and private investments towards technology innovation and enables countries and companies to meet their emission reduction objectives in a cost-effective and flexible way. The EU would like to share lessons learnt from the EU ETS, upon which we should build when discussing how to develop and strengthen the carbon market in a post-2012 perspective.

The EU ETS - including the use of the project-based mechanisms - is an effective instrument to help Member States in achieving their Kyoto targets and effectively engage the private sector in the reduction effort. The EU ETS has demonstrated that a carbon price signal in Europe succeeded in stimulating emissions abatement by involving the private sector, both within Europe as well as in developing countries through the use of the CDM.

A key requirement for a well-functioning carbon market is creating scarcity of tradable emission units (emission units). If there is no scarcity, the price signal remains negligible and economic behaviour does not change. Therefore, ambitious binding and absolute emission reduction commitments are the backbone of any carbon market. Likewise due attention needs to be paid to the supply of credits flowing into the market.

Another lesson learnt is that the carbon market is not capable of addressing all mitigation options in all sectors. Although the carbon market has shown to be an effective instrument to tackle climate change in a broad range of sectors, in particular for large point sources, there are mitigation options and sectors which face barriers that the carbon market is unable to address on its own. This relates for instance to mitigation options that face high initial costs that need to be reduced through R&D and deployment support or options which face other market barriers and failures.

The EU believes that current experience with the carbon market provides important lessons for the development of new mechanisms that will help the international community in meeting the climate change challenge, delivering finance and deploying low-carbon technology on unprecedented scales. The carbon market will no doubt help Annex I Parties in delivering on their commitments under Article 3(1) of the Kyoto Protocol. However, as discussed above, the contribution of the carbon market to meeting these and further commitments will depend on the further development of existing mechanisms and the establishment of new, broader mechanisms. The EU is confident that a strengthened and expanded carbon market will be part of our collective work on an effective, global post-2012 agreement.

Issues to be addressed by the AWG

Accordingly the EU would like to further discuss in the AWG, *inter alia*, the following issues:

- Improvement and further development of, flexible mechanisms, in particular the CDM, regarding environmental integrity, efficiency, technology transfer and its contribution to sustainable development;
- Transition from project-based mechanisms to sectoral approaches, including exploration of sectoral targets, sectoral crediting approaches and no-lose targets;
- Consideration of emission trading (cap and trade) systems in sectors, regions or countries;
- Integrity and effectiveness of the post-2012 carbon market, including the relationship between supply and demand and the carbon market's contribution to achieving the ultimate objective of the Convention;

With regard to possible organisations and expert bodies to contribute to the in-session workshop, the EU refers to its earlier submission on expert input relevant for the work of the AWG. The EU is of the view that experts from the IPCC WG3, in particular those who worked on Chapter 13 of the IPCC 4th Assessment report should be invited to provide input to the discussions. In addition, independent experts, such as the Center for Clean Air Policy (CCAP) and carbon market analysts could provide valuable expertise for the AWG work on the carbon market post 2012.

In addition, the LULUCF-oriented provisions of the flexibility mechanisms will have to be reviewed in conjunction with the overall review of the flexibility mechanisms. The review should be informed by the treatment of this sector in Annex I parties, further development in addressing emissions from deforestation in developing countries and the overall negotiations.

In the Annex to this submission the EU elaborates further on lessons learnt from existing instruments and on options for expanding the carbon market in order to enhance the effectiveness of the carbon market in the context of a fair and flexible international agreement post 2012.

The EU submission for the review of the Kyoto Protocol pursuant to its Article 9 will contain views on scope, effectiveness and functioning of the flexibility mechanisms.

II.2 Treatment of Land Use, Land-use Change and Forestry (LULUCF) in the post-2012 regime

Agriculture and forestry can contribute to mitigation of climate change by reducing emissions and increasing removals of greenhouse gases, provisioning renewable energy and alternatives to materials with higher life-cycle emissions. Maximum benefit to the objectives of the Convention implies joint optimisation of emission reduction, carbon sequestration, bioenergy, and material substitution functions.

Characteristics of the current accounting rules for the LULUCF sector:

Quantified emissions limitation and reduction commitments were agreed at Kyoto in the expectation of additional flexibility from the LULUCF sector but before the scope of activities had been agreed. The outcome for the first commitment period of the Kyoto Protocol was a partial inclusion of this sector.

In Annex I countries, accounting is mandatory for afforestation, reforestation and deforestation. Additional activities (forest management, cropland management, grazing land management and revegetation) can be selected voluntarily. As a consequence, some emissions and removals are currently not part of the system.

For the activities covered, different accounting rules apply. Most provisions (definitions, modalities, rules and guidelines) relating to land use, land-use change and forestry activities were decided upon for the first commitment period and need to be revisited.

The current provisions in COP/MOP decisions reflect the need to deal with differences in national circumstances and sectoral characteristics, and aim to provide extra flexibility in meeting commitments without undermining the environmental integrity of the Kyoto Protocol. The complexity of these provisions tends to limit the potential incentives for Parties to protect and develop their carbon stock in forests, agricultural lands and grasslands, to promote the use of wood as a biomaterial, or to promote the production of sustainable biomass for energy.

Principles for the treatment of the LULUCF sector in a post-2012 agreement

The EU believes that the following principles should guide the treatment of the LULUCF sector in a post-2012 agreement:

- The LULUCF sector should contribute to meeting the ultimate objective of the Convention.
- Accounting of agriculture and forestry needs to preserve the environmental integrity of the climate regime.
- The vulnerability of terrestrial carbon stocks to natural disturbances and potential impacts of climate change on terrestrial carbon stocks need to be taken into account.
- Accounting for emission sources and sinks from the LULUCF sector should promote mitigation opportunities while avoiding possible perverse incentives
- The review of current accounting rules for the LULUCF sector should seek to provide a basis for further incentives to promote emissions reduction in the sector, the use of sustainable biomass for energy, the use of wood products and the sustainable use and management of agricultural and forest land.

- Accounting for agriculture and forestry should reflect real anthropogenic mitigation action.
- The contribution of agriculture and forestry to the climate change policy framework should be considered holistically. Other economic, social and environmental functions should be taken into account and synergies should be promoted.
- Future treatment of LULUCF should seek to simplify accounting rules and enhance their robustness.

Issues to be addressed by the AWG

The treatment of this sector in future agreements should aim at strengthening incentives for sustainable land-use practices, reducing the complexity and costs, and enhancing the environmental integrity of the climate regime.

We are much better informed on issues related to emissions and removals in agriculture and forestry now than at the time the Kyoto Protocol was negotiated and Parties are therefore in a position to explore options for including LULUCF in a more systematic and balanced manner.

The EU is committed to explore options to deal with this sector in line with the principles described above. In particular, the EU would be interested in analysing options around:

- Coverage, i.e., which land-use activities should be included.
- Nature of commitments, i.e, the voluntary vs mandatory nature of accounting for land-use activities.
- Integration of LULUCF into national Annex 1 commitments and accounting for LULUCF activities.
- Compatibility with the current system, i.e. smoothing the transition between current Kyoto and future rules.

The EU is of the view that experts from the IPCC WGIII, who specifically worked on Chapters 8 and 9 of the IPCC 4th Assessment report and WG I who worked on Chapter 7 (Coupling between Changes of the Climate System and Biogeochemistry) as well as WG II (Chapters 4 and 19 on ecosystems and on key vulnerabilities and risks, as well as the Synthesis Report) should be invited to provide input to the discussions on the future treatment of agriculture and forestry, together with experts from the FAO, CGIAR and its relevant research centres. The discussions will also benefit from input from the Secretariats of the CBD, UNCCD, UNFF and the Ramsar Convention.

II.3 Sectors and source categories to be covered

Current greenhouse gas inventories are compiled on the basis of GWPs (Global Warming Potentials) reported in IPCC Second Assessment report in 1995. Meanwhile additional greenhouse gases were identified and GWPs were determined. Coverage of 2006 IPCC Guidelines includes all greenhouse gases not covered by the Montreal Protocol, for which the IPCC, at the time of writing, provided a global warming potential (GWP) and the guidelines refer to the IPCC Third Assessment Report (TAR). The IPCC in its Fourth Assessment Report identified additional greenhouse gases and further updated GWP values for substances already identified. The EU suggests that the AWG addresses the issue of how emissions from those additional greenhouse gases could be addressed in the period beyond 2012. This will also be of relevance to the AWG' s work on methodological issues.

Emissions from international aviation and maritime transport

Given the scale of the emission reductions needed in the course of the coming decades, the EU believes that leaving significant part of the global emissions unchecked is no longer an option. International aviation and maritime transport are major sources of greenhouse gas emissions: only in nine out of the forty-one Annex I countries total national GHG emissions are higher than the emissions caused by international maritime transport; only twelve Annex I countries emit more than the international aviation sector. Together both sectors emitted about 960 Mt CO_2 in 2005, almost as much as the total greenhouse gas emissions of Germany in the same year.[3] Importantly, the way the rapidly growing emissions from international aviation and maritime transport are addressed in the UNFCCC and its Kyoto Protocol is not effective. The growth of emissions in both sectors, if it remains unchecked, might significantly reduce the effect of the overall efforts in all sectors to prevent dangerous climate change.

The EU has repeatedly expressed its concern that emissions from international aviation and maritime transport represent one of the fastest growing sources of greenhouse gas emissions. The EU calls upon all Parties to agree to clear, meaningful targets for these sectors within the framework of a future global climate agreement for the post-2012 period and urges parties to work towards stronger leadership by the UNFCCC in this matter, and in particular for enhancing its cooperation with the International Civil Aviation Organisation (ICAO) to develop a more effective approach to address emissions from this sector. The EU takes the view that cooperation and discussions in the framework of the International Maritime Organisation (IMO) should be accelerated with a view to achieving a comprehensive solution for tackling the emissions from international transport.

In designing measures and agreeing upon clear and meaningful emission targets for the international aviation and maritime sectors within a post-2012 agreement, we must recognise the specific characteristics including the global nature of the maritime and aviation sectors. We must also recognise the potential contribution of ICAO and IMO to design comprehensive and effective approaches to the limitation of emissions from these sectors.

The EU has noted that several interesting proposals for the inclusion of both sectors in a post-2012 regime have been discussed in different fora in the past years; these proposals include options for the inclusion of GHG emissions from international aviation and maritime transport in national totals as well as sectoral approaches. Although some methodological issues remain, the EU believes that the inclusion of these sectors in a future climate change regime is mainly a political and not a methodological question. Any future regime for international aviation and maritime transport should

- contribute to stabilisation and thereafter reduction of absolute greenhouse gas emissions from these sectors;
- be designed in such a way as to prevent leakage (in case of action in Annex I Parties only) and to ensure the environmental integrity of the scheme; and
- be linked to the overall regime and especially the international carbon market, possibly through an emissions trading scheme.

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[3] IEA Statistics 2007 *CO_2 Emissions from fuel combustion 1971 – 2005* and the UNFCCC GHG data interface (http://unfccc.int/ghg_emissions_data/ghg_data_from_unfccc/items/4146.php) accessed on 24 January 2008.

Despite some similarities the differences between international aviation and maritime transport justify separate treatment of these sectors in a future regime; an agreement on international aviation might be different than one on international maritime transport.

Issues to be addressed by the AWG

The EU believes that the options presented in this submission are currently the most promising possibilities for limiting emissions from international aviation and maritime transport which merit further discussion in an open manner. To this end, the in-session workshop at AWG 5 (first part)(31 March-4April 2008) should cover the means available to Annex I Parties to reduce emissions from these sectors. A special focus should lie on how approaches could be designed to deliver effective emissions reductions from the aviation and maritime sector whilst both taking into account differences between Parties and avoiding distortions of competition.

The EU is interested to present the ideas included in this submission in more detail. In addition to information presented by Parties representatives of ICAO and IMO as well as different research institutions should be invited to provide input. The UN specialised bodies for aviation (ICAO) and maritime transport (IMO) should be asked to address

- existing and potential means available to Parties to reduce emissions from the sectors;
- ways to address emissions from these and the reductions that can be achieved;
- their work programs and deliverables for 2008 and 2009 with a special focus on mandatory measures to be concluded within the organisations before COP 15;
- possibilities to enhance the cooperation between UNFCCC and IMO/ICAO and the effectiveness of their work to reduce greenhouse gas emissions from the two sectors; IMO should also report on the joint working arrangements on the dismantling of old ships between ILO, BASEL Convention and IMO as a possible example for a joint process between UNFCCC and IMO.

In addition, the in-session workshop and subsequent negotiations should cover:

- means available for limiting the contribution of international aviation and maritime transport to climate change;
- scope of any regime taking into account the need to avoid distortions of competition in the sector and to prevent leakage and whether the distinction between Annex I and non-Annex I countries may not be appropriate for the aviation and maritime sectors;
- the impact on the global carbon market;
- the possible contribution of the international aviation and maritime transport sectors to sustainable development and technology transfer;
- the possibilities to provide adequate, predictable and sustainable financial resources to assist developing Parties that are particularly vulnerable to the adverse impacts of climate change in meeting the costs of adaptation through the inclusion of international aviation and maritime transport in a future regime;

The EU is of the view that experts from the IPCC WGIII, in particular those who worked on Chapter 5 of the IPCC 4th Assessment report should be invited to provide input to the discussions. Additional experts that could contribute to the work of the AWG, e.g. by presentations, would be Jasper Faber (CE Delft, NL) for aviation and Per Kageson (Nature Associates, SE) for Maritime transport.

In the Annex to this submission the EU outlines in more detail several different ways to address emissions from international aviation and maritime transport. The EU believes that all of these ideas might be effective and should be discussed at the in-session workshop and subsequent negotiations together with any other proposals to reduce emissions from these sectors put forward by other Parties and accredited observer organisations.

II.4 Approaches Targeting Sectoral Emissions

Sectoral approaches could facilitate enhanced action by both developed and developing countries and technology transfer to developing countries beyond a project-based approach and contribute to strengthening the knowledge-base on mitigation potential in key emitting sectors and to further developing monitoring and reporting capacities.

Another reason to consider mitigation options from a sectoral perspective is that they could diminish the risk that ambitious policies to reduce emissions in certain sectors in some countries might lead to increasing emissions from the same sectors in other countries that are applying less stringent climate policies. This phenomenon is widely recognised as “carbon leakage”.

It is important, however, that such mechanisms do not jeopardise the effectiveness of cap-and-trade systems that have been developed to implement the Kyoto Protocol, since cap-and-trade approaches are most efficient if covering a broad emission base. In addition, action in specific sectors needs to adequately contribute to the overall efforts to reach the ultimate objective of the Convention.

The EU finds it important to bear in mind the differences between sectors in terms of their impacts to global GHG emissions, national socio-economic importance in different countries as well as exposure to international competition. Thus the design of possible approaches needs to take into account the specific circumstances on a sector-by-sector basis (such as aviation, maritime, forestry, energy-intensive industries such as aluminium, iron and steel or cement and or electricity production).

However, since the discussion of sectoral approaches should be global in scope, the EU suggests that it is taken forward in the framework of the Ad hoc Working Group on Long-term Cooperative Action under the Convention (AWGLCA).

III. Conclusions

In initiating its work on the means that may be available to Annex-I Parties, the AWG should begin with an analysis of the current means and possible options to enhance those beyond 2012 with a view to contributing to the ultimate objective of the Convention. This analysis should build on best available scientific and technical expertise. The in-session workshop at AWG5 (first part) would therefore be an excellent opportunity to invite expert input and further views of Parties on options to enhance the effectiveness of these means and their contribution to sustainable development. The EU has indicated possible expert bodies that could provide an input to that workshop under the respective sections of this submission as relevant.

The EU suggests that those topics identified for the in-session workshop would be taken forward in negotiations, possibly in parallel subgroups as appropriate, building on the note by the secretariat and expertise provided to Parties at the in-session workshop. The roundtable in June provides an excellent opportunity for Parties to present and explain their views on the issues under discussion with a view to facilitating agreement within the AWG on those issues, in particular on how to enhance the effectiveness of means that may be available to Annex-I Parties to reach their emission reduction commitments.

IV. Information on the potential environmental, economic and social consequences of tools, policies, measures and methodologies available to Annex I Parties to reduce GHG emissions

The AWG invited Parties to include in their submissions by 15 February 2008 "Information on the potential environmental, economic and social consequences of measures taken in Annex-I Parties".

The 4th assessment report of the IPCC already covers a broad range of spill-over effects. Literature since the TAR confirms with high agreement and medium evidence that there may be effects from Annex I countries' action on the global economy and global emissions, although the scale of carbon leakage remains uncertain {WGIII 11.7, SPM}. Fossil fuel exporting nations (in both Annex I and non-Annex I countries) may expect, as indicated in the TAR, lower demand and prices as well as lower GDP growth due to mitigation policies. The extent of this spill-over depends strongly on assumptions related to policy decisions and oil market conditions {WGIII 11.7, SPM}. Critical uncertainties remain in the assessment of carbon leakage. Most general equilibrium modelling supports the conclusion in the TAR of economy-wide leakage from Kyoto action in the order of 5- 20%, which would be less if competitive low-emissions technologies were effectively diffused {WGIII 11.7, SPM}.

On the basis of Decisions 1/CP.10 and 5/CP.7 some important work has been undertaken. The EU refers in particular to documents FCCC/SBI/2006/13 and FCCC/SBI/2007/23, the latter synthesising available information related to the impacts of response measures.

Nevertheless, some further work needs to be done to better understand the major impacts and to focus our work in the future.

The EU is open to continue the constructive discussion under this item and to consider which further actions would be the most appropriate to deal with this issue.

Annex

1. The international carbon market

While the existence of the carbon market has proven to be a crucial element in reducing the emissions of greenhouse gases, some important lessons could be learnt from the experience with emissions trading and the project-based mechanisms which are worth sharing, as a contribution to the discussion on the development of the carbon market in a post-2012 perspective

1.1 Emissions trading

There has been limited experience with international emissions trading (under Article 17 of the Kyoto Protocol) to date, given the lack of a complete architecture until recently. Nevertheless, most useful and valuable experience has been gained with regional emissions trading, in particular the EU emissions trading scheme (EU ETS). The EU believes Parties can build upon the current experience in further developing the global carbon market.

The EU has gained first mover experience in setting up the world's largest company-based cap-and-trade emissions trading system, covering approximately 10,000 installations of the energy-intensive sectors.

The EU ETS has shown that it will be an effective instrument to help Member States in achieving their Kyoto targets and effectively engage the private sector in the reduction effort. The EU ETS has demonstrated that a carbon price signal in Europe succeeded in stimulating emissions abatement by involving the private sector, both within Europe as well as in developing countries through the use of the CDM. By linking the project-based Kyoto mechanisms to the ETS, private-sector demand for these mechanisms has generated substantial financial flows for investments in clean technologies in developing countries. The EU ETS is and will continue to be a central instrument in the EU's strategy to tackle climate change (see Box 1 below).

The experience with the EU ETS has shown that the carbon market only delivers its full potential, if a number of important principles are taken into account in its design:

- A key requirement is scarcity of tradable units. Without scarcity, the price signal remains negligible and economic behaviour cannot be expected to change.
- In order to deliver the right price signal to investors and participants in the market, the market needs to be transparent, competitive and liquid. This implies that the number of buyers and sellers should be high enough, that information on emissions and tradable emission units holdings is available, and that the level of transaction costs is acceptable. The diversity of the units should be kept to a minimum, so as to increase transparency and liquidity in the market, and reduce transaction costs.
- Because capital stock turnover is slow and investment life-spans are often 20 years or more, in particular in the energy and transportation infrastructure, an adequate price signal for the short-term is a necessary but by no means sufficient condition for changing long-term decisions. Market participants need a long-term perspective of the future market development to take efficient investment or policy decisions. This requires a transparent and predictable long-term legal framework and binding long-term commitments.
- In order to ensure both confidence in the market and maintain its environmental integrity, an adequate monitoring and verification system in the trading sectors and a credible compliance and enforcement regime is needed.

- Finally, carbon leakage, where mandatory requirements in one jurisdiction cause a shift in economic activity and emissions to other jurisdictions without mandatory requirements, must be addressed in the context of regional or global initiatives.

1.2 CDM and JI

The CDM has proven to be a successful instrument to help countries meet their Kyoto targets and to generate significant additional financial flows to developing countries for climate-friendly projects, thereby considerably changing greenhouse gas emissions in some sectors. The CDM has also proven to be an important scheme for developing countries to learn about market-based approaches and participation in the carbon market, and one of the most powerful instruments under the Kyoto Protocol to involve the private sector. There is considerable interest within many Kyoto Parties to continue using this instrument in the future and to improve, expand and build on it.

Joint Implementation has had a slower start than the CDM, but the number of JI projects from economies in transition, especially Russia, Ukraine and Bulgaria, has grown rapidly in the last few years. Other countries from Central and Eastern Europe and New Zealand, Germany and France have also taken part in the market, although to a lesser extent. While private-sector buyers, especially banks and carbon funds, are the main buyers of CDM credits, government buyers dominate JI purchases.

The experience with CDM and JI demonstrates that project-based greenhouse gas crediting systems pose a number of challenges:

- From an environmental point of view, in the CDM (and in JI if adequate national reporting systems do not meet the requirements for track 1 JI), it will be crucial to demonstrate additionality in a more credible way and to avoid crediting of projects or programmes, which would have taken place anyway. This is methodologically challenging. Similarly, it is methodologically challenging to determine baseline emissions accurately and in a conservative manner in order to avoid an inflation of baseline emissions and to estimate the indirect emission effects of some activities.
- In some sectors, crediting emission reductions can result in perverse incentives, either for the operators of the installations to increase other (related) emissions or for policy makers to adopt or not to adopt policies and measures that may affect these installations.
- The project-based approach leads to high transaction costs for relatively small reductions and is not working adequately for all mitigation options and sectors.
- There are concerns about the contribution of the CDM to sustainable development, technology transfer and the regional distribution of CDM projects. Even though various efforts have been, and continue to be, undertaken to both improve the regional balance of CDM projects and favour projects and technologies with high sustainable development benefits, as a market-based instrument the CDM tends to favour investments where they are most cost-effective.

1.3 Options for expanding the carbon market and building on the flexible mechanisms

On the basis of the experience gained, it is now clear that, if expanded, the carbon market can play a crucial role in leveraging finance and assisting in the transfer of technology, in view of the finance and technology needs that underpin the IPCC scenarios. Expansion of the carbon market in the post-2012 period, including enhanced flexible mechanisms, will also lead to increased private-sector participation and increase cost-effectiveness of mitigation efforts.

The experience gained so far with the Kyoto Protocol's flexible mechanisms and company-based emissions trading schemes allows to draw some important lessons for the further development and improvement of these important instruments for tackling climate change. In this respect it is worth noting that emission reduction commitments of 25-40 % by industrialised countries by 2020 (compared to 1990) are needed, along with substantial deviations from baseline growth in emissions in advanced developing regions.

Building on emissions trading

The EU believes that international emissions trading of AAUs as per Article 17 of the Kyoto Protocol should continue. Setting absolute economy-wide greenhouse gas emissions caps is necessary to create scarcity in the global carbon market as a starting point from which emissions trading allows for flexibility for countries and eventually companies or other entities in the market to reach their reduction obligations.

Moreover, international emissions trading should continue to be simple in its design, set mandatory absolute limits on emissions, have electronic registry systems and robust monitoring and compliance provisions in place so that the environmental integrity of the system can be ensured.

Emissions trading framed within international agreements at the Party level can be applied on a regional basis at the company level, as the EU ETS exemplifies.

In addition to the EU ETS, numerous other national and regional company-based emissions trading systems already exist or are being developed. The EU is looking forward to further development and linking of national or regional emissions trading schemes across the globe.

Box 1 The EU ETS

In the EU-ETS limited tradable CO_2 emission units are allocated to approximately 10,000 installations of large-scale operators of the energy and energy-intensive sectors.

After a learning phase in 2005-2007, as of 1 January 2008 the second trading period (2008-2012) has started, limiting emissions of covered installations to approximately 2.08 billion tonnes CO_2e annually, 6.5 % below 2005 verified emissions. This has resulted in a forward price for an EU emission allowance of around 20 euros per tonne. It is estimated that in the 2nd trading period the EU ETS will contribute to reaching an estimated 3.4 % of the EU-15's Kyoto target (of 8 % reduction of greenhouse gas emissions as compared to 1990 levels).[4]

Linking the EU-ETS to the project-based mechanisms of the Kyoto Protocol has been crucial to the development of the latter. Companies under the EU-ETS are able to invest in CDM and JI projects and use the credits generated to meet part of their commitments.

The EU is now in the process of reviewing the EU ETS for the period after 2012. Allocations will be further reduced to contribute to the achievement of the EU's domestic 20 % emissions reduction target compared to 1990 levels. In the context of an international post-2012 agreement, this target is set at –30 % provided that other developed countries commit to comparable emission reductions and economically more advanced developing countries adequately contribute according to their responsibilities and respective capabilities[5]. Crucially, achieving such an agreement could result in the increase of the credit import limit, generating more demand for CDM and other credit programmes that may be established post-2012.

In addition, the proposed review aims at creating a more level playing field within the EU by harmonising cap-setting and allocation methods between Member States. Provided that the environmental integrity is ensured, it will also allow more flexibility when linking the EU ETS to third country emissions trading schemes. Moreover, the EU is working on rules for including international aviation into the EU ETS at the latest by 2012 and providing for a legislative framework to provide incentives and further develop low-carbon technologies in the EU. The EU is looking forward to sharing experiences and knowledge in setting up such systems.

The EU hopes that the development of company-based emissions trading scheme at the national, regional or even sectoral level will further the acceptance and understanding of the use of market-based instruments to abate greenhouse gas emissions. Ultimately, such company-based approaches should converge with international emissions trading at the Party level to constitute one truly global emissions trading system with only one tradable currency and a global carbon price at some stage. Covering all large point sources in the world under company-based emissions trading schemes would also create a level playing field for globally acting industries, thereby avoiding carbon leakage.

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4 See progress report of the Communication from the Commission Progress towards achieving the Kyoto objectives of 27.11.2007, 2007(COM)757 final.

5 See Council of the European Union, Brussels, 21 February 2007, document no: 6629/07.

Building on CDM and JI

Clean Development Mechanism

The EU underlines the importance of continuing the CDM beyond 2012 and the need to thoroughly discuss improvements to the CDM in order to increase its environmental integrity, efficiency and contribution to sustainable development.

Several Parties and stakeholders have argued that the current project-based CDM approach leads to high transaction costs, that it does not sufficiently promote sustainable development and a geographical balanced distribution of projects and that it requires improvements regarding its environmental integrity. The EU believes that efforts should be undertaken to improve the CDM in light of that critique.

Efforts have already been undertaken within the current CDM to improve efficiency and expand coverage, such as streamlined procedures and tools and the introduction of programmatic CDM. Programmatic CDM experiences will provide an opportunity to learn and gain experience especially on methodological issues to move to more ambitious and larger approaches. While some experience is being gained in programmatic CDM, it would be necessary to discuss how the programmatic CDM approach could be built upon in the future and whether it delivers on its promise to overcome barriers, especially to small projects in the field of energy efficiency, transport and renewable energy.

The EU is willing to consider other ideas on expanding the scope of the CDM beyond a project basis. However, it should be noted that moving away from a project-based approach may not work well for all mitigation options and all developing countries and that additional instruments as well as means to remove barriers in host countries might be needed in order to fully realize mitigation potentials.

Lessons learnt from the current CDM approach also show that it could be further optimised in order to reach its full potential in contributing to sustainable development, technology transfer and regional distribution. In addition, the environmental integrity of the CDM should be strengthened. The EU is looking forward to discussing ideas on how to promote projects with high sustainable development benefits in less developed countries in the CDM. The EU would also like to discuss whether the current CDM approach is able to assist developing countries in achieving sustainable development, contribute to technology transfer and to address regional distribution and whether complementary approaches outside the CDM as well as means to remove barriers in host countries are necessary to achieve these goals.

Joint Implementation

The EU welcomes the recent considerable efforts of the Joint Implementation Supervisory Committee to develop rules and practices for JI. The EU believes that, despite the rather limited use of the instrument so far, JI could still play a role beyond 2012 to further the utilisation of cost-effective mitigation opportunities for several reasons. Firstly, JI allows for institutional learning about market-based approaches and a transitional step before wider application of cap-and-trade emission trading as countries take on new mitigation objectives. Secondly, even if company-based emissions trading systems are implemented, JI could play a role for sectors or greenhouse gases that are difficult to cover in an

emissions trading scheme and provide entities in these sectors access to the global carbon market. Thirdly, JI can be a way for the host country to channel (foreign) investments and technology cooperation into certain sectors.

Lessons learnt from the current JI approach show that it could be further optimised in order to reach its full potential. The EU is looking forward to a thorough consideration of ideas on how JI can be expanded beyond a project-by-project basis, such as programmatic JI.

New mechanisms

While improvements to the existing flexible mechanisms are needed, there is now increasing recognition that in order to support low-carbon development pathways current mechanisms will need to be scaled up and reformed. There is a need to explore and develop new instruments, including market-based mechanisms, to leverage finance and technology deployment in developing countries.

Such mechanisms could build on a variety of enhanced mitigation contributions by developing countries at national or sectoral level.

For some sectors and countries, legally-binding **sectoral targets** could be adopted and thus allow for full participation in emissions trading, inter alia in regional emission trading systems.

No-lose targets have also been proposed. These schemes would credit emission reductions at the sectoral or nation-wide level against a target that is set below business-as-usual emission projections, without any obligation to reach the targets. As proposed, they could be applied in individual sectors, across sectors or economy-wide.

Sectoral crediting could also be explored in some countries. Sectoral crediting would result in crediting emission reductions in a sector against an agreed baseline or benchmark by Parties.

These approaches could potentially increase incentives to reduce greenhouse gas emissions in a sector or at the national level and increase participation of developing countries and the private sector in a global climate regime. The EU is looking forward to further discussing ideas for sectoral approaches, their relation to the current carbon market instruments, the possible implications for demand and supply on the carbon market and the methodological challenges in these approaches.

2. Emissions from international aviation and maritime transport

Despite some advances of late, especially within IMO, the progress of work in the IMO and ICAO falls short of our expectations, as we made clear, in the case of ICAO, at its 36th Assembly. The EU considers that this situation calls for stronger leadership by the UNFCCC to encourage more effective approaches and faster progress through enhanced cooperation with ICAO and IMO. Given the tight time-frame for reaching a post-2012 agreement at COP 15 in Copenhagen in 2009, we call for significant steps forward by ICAO and IMO to be reported to COP 14 in Poznan in 2008.

In designing and agreeing upon clear and meaningful emission targets for the international aviation and maritime sectors within a post-2012 agreement, we must recognise the specific characteristics including the global nature of the maritime and aviation sectors. The differences between the two sectors, as well as their specific characteristics justify their separate treatment from each other, as different sources of emissions. We must also recognise the potential contribution of ICAO and IMO to the design of comprehensive and effective approaches to the limitation of emissions from these sectors.

The EU would like to draw attention to a workshop hosted by the Government of Norway and the European Environment Agency in Oslo in October 2007, in which experts from developed and developing countries participated[6]. That workshop concluded that, while there are still technical issues related to the monitoring and accounting of emissions from the international aviation and maritime sectors, they are not so significant as to prevent those emissions from being reported. The workshop also concluded that the inclusion of these sectors in a future climate regime is mainly a political and not a methodological question.

In order to advance the debate the EU would like to introduce several possible approaches for addressing emissions from international transport. These options cover approaches for the inclusion of the emissions in national totals as well as approaches for sectoral targets.

The EU is interested in discussing these and other options in an open manner with all Parties to find the best approaches for limiting emissions from international aviation and maritime transport. Due to the diverse nature of the two different modes of transport the European Community believes that the discussion and assessment of the options should be done for each sector separately. The options for approaches should be assessed on the basis of the following criteria:

- environmental effectiveness,
- economic efficiency,
- non-discrimination and avoidance of distortions of competition,
- administrative burden and
- questions related to fairness and justice.

Differences between the inclusion in national totals and sectoral approaches

The inclusion in national totals would mean that emissions from international aviation and/or maritime transport would be treated as any sector covered by the Kyoto Protocol: they would be included in each State's national inventory and would be part of each State's quantified emission reduction and limitation commitment. It would be up to each Party to decide whether it will introduce policies and measures addressing emissions from international aviation or shipping or reduces emissions in other sectors.

Under a sectoral approach, emissions from aviation and shipping would not be included in the quantified emission reduction and limitation commitments. Instead a separate approach would be adopted for each of these sectors, which is likely to involve the requirement to reduce emissions directly to operators without the need for allocating emission reduction limits at Party level. Parties would remain responsible for setting up and enforcing the scheme. A sectoral approach could be global or could allow for different policies and measures to be adopted at a global, regional or individual state level. Under a sectoral approach, it is not necessary to allocate emissions from the international maritime and shipping sectors between Parties for inclusion in their national totals. Instead the question is how to divide responsibility for the setting up and enforcement of measures between parties.

This division should avoid creating administrative burden or distortions of competition. In order to ensure that sectoral approaches can be effectively adopted it is important that measures are applied to operators in the aviation and maritime sectors operating on the same routes without distinction as to nationality. This could be done by dividing responsibility for the setting up and enforcement of measures on the basis of the destination or departure point of ships or planes.

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[6] http://www.eionet.europa.eu/training/bunkerfuelemissions and http://www.iisd.ca/YMB/sdosl/

Operator-level emissions trading

One mechanism which the European Union considers particularly useful either to assist States in meeting their quantified emission reduction and limitation commitments or as part of a sectoral approach to aviation and maritime emissions is operator-level emissions trading. Emissions trading is a flexible instrument: it allows a limit to be set on emissions but leave operators the freedom to decide how to meet the limit. It is therefore more cost-effective than other forms of regulation because innovation which ensure that emissions reductions are made where they cost the least. By creating a value for carbon, it offers incentives to industry and provides a stimulus for innovation.

There are a number of parameters which need to be decided upon when developing an operator-level emissions trading scheme. These include: the scope of the scheme, whether the scheme should be a cap-and-trade system or a baseline-and-credit system, the method for determining the cap and allocating emission units to operators (or for determining the baseline to use in a baseline-and-credit system) and the extent to which trading will be allowed with other sectors or that operators will be able to buy JI/CDM credits to meet their obligations.

The main advantages of an operator-level emissions trading system are that:

- responsibility for reducing emissions is given to those who have the capability to reduce emissions from the aviation and maritime sectors (namely operators of aircraft and ships)
- it can be implemented easily and within a few years;
- it enables operators to contribute to global efforts to reduce greenhouse gas emissions at the least cost – they can either reduce their emissions or pay for emissions reductions elsewhere if that would be cheaper; and
- provided the scheme is applied to all operators operating on the same routes it would have little impact on distortion of competition within the sector.

2.1 Emissions from international aviation

Apart from emitting carbon dioxide, aviation also has an impact on global climate through releases of nitrogen oxides, water vapour and sulphate and soot particles, which have effects on ozone formation and changes the natural cloudiness. Although these effects are estimated to have significant impacts on the global climate[7] the EU believes that the scientific understanding is still not advanced enough to be able to include these effects at this point in time. However, focusing just on direct emissions of CO_2 might induce perverse incentives. Therefore, other climate impacts must not be ignored but should be addressed through flanking measures such as regulations of flight routes to avoid the formation of contrails and cirrus clouds.

Inclusion in national totals

SBSTA has considered several different options for the inclusion of emissions from international aviation in national totals in the past[8]. Out of these, the EU believes that option 5 (according to origin and/or destination of a flight) is the most viable. The main reasons for this are:

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[7] Changes in Atmospheric Constituents and in Radiative Forcing. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.

[8] FCCC/SBSTA/1996/9/Add.1 and FCCC/SBSTA/1996/9/Add.2

- that more than 70% of global CO_2 emissions from aviation would be included in the national emission commitments of Annex I countries,
- that it could be implemented easily and within a short time frame,
- that it is consistent with the approach under the Kyoto Protocol and
- that it would not lead to substantial distortions in competition between aircraft operators.

Option 3 (according to fuel sales) could also be viable as the fuel sales are already reported as a memo item in the current national GHG inventories. The quantity of emissions which would be included in national totals of individual Parties would be similar under both options [9]. However, allocation according to the route flown might be able to better reflect country-specific circumstances like prevailing winds or tankering strategies by airlines and would leave less room for evasion strategies. The 2006 IPCC Guidelines for National Greenhouse Gas Inventories [10] include methodologies which could be used to monitor and report emissions under both options.

The EU believes that the other options considered by SBSTA are less practical for competitiveness reasons (option 4/ nationality of carrier), polluter pays principle (option 2/ proportional to national emissions as well as option 8/ according to emissions in national air space) and data difficulties (option 6/ country of departure or destination of passenger as well as option 7/ nationality of passenger). Option 1 (no national allocation) would require that greenhouse gas emissions from aviation are addressed through other means such as sectoral approaches.

Sectoral approaches

In a sectoral approach operators and not national governments would be responsible for limiting and reducing emissions. The main task of national governments would be to set up the scheme and ensure compliance of all operators with the scheme. The options for the inclusion of emissions in national totals discussed above are not relevant in a sectoral approach; however, where a sectoral approach is applied at a regional or Party level, care has to be taken when defining system boundaries to minimise any distortion of competition in the highly competitive aviation sector. This could be done through the inclusion in the scheme of all flights, independent of the nationality of the operator, to and/or from countries with more highly developed aviation economies. The EU believes that approaches based on nationality of a carrier rather than geography are less feasible as it would lead to different obligations for different operators with flights on the same routes creating distortions of competition.

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[9] Lee D.S., Owen B., et. al. 2005: Allocation of International Aviation Emissions from Scheduled Air Traffic. Study on the Allocation of Emissions from International Aviation to the UK Inventory.

[10] IPCC 2006, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme, Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (eds). Published: IGES, Japan

Operator-level emissions trading

An operator-level emissions trading scheme could be an effective tool to address aviation emissions. Under such a scheme operators and not national governments would be responsible to monitor and report their emissions within the scheme and to surrender emission units to cover those emissions on a regular basis (e.g. annually). All airlines operating in highly developed aviation economies should be able to monitor and report their emissions with little difficulties as the necessary data is collected already for other purposes by the airlines. To be able to do so, operators might need to reduce their emissions or buy additional units on the international carbon market. Ambitious absolute targets would ensure a high ecological effectiveness. Some modality would be necessary to distribute emission units, e.g. auctioning, grandfathering or benchmarks. Out of these, auctioning and benchmarks might be better able to reflect different growth rates in different countries and especially the high growth of aviation in some less-developed aviation economies than grandfathering.

Studies have shown that such a cap-and-trade system with absolute targets could be set up in parallel to a baseline-and-credit system implemented in other countries. [11] A baseline-and-credit scheme with intensity targets (e.g. emissions per passenger kilometre) would require the establishment of one or more benchmarks against which aircraft performance would be measured. This could be one means of reflecting national circumstances in different Parties.

- The EU is preparing to include the aviation sector in the EU emissions trading scheme (EU ETS). [12] The EU ETS is the largest multi-sector operator-level emissions trading scheme in the world and is central to the European Union's efforts to address climate change. It is hoped that the scheme will serve as a model for emissions trading worldwide.

2.2 Emissions from international maritime transport

Inclusion in national totals

The EU believes that options 2 to 8 considered by SBSTA for the inclusion in national totals are not feasible in the maritime transport sector. The main reasons for this are competitiveness issues (option 4/ nationality of carrier), polluter pays principle (option 2/ proportional to national emissions as well as option 8/ according to emissions in national waters), evasion possibilities (option 3/ fuel sales and option 5/ country of origin or destination) and data difficulties (option 6/ origin or destination of cargo and option 7/ nationality of passenger).

As for aviation, option 1 (no national allocation) would require that greenhouse gas emissions from international maritime transport are addressed through other means, such as a sectoral approach.

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[11] Deuber, O., Graichen, J. 2007: A discussion of different commitment types in a multi-stage post-2012 commitment architecture for international aviation

[12] COM(2006) 818 final (http://ec.europa.eu/environment/climat/pdf/aviation_ets_com_2006_818-21273_en.pdf)

Sectoral approaches

In a sectoral approach operators would be responsible for limiting and reducing emissions. The main task of national governments would be to set up the scheme and ensure compliance of all operators with the scheme. The options for the inclusion of emissions in national totals discussed above are not relevant in a sectoral approach; however, where a sectoral approach is applied at a regional or Party level care has to be taken when defining system boundaries to minimise any distortion of competition. The EU believes that any approaches should be based on the route travelled, fuel consumed or cargo transported and not on the nationality of a carrier.
At IMO, to achieve limitation or reduction of greenhouse gas emissions from ships, a sectoral approach is followed. This approach is based upon the legal framework of the United Nations Convention on the Law of the Sea (UNCLOS) and the concept of 'no more favourable treatment of ships'.

The work within IMO is based upon Assembly Resolution A.963(23) of November 2003. In this Resolution, IMO urged its Marine Environment Protection Committee (MEPC) to undertake further work to identify and develop the necessary mechanisms to achieve limitation or reduction of GHG emissions from new and existing ships. MEPC approved a GHG work plan to finalize all different elements at MEPC 59 (July 2009). After deliberations at its 57th session (July 2007), MEPC approved the terms of reference to update the IMO Study on GHG emissions from ships published in 2000 until 2010 at the latest in 2010, and to establish an intersessional Correspondence Group on GHG related issues (CG GHG) to discuss possible approaches on technical, operational and market-based measures. The CG GHG has submitted its report to MEPC 57 (April 2008), including short-term and long-term technical, operational and market-based measures.[13]

Operator-level emissions trading

An operator-level emissions trading scheme could be an effective tool to address shipping emissions. Under such a scheme operators and not national governments would be responsible to monitor and report their emissions within the scheme and to surrender emission units to cover those emissions on a regular basis (e.g. annually). Different system boundaries are possible, e.g. total annual emissions from ships which entered a port in an Annex I country in a year or emissions from all trips to/from Annex I ports only. The necessary data for the calculation is available to most operators although some ships might need to upgrade their measuring equipment and reporting procedures to be able to comply with such a scheme.

For a cap-and-trade scheme some modality would be necessary to insert emission units into the scheme, e.g. auctioning, grandfathering or benchmarks. A baseline-and-credit scheme would require the establishment of one or more benchmarks against which vessel performance would be measured.

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[13] MEPC 57/4/5, MEPC 57/4/5/add.1 and MEPC 57/INF.15

CO2 charge

An example of a sectoral approach is the proposed CO_2-related levy for global maritime transport which is put forward in the IMO by Norway [14] and Denmark [15]**.** The charge would be proportional to the total CO_2 emissions of a ship. Some differences remain on the use of the collected levy but some of the suggestions in this proposal by Norway and Denmark relate for instance to subsidising measures in the sector to reduce emissions; for research and development to reduce emissions from the sector; offsetting emissions through the international carbon market and lastly to fund non-shipping adaptation projects in non-Annex I countries. The proposals aim at including global emissions from all international maritime transport but differentiate between Annex I and non-Annex I Parties in the use of the fund. Introducing such a scheme for only a group of countries (e.g. Annex I countries only) would require the differential treatment of vessels based on route or cargo transported and not on the nationality of a carrier to limit evasion strategies and distortion of competition. Such a regional start would add significant complexity to what, if introduced on a global basis, is a very simple system.

The implementation of such a system would require the establishment and administration of a new international fund. In addition clear guidelines for the use of the funds would be needed. Monitoring and reporting would require additional institutional procedures in most countries but the necessary methodologies exist and are already applied for the calculation of the GHG emissions from shipping which are reported as a memo item in national GHG inventories.

The main features of such a system as described in the proposal by Norway and Denmark would be that

- it is a very simple system which could be implemented easily;
- a levy applied to marine bunkers would generally be less likely to have significant impact on total CO_2 emissions from shipping. Nonetheless, a favourable effect would be the encouragement of (presumably limited) ship efficiency improvements, thus possibly achieving a reduction in the present emission growth rate;
- it does not lead to distortion of competition within the sector and follows the IMO principle of no favourable treatment while complying with the UNFCCC principle of common but differentiated responsibilities through the use of the fund for adaptation.

[14] MEPC 56/4/9.

[15] MEPC 57/4/4 and MEPC 57/INF.13

PAPER NO. 8: SRI LANKA

MEANS TO ACHIEVE MITIGATION OBJECTIVES OF ANNEX 1 PARTIES

1.1 Information and Views on the means to achieve mitigation objectives of Annex I Parties referred to in document FCCC/KP/AWG/2006/4

1.1.1 We agree that the Ad hoc Working Group should continue with the current progress of activities.

1.1.2. We feel that it is necessary to formulate a time bound emission reduction program for Annex I Parties, with targets and indicators for monitoring the achievement of targets. In the case that any Annex 1 Party could not achieve these targets during the specified time, a course of action should be available to levy a charge from such Party, which will be used in a fund to compensate climate change affects of developing countries that emit GHG below the threshold level.

1.1.3 It is necessary to determine a threshold level of emissions on a global basis, at which the global temperature could be maintained at a desired level.

We note that the emissions of Annex 1 Parties over the past few decades have exceeded the threshold level of GHG emissions, which enabled them to attain the present level of development. Hence they are jointly and individually responsible for the adverse climatic impacts experienced today, specially by the developing countries, whose emission loads are still below the threshold level.

1.1.4 In view of the contribution of Annex I Parties in historical GHG emissions resulting in the present levels, it is also necessary to include specific provisions to spell out that the Annex I parties corporate with developing countries to implement Mitigation and Adaptation programs.

1.1.5 We also would like AWG to facilitate Annex I Parties to spell out their mitigation programs in this regard.

1.2. Information from Annex 1 Parties on the potential environmental, economic and social consequences, including spillover effects on all Parties, in particular developing country parties, of available tools, policies, measures and methodologies available to Annex I Parties. (Reference FCCC/KP/AWG/2007/4)

1.2.1 Sri Lanka agrees with para 19 of the above document, that achievement of reduction objectives by Annex I parties would make an important contribution to overall global efforts required to meet the ultimate objectives of the Convention as set out in Article 2.

1.2.2 However, we would like to suggest that Annex I countries should take urgent measures to curtail GHG emissions, well before the middle of twenty first century considering the vulnerability of developing countries to be severely affected by Climate Change impacts. As such, we would like to suggest that AWG facilitate policies and methodologies, to promote implementation of country specific time bound emission reduction programs in Annex I countries, supported by liability regimes.

1.2.3 We think that the productivity and efficiency in Annex I countries should be evaluated through a life cycle approach rather than through a point productivity basis. We would like AWG to identify

necessary tools and parameters to evaluate the productivity and efficiency of the production process of Annex I countries on such a holistic basis.

1.2.4 We also feel that a strong analysis and monitoring regime under CMP is needed to accelerate such GHG emission reduction measures.

1.3 Views on the topics to be covered and experts/organizations to be invited to participate in the in-session thematic workshop to be held at the first part of the fifth session of the AWG. Reference FCCC/KP/AWG/2007/L6/Rev 1

1.3.1 We agree that the AWG process be continued further.

During the proposed thematic workshop, we propose that the following areas should be covered;

1.3.2 We believe that the participation of Annex I countries in the CDM process is only in the form of CER buyers. In reality the burden of CDM project development including project risk lie solely with the non Annex I countries. Sri Lanka looks forward for development of a tool at the thematic workshop which would facilitate channeling of a significant portion of funds to the Adaptation Fund, from Annex I countries historically responsible for GHG emissions.

1.3.3. We propose to implement a uniform mechanism to evaluate the adverse environmental impacts caused by Climate Change in economic terms, so that the Annex I countries would have more precise data.

1.3.4. We propose that the Round Table meeting should concentrate on cleaner technologies in power generation, transport and industrial development. It is necessary that these technologies have high efficiency on a life cycle approach rather than on a point productivity approach.

1.3.5 It is necessary to establish methodologies that support developing countries to achieve clean low emission GHG practices.

1.3.6 Proposed experts

We propose to have environmental economists, environmental engineers and agricultural scientists who are able to provide views on adaptation and mitigation; experts on transport and energy who can contribute on emission reduction, at the proposed thematic workshop.

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