

## The policy process on climate change

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**ABSTRACT:** The United Nations Framework Convention on Climate Change accepted in 1992 at the Earth Summit in Rio de Janeiro provides principles and framework for cooperative international action on mitigating climate change. But it soon became clear that more radical targets were needed to encourage particular countries to reduce greenhouse gas emissions. In response, countries that have ratified the United Nation Framework Convention on Climate Change accepted the Kyoto Protocol in 1997. The rulebook for how the Kyoto Protocol will be implemented – the Marrakech Accord, was agreed in 2001. This paper describes political instruments and facilities of mitigating climate change by forestry proposed in those political documents.

**Keywords:** climate change; UNFCCC; Kyoto Protocol; forestry; flexibility mechanisms

Climate change is one of the most significant sustainable development challenges the international community is facing. It has implications not only for health and well-being of Earth's ecosystems, but also for economic entities and social livelihoods. No country is immune from the threat of climate change and all contribute to the problem to some extent.

Several policy initiatives, aimed at mitigating climate change, have emerged from international forums, national governments and private sector. The most important among them are the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol to the Convention, and the Marrakech Accord – a rulebook to the Kyoto Protocol. These documents constitute a policy framework for introducing legally binding economic instruments for reducing greenhouse gas emissions and mitigating climate change. They also stress that forests and forestry sector can play a significant role in mitigating climate change and should be involved in the process.

Forests play an important role in the climate system. They are a major reservoir of carbon, containing some 80% of all the carbon stored in land vegetation, and about 40% of the carbon fixed in soils. Immense quantities of carbon may be emit-

ted into the atmosphere during transitions from one forest type to another if mortality releases carbon faster than regeneration and growth absorbs it. Forests also directly affect climate on the local, regional, and continental scales by influencing ground temperature, evapotranspiration, surface roughness, albedo (or reflectivity), cloud formation as well as precipitation (UNITAR, UNEP, WMO, WHO, UN 2002).

The UNFCCC provides principles and framework for cooperative international action on climate change. Under this agreement, over 180 countries (Parties of the Convention) have agreed to reduce their greenhouse gases (GHG) emissions, so as to stabilize their concentrations in the Earth's atmosphere at a level that will prevent dangerous human-induced interference in the climate system. Generally, the Parties are obligated to reduce or limit their emissions relative to their 1990 levels (a base year). The Parties may offset their emissions by limiting emissions from various anthropogenic sources (for example: energy production, transport, industry, and agriculture) as well as enhancing fixing carbon sequestration from the atmosphere and its storage by terrestrial ecosystems, so called "carbon sinks" (for example forests).

## The history of the international activities

By 1979, when the First World Climatic Conference took place in Geneva, which was the first considerable international event concerning climate change, questions of GHG effects on climate were exclusively a domain of scientist interest. The conference issued a declaration calling on countries' governments to foresee and prevent potential man-made changes of the climate that might be adverse to humankind well-being. It also endorsed plans to establish the World Climate Programme (WCP) under the joint responsibility of the World Meteorological Organization (WMO), the United Nations Environment Programme (UNEP), and the International Council of Scientific Unions (ICSU) (UNITAR, UNEP, WMO, WHO, UN 2002).

A number of intergovernmental conferences focusing on climate change were held in the late 1980s and early 1990s. Two of them – in Willach (1985) and in Bellagio (1987) – designed a common attitude related to possible global heating and set a political assignment to deal with the problem.

From that time, a previous academic problem changed into a political one. The matter was more and more often in agendas of international meetings. Among others, during the conference in Toronto in 1988 the "Act on Air" proposed for the first time an idea to take a common responsibility for climate changes and accept a common legal act on the issue under the United Nations (UN). The issue was taken into account also during the Second World Climatic Conference (Geneva 1990), where additionally a need of looking for solution in co-operation with both academics and politicians was stressed (SADOWSKI 1996).

In 1998 the UNEP and the WMO established the International Panel on Climate Change (IPCC). The Panel was given a mandate to assess the state of existing knowledge about the climate system and climate change, the environmental, economic, and social impacts of the change, and the possible response strategies. Approved after a painstaking peer review process, the first IPCC report on climate change presented scientific evidence for climate change. It had a powerful effect on both policy-makers and the general public and provided the basis for negotiations on the UNFCCC.

On the 11<sup>th</sup> December 1990, the 45<sup>th</sup> session of the UN General Assembly adopted a resolution establishing the International Negotiating Committee for Framework Convention on Climate Change (INC/FCCC). The UN Framework Convention on Climate Change, prepared by the Committee, was presented

in June 1992 during the conference *Environment and Development* in Rio de Janeiro. Under this agreement, over 180 countries have agreed to reduce their emissions of greenhouse gases so as to stabilize their concentrations in the Earth's atmosphere at the level that will prevent dangerous human-induced interference in the climate system. Industrialized countries committed to stabilize their emissions of GHG at the level of 1990 by the year 2000 through voluntary actions (STUART, MOURA COSTA 1998).

The UNFCCC is the first legal political step towards mitigating climate change. But already during the First Conference of Parties (COP) in Berlin in 1995 it became clear that the Convention itself was not a sufficient instrument of permanent and effective limitation climate changes, and another, more radical agreement is needed. Therefore, delegates of 117 Parties of the Convention and 53 Observer States, which participated in COP 1, agreed that the commitments under the Convention for developed countries were inadequate and launched the Berlin Mandate talks on additional commitments.

As a result of the undertaken action, countries that have ratified the Convention on Climate Change adopted the Kyoto Protocol to the Convention (at COP3, on 11 December 1997), under which developed countries agreed to reduce their overall emissions of the six major greenhouse gases to an average of 5.2% below 1990 levels by 2008–2012.

Because the commitment required many detailed operational and technical arrangements to be done, the Parties adopted a two-year Plan of Action for completing the Kyoto rulebook. The agreement on the political principles of the operational rulebook for the Kyoto Protocol was reached in 2001. This set of documents – Marrakech Accord – addressed the emission trading system, the Clean Development Mechanism, the rules for counting emission reductions from carbon sinks, and the compliance regime. It also outlined a package of financial and technological support to help developing countries contribute to global action on climate change. With the completion of these negotiations, the way has been paved for ratification of the Kyoto Protocol.

## Framework convention on climate change

The UNFCCC itself has no particular policy mandate or enforcement mechanisms, but it creates quite a comprehensive framework that coordinates climate research and diplomacy in economic, environmental, social, financial and political terms. A series of economic instruments to promote reductions of some GHG emissions [carbon dioxide (CO<sub>2</sub>), meth-

ane (CH<sub>4</sub>), nitrous oxide (NO<sub>2</sub>), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF<sub>6</sub>) are being considered by countries. These include taxes on emissions, subsidies for emission reduction projects, tradable emission permits and direct regulation of emission sources.

All Parties will develop and submit national communications containing inventories of GHG emissions by source and GHG removals by sinks. They will adopt national programmes for mitigating climate change and develop strategies for adapting to its impacts. They will also promote technology transfer and sustainable management, conservation, and enhancement of greenhouse gas sinks and reservoirs (such as forests and oceans). In addition, the Parties will take climate change into account in their relevant social, economic and environmental policies, cooperate in scientific, technical and educational matters, and promote education, public awareness and the exchange of information related to climate change.

Most members of the Organization for Economic Cooperation and Development (OECD) plus the states of Central and Eastern Europe (Annex I countries) committed themselves to adopt policies and measures aimed at returning their GHG emissions to 1990 levels by the year 2000 (emission targets for the post-2000 period are addressed by the Kyoto Protocol). They must also submit national communications on a regular basis detailing their climate change strategies. Several states may together adopt a joint emission target. The countries in transition to a market economy are granted a certain degree of flexibility in implementing their commitments.

A financial mechanism provides funds on a grant or concession basis. The COP shall decide on its policies, programme priorities, and eligibility criteria.

No matter what policy instruments are utilized, there are likely to be substantial efficiency gains available from the use of carbon offsets. Offsets are a mechanism by which companies, countries or financing entities undertake emission improvements outside of their direct operation or territory.

International carbon offset projects between countries have traditionally been referred to as joint implementation projects (JI). The meaning of these terms has changed. While the JI mechanism was a part of negotiations before the Rio conference (introduced by Norway in 1991), COP 1 created a compromise pilot phase (until the 1<sup>st</sup> of January 2000) during which projects were called Activities Implemented Jointly (AIJ).

Until March 2002, more than 150 AIJ projects were communicated to the secretariat, engaging around

one quarter of the Parties to the Convention, either as investors or as hosts. Interest in the AIJ pilot phase has steadily grown, especially since the adoption of the Kyoto Protocol, with an almost 50% increase in the number of projects since 1997. While 70% of host Parties are non-Annex I Parties (developing countries), countries with economies in transition (EITs) still host the majority of AIJ projects, although the balance is gradually shifting towards the developing countries. Most projects concern sources of renewable energy and energy efficiency sectors, although the largest projects involve forest preservation, reforestation or restoration (UNFCCC-CC INFO 2002).

The following table contains projects that have been accepted, approved or endorsed by the designated national authorities for AIJ in Slovak Republic, Poland, Hungary and Czech Republic. Totally in this phase were 85 AIJ projects in EITs. From among them only 3 have been executed in the forest sector: two in the Russian Federation (reforestation in Vologda and RUSAFOR – Saratov Afforestation Project) and one in the Czech Republic (Forest Rehabilitation in Krkonoše and Šumava National Parks).

### Kyoto Protocol

During COP 3, which took place in December 1997 in Kyoto, Japan, the Parties concluded the Berlin Mandate process. The adopted Kyoto Protocol of the UNFCCC appears to be a very important step in the GHG emission mitigation arena.

The rules for entry into force of the Kyoto Protocol require 55 Parties to the Convention to ratify (approve, accept, or accede to) the Protocol, including Annex I Parties, accounting for 55% of that group's carbon dioxide emissions in 1990. On 18<sup>th</sup> November 2004, when the Russian Federation ratified the Kyoto Protocol, the period of uncertainty closed. The document was ratified in total by 129 countries, including 33 of the Annex I Parties, which represented 61.6% of GHG emissions in 1990 and the Kyoto Protocol enters into force on 16 February 2005.

The Protocol is liberal in allowing a variety of mechanisms for achieving those reductions, both technically, in the form of formally recognizing forestry and agricultural emission reductions, and structurally, through the trading of emission quotas and various forms of JI emission reduction projects.

This document covers some specified activities in land-use change and forestry sector that emit or remove CO<sub>2</sub> from atmosphere. All changes in emissions and removals by sinks are added to or subtract-

Table 1. Activities Implemented Jointly – examples from some EITs

Activity type	Activity title	Host	Investor	GHG Impact <sup>1</sup> (CO <sub>2</sub> equivalent in metric tons)	Lifetime (years)
Energy efficiency	Modernization of Cement Factory in Čížkovice	Czech Republic	France	168,000	5.0
Forest preservation	Forest Rehabilitation in Krkonoše and Šumava National Parks	Czech Republic	Netherlands	9,834,120	15.0
Fuel switching	City of Decin: Fuel Switching for District Heating	Czech Republic	United States of America	607,150	27.0
Fuel switching	Sko Energo Mladá Boleslav – Cogeneration Station of Škoda Plant Mladá Boleslav	Czech Republic	Germany	5,440,000	20.0
Energy efficiency	Energy-efficiency Improvement by Hungarian Municipalities and Utilities	Hungary	Netherlands	240,000	20.0
Energy efficiency	Redesign of the Energy Process at Bacstěj Kft	Hungary	Netherlands	0	0.0
Fuel switching	Evaluation of the Dalkia-Vivendi Proposal: Fuel Switching and Cogeneration in the Dorog Eromu Kft Power Plant	Hungary	France	71,420	15.0
Fuel switching	RABA/IKARUS Compressed Natural Gas Engine Bus Project	Hungary	Netherlands	148,000	20.0
Energy efficiency	Reduction of Atmospheric Pollution through Modernization of the Energy Supply System in the Town of Byzycyna	Poland	Netherlands	60,600	15.0
Energy efficiency	Sustainable Heat and Power for Public Networks in the Szamotuly Town in Poland	Poland	Netherlands	76,765	15.0
Fuel switching	Coal to Gas Conversion	Poland	Norway	2,532,442	17.0
Energy efficiency	Swiss Energy Efficiency Project (Bučina, a. s., Zvolen)	Slovakia	Switzerland	148,300	8.0
Fuel switching	Energy Saving in the Slovakian Dairy Industry	Slovakia	Netherlands	0	1.5
Fuel switching	Replacement of Brown Coal-fired Boilers by a Biomass-fired Boiler	Slovakia	Netherlands	7,400	1.5
Renewable energy	Fuel Switch from Fossil Fuels to Bio-Energy AIJ Pilot Project	Slovakia	Norway	51,000	30.0

Source: UNFCCC-CC:INFO/AIJ

<sup>1</sup>Estimated greenhouse-gas (GHG) emissions reduced or sequestered (in metric tons of CO<sub>2</sub> equivalent) during the lifetime of the project. Some of the values have been revised since document FCCC/CP/1998/2

ed from the assigned amount of the Party. Forests have an important role in removing CO<sub>2</sub> from atmosphere and therefore may help to achieve the reduction of GHG emissions. In particular, this is mentioned in Article 3.3 and 3.4 of the Kyoto Protocol:

### Article 3.3

*The net changes in greenhouse gas emissions by sources and removals by sinks resulting from direct human-induced land-use change and forestry activities, limited to afforestation, reforestation and deforestation since*

*1990, measured as verifiable changes in carbon stocks in each commitment period, shall be used to meet the commitments under this Article of each Party included in Annex I. The greenhouse gas emissions by sources and removals by sinks associated with those activities shall be reported in a transparent and verifiable manner and reviewed in accordance with Articles 7 and 8.*

### Article 3.4

*Prior to the first session of the Conference of the Parties serving as the meeting of the Parties to this Pro-*

*to col, each Party included in Annex I shall provide, for consideration by the Subsidiary Body for Scientific and Technological Advice, data to establish its level of carbon stocks in 1990 and to enable an estimate to be made of its changes in carbon stocks in subsequent years. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first session or as soon as practicable thereafter, decide upon modalities, rules and guidelines as to how, and which, additional human-induced activities related to changes in greenhouse gas emissions by sources and removals by sinks in the agricultural soils and the land-use change and forestry categories shall be added to, or subtracted from, the assigned amounts for Parties included in Annex I, taking into account uncertainties, transparency in reporting, verifiability, the methodological work of the Intergovernmental Panel on Climate Change, the advice provided by the Subsidiary Body for Scientific and Technological Advice in accordance with Article 5 and the decisions of the Conference of the Parties. Such a decision shall apply in the second and subsequent commitment periods. A Party may choose to apply such a decision on these additional human-induced activities for its first commitment period, provided that these activities have taken place since 1990.*

Under Article 3.3 verifiable changes in carbon storage from afforestation, reforestation and deforestation since 1990 can be counted as credits or debits if they result directly from human activities. Article 3.4 provides an opportunity for countries to propose additional forest management activities (MURRAY et al. 2000).

The Protocol broke new ground with three innovative mechanisms that were collectively called flexibility mechanisms:

Joint implementation – JI (under Article 6) provides for Annex I Parties to implement projects that reduce emissions or remove carbon from the air, in other Annex I Parties, in return for emission reduction units (ERUs).

The clean development mechanism – CDM defined in Article 12 provides for Annex I Parties to implement projects that reduce emissions in non-Annex I Parties, in return for certified emission reductions (CERs), and assist the host Parties in achieving sustainable development and contributing to the ultimate objective of the Convention.

Emission trading – or the QUERO (Quantified Emission Limitation and Reduction Obligations) trading, as set out in Article 17, provides for Annex I Parties to acquire units from other Annex I Parties. These units may be in the form of assigned amount units (AAUs), removal units (RMUs), ERUs

and CERs. As set out in Article 17, it provides for Annex I Parties to acquire units from other Annex I Parties. These units may be in the form of assigned amount units (AAUs), removal units (RMUs), ERUs and CERs.

The Marrakech Accords allow businesses, environmental NGOs and other “legal entities” to participate in any of the mechanisms – or in all three – albeit at the discretion of their governments.

The removal of GHG from the atmosphere, for example through planting trees or improving forest management, can be partially counteracted at a relatively low cost. However, it is often difficult to estimate emissions and removals from the land use, land-use change and forestry (LULUCF) sector. Carbon removals and emission reductions achieved as a result of LULUCF interventions can be counted towards meeting Parties’ emission targets (IPCC 2000).

For the forestry sector in developing countries the most important seems to be the clean development mechanism, which makes it possible to take up mitigation projects in co-operation with developed countries. The CDM and emission trading were designed to boost the cost effectiveness of climate change mitigation by opening ways for Parties to cut emissions, or enhance carbon ‘sinks’, more cheaply abroad than at home. The Marrakech Accords call on Annex I Parties to implement domestic action to reduce emissions in ways that could help to narrow the differences per capita between developed and developing countries. They also impose no quantitative limits on the extent to which the mechanisms can be used to meet emission targets.

Emission targets must be achieved as an average over the first commitment period of 2008–2012. However, in order to show early action, Parties must have already made demonstrable progress towards meeting their commitments under the Kyoto Protocol until 2005, and must submit their progress reports on this matter by the 1<sup>st</sup> of January 2006 (UNFCCC 2003).

Joint implementation allows the Annex I Parties to implement projects that reduce emissions, or increase removals using sinks, in other Annex I countries. ERUs generated by such projects can then be used by investing Annex I Parties to help meet their emission targets.

JI projects must have the approval of all Parties involved and must lead to emission reductions or removals that are additional to any that would have occurred without the project. Projects such as reforestation schemes involving activities in the LULUCF sector must conform to the Protocol’s wider rules on

this sector and Annex I Parties are to refrain from using ERUs generated from nuclear facilities to meet their targets.

The Member States of the European Union collectively have to reduce their emissions to a level of 8 percent below their 1990 emissions (UNFCCC 2003). To achieve this target projects between Annex I Parties are also prepared in the second phase of JI (e.g. Czech Republic–Netherlands, Slovakia–Denmark). But there are not enough activities in LULUCF sector again and they are concentrated in energy and fuels.

## CONCLUSIONS

Within this global process governments need to move forward quickly now to design and carry out their national climate change policies.

The reduction of CO<sub>2</sub> emissions and increase of stored carbon can be possible by applying principles and methods of sustainable forest management (SFM). One of these elements is to reduce impact logging (RIL) techniques used in tropical forests and based on strict forest operation planning and reducing damage to forest stands and soils.

The rate of CO<sub>2</sub> sequestration can be enhanced by the cultivation of fast-growing tree species. Forest plantations and agro-forestry systems can also provide some other beneficial effects, such as economic development of rural areas, reduced pressure on native forests and providing forest product utilization. They can also play an important role especially in the non-forest or degraded areas (KALISZEWSKI 2001).

In temperate and boreal zones the sustainable forest management will lead to increased carbon sequestration and storage in forests as well. It will also probably demand to accept longer stand rotations while the management of fast-growing plantations and agro-forestry leads to a shortening of rotations.

These two approaches do not oppose but complete each other. Their application will depend mostly on local circumstances.

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## Politický proces v klimatickej zmene

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**ABSTRAKT:** Rámcový dohovor spojených národov o klimatickej zmene prijatý v roku 1992 na Samite Zeme v Rio de Janeiro obsahuje princípy a rámce medzinárodnej spolupráce v oblasti zmiernujúcich opatrení klimatickej zmeny. Čoskoro sa ukázalo, že je potrebný ostrejší prostriedok na zaistenie cieľa znížiť v jednotlivých krajinách emisie skleníkových plynov. Ako odpoveď krajiny, ktoré ratifikovali Dohovor spojených národov o klimatickej zmene, prijali v roku 1997 Kyotsky protokol.

Príručka, ako sa má Kyotsky protokol implementovať – Marrakeshsky akord – bol dohodnutý v r. 2001. Príspevok popisuje politické nástroje a prostriedky na zmiernenie klimatickej zmeny prostredníctvom lesného hospodárstva, navrhované v spomínaných politických dokumentoch.

**Kľúčové slová:** klimatická zmena; UNFCCC; Kyotsky protokol; lesníctvo; mechanizmy flexibility

Až do roku 1979, keď sa v Geneve konalo prvé významné medzinárodné podujatie – Prvá svetová klimatická konferencia, boli otázky vplyvu skleníkových plynov na klímu Zeme výlučne oblasťou záujmu vedcov. Dve po nej nasledujúce konferencie (Willach 1985, Belliagio 1987) vypracovali spoločné stanovisko krajín v súvislosti s možným globálnym oteplením a zadali politikom úlohu zaoberať sa týmto problémom. Od tejto doby sa problém dovtedy vedecký premenil na problém politický.

Medzinárodný záujem o túto problematiku vyústil do toho, že Svetová meteorologická organizácia a Organizácia spojených národov v roku 1988 zvolali IPCC (Medzivládny panel o zmene klímy). Tento pakt mal za úlohu pripraviť pre Valné zhromaždenie OSN správu o probléme zmeny klímy, jej vplyvu na životné prostredie a život človeka spolu s návrhom stratégií a reakcií na tieto zmeny. V r. 1990 bola táto správa prednesená na 45. stretnutí Valného zhromaždenia OSN a začali sa prípravy na Konvencii o zmene klímy. V r. 1992 na Samite Zeme v Rio de Janeiru došlo k podpisu Rámcového dohovoru o zmene klímy (The United Nation Framework Convention on Climate Change UN-FCCC). Odvtedy sa začala história dokumentov zmierňujúcich dopady zmien klímy pomocou politických nástrojov.

Rámcový dohovor Spojených národov o klimatickej zmene obsahuje princípy a rámce medzinárodnej spolupráce v oblasti zmierňujúcich opatrení klimatickej zmeny.

Čoskoro sa ukázalo, že je potrebný ostrejší prostriedok na zaistenie cieľa znížiť v jednotlivých krajinách emisie skleníkových plynov. Krajiny, ktoré ratifikovali Rámcový dohovor Spojených národov o klimatickej zmene, prijali v r. 1997 Kyotsky protokol. Príručka, ako sa má Kyotsky protokol implementovať, bola dohodnutá v r. 2001.

Lesy majú dôležitú úlohu v odstraňovaní CO<sub>2</sub> z atmosféry a tým môžu pomôcť pri znižovaní emi-

sií skleníkových plynov. Konkrétne je to spomenuté v odsekoch 3 a 4 Článku 3 Kyotskeho protokolu. Pod článkom 3.3 sa overujú zmeny v uskladňovaní uhlíka prostredníctvom zalesňovania a odlesňovania od roku 1990; tieto zmeny môžu byť hodnotené ako plusy aj mínusy, ak sú priamo spôsobené ľudskou činnosťou. Článok 3.4 dáva možnosť krajinám navrhnúť ďalšie lesnícke aktivity, majúce vzťah ku zmenám emisií skleníkových plynov. Protokol obsahuje pravidlá spoločných projektov (II v prvej fáze nazývané AIJ projekty) na zníženie emisií, nástroje CDM (mechanizmu čistého rozvoja), obchod s emisiami (QUERO) ako aj nástroje finančnej a technologickej podpory pomáhajúce rozvojovým krajinám podieľať sa na zmiernení dopadov klimatickej zmeny.

V krajinách prechádzajúcich procesom transformácie na trhové ekonomiku je stále nedostatok spoločných projektov v sektore zahrňujúcom lesníctvo a zmeny vo využívaní poľnohospodárskej pôdy (LULUCF). Z celkového počtu 85 AIJ projektov v týchto krajinách sa len tri dotýkali lesníctva (2 zalesňovacie projekty v Ruskej federácii a obnova NP Krkonoše a Šumava v Českej republike). Táto nepriaznivá situácia naďalej pretrváva. Aj v druhej fáze sa II projekty medzi krajinami Anexu I sústreďujú na oblasti energetiky a palív.

Členské štáty EU sa kolektívne zaviazali znížiť emisie skleníkových plynov. Na dosiahnutie tohto cieľa je vhodné paralelne s plantážami rýchlo rastúcich drevín a agro-lesníctvom, ktoré majú krátke obnovné doby, podporiť projekty trvalo udržateľného obhospodarovania lesov, čím sa predĺži doba uskladnenia a sekvestrácie uhlíka v lesoch našich zemepisných šírok.

V snahe posunúť dopredu tento globálny politický proces musia vlády krajín rýchle vytvoriť a uskutočniť zmeny vo svojej národnej politike zmeny klímy a použiť príslušné opatrenia aj v LULUCF sektore.

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