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SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE  
Seventeenth session  
New Delhi, 23–29 October 2002  
Agenda item 4 (b)

## METHODOLOGICAL ISSUES

### GUIDELINES UNDER ARTICLES 5, 7 AND 8 OF THE KYOTO PROTOCOL

#### Addendum

#### Recommendation of the Subsidiary Body for Scientific and Technological Advice

The Subsidiary Body for Scientific and Technological Advice, at its seventeenth session, decided to recommend the following draft decision for adoption by the Conference of the Parties at its eighth session:

#### **Draft decision -/CP.8**

#### **Technical standards for data exchange between registry systems under the Kyoto Protocol**

*The Conference of the Parties,*

*Recalling* its decisions 15/CP.7, 16/CP.7, 17/CP.7, 18/CP.7, 19/CP.7 and 24/CP.7,

*Noting* the progress made through the intersessional consultations on registries convened by the Chair of the Subsidiary Body for Scientific and Technological Advice,

*Mindful* of the importance of this work to the timely implementation of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol, in particular to the prompt start of the clean development mechanism under Article 12 of the Kyoto Protocol,

1. *Recommends* that the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, at its first session, adopt the general design requirements for the technical standards for data exchange between registry systems<sup>1</sup> under the Kyoto Protocol, as contained in the annex to this decision;

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<sup>1</sup> Comprising national registries, the clean development mechanism registry and the transaction log.

2. *Recognizes* that the general design requirements form the basis for a complete model of data exchange between registry systems and require the subsequent elaboration of detailed functional and technical specifications, in order to facilitate the implementation of the technical standards in all registry systems in a compatible manner;

3. *Requests* the secretariat, in its development of the transaction log, to undertake work relating to the functional and technical specifications of the technical standards during 2003, subject to the availability of resources, with a view to completing the technical specification prior to the ninth session of the Conference of the Parties and completing the implementation and testing of the transaction log by the tenth session of the Conference of the Parties;

4. *Requests* the secretariat, in working on these specifications, to closely collaborate with technical experts and report on progress to the Subsidiary Body for Scientific and Technological Advice at its nineteenth session;

5. *Commends* the progress already made through the intersessional consultations on more detailed material for the technical standards as a good starting point for future work to elaborate the functional and technical specifications of the technical standards;

6. *Requests* the Subsidiary Body for Scientific and Technological Advice to report to the Conference of the Parties at its ninth session<sup>2</sup> on progress made in developing the functional and technical specifications of the technical standards, and to make any recommendations for additional actions to establish and maintain registry systems, as appropriate;

7. *Requests* the Chair of the Subsidiary Body for Scientific and Technological Advice, with the assistance of the secretariat, to continue the intersessional consultations with Parties and experts for the purpose of:

(a) Sharing the results of work on the specifications of the technical standards with other Parties and seeking feedback on progress;

(b) Exchanging information and experience in relation to the development and establishment of registry systems;

(c) Preparing any recommendations to the Subsidiary Body for Scientific and Technological Advice on additional actions to establish and maintain registry systems and to implement and update the technical standards, as appropriate;

8. *Recognizes* that the intersessional consultations on registries identified issues that lie outside the scope of the technical standards for data exchange on which there is need for cooperation to facilitate and promote accuracy, efficiency and transparency in the design and operation of registry systems;

9. *Notes* that national registries and the clean development mechanism registry shall make up-to-date information, as referred to in draft decisions -/CMP.1 (*Article 12*) and -/CMP.1 (*Modalities for the accounting of assigned amounts*),<sup>3</sup> publicly accessible through an Internet web site;

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<sup>2</sup> Or, if the Kyoto Protocol has entered into force, the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol at its first session.

<sup>3</sup> Attached to decisions 17/CP.7 and 19/CP.7, respectively.

10. *Encourages* each Party included in Annex I to the Convention with a commitment inscribed in Annex B to the Kyoto Protocol to designate, as soon as possible, a registry administrator to maintain its national registry, with a view to facilitating early cooperation between registry administrators to address the need referred to in paragraph 8 above;

11. *Reiterates* its invitation to Parties, contained in decision 38/CP.7, to make contributions to the Trust Fund for Supplementary Activities under the United Nations Framework Convention on Climate Change, in the order of US\$ 1.15 million for the biennium 2002-2003, for the purpose of undertaking work related to registries and the transaction log;

12. *Invites* the secretariat to estimate the specific resource requirements for establishing and maintaining the transaction log, including the elaboration and implementation of the functional and technical specifications of the technical standards, and make this information available to Parties prior to the eighteenth session of the Subsidiary Body for Scientific and Technological Advice;

13. *Invites* Parties included in Annex II to the Convention to contribute to meeting the resource requirements referred to in paragraph 12 above in order to provide for the timely development of all registry systems in a manner that facilitates the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol, as well as the modalities for the accounting of assigned amounts under Article 7, paragraph 4, of the Kyoto Protocol, and is consistent with the progress envisaged in paragraph 3 above;

14. *Invites* the secretariat to explore additional sources of funding to meet the resource requirements referred to in paragraph 12 above;

15. *Requests* the Subsidiary Body for Scientific and Technological Advice, at its twentieth session, to forward a draft decision to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol recommending that it incorporates, in the annex to this decision, any elements needed to reflect decisions of the Conference of the Parties or of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol relating to definitions and modalities for including afforestation and reforestation project activities under Article 12 in the first commitment period.

Annex

**Technical standards for data exchange between registry systems under the Kyoto Protocol**

**General design requirements**

**I. PURPOSE**

1. The technical standards for data exchange provide a technical basis for transactions under the mechanisms defined in Articles 6, 12 and 17 of the Kyoto Protocol and the modalities for the accounting of assigned amounts under Article 7, paragraph 4, of the Kyoto Protocol. They pertain to the exchange of data between national registries of Parties to the Kyoto Protocol, the clean development mechanism (CDM) registry and the transaction log (referred to below as “registry systems”), in accordance with decisions -/CMP.1 (*Article 12*) and -/CMP.1 (*Modalities for the accounting of assigned amounts*),<sup>1</sup> and are complementary to those decisions.
2. Transactions requiring the exchange of data between registry systems are the issuance, transfer and acquisition between registries, cancellation, retirement and carry-over, as appropriate, of assigned amount units (AAUs), certified emission reductions (CERs), emission reduction units (ERUs) and removal units (RMUs) (referred to below as “units”).
3. In order to support the elaboration of technical standards and their implementation in all registry systems, the technical standards shall have the following tiered framework:
  - (a) General design requirements for data exchange between registry systems, forming the basis for a complete model for data exchange;
  - (b) Detailed functional specification of the interface between registry systems, in accordance with the general design requirements;
  - (c) Detailed technical specification of the interface between registry systems, in accordance with the general design requirements, at a level of detail sufficient for administrators of registry systems to implement and test them.
4. The provisions contained herein address the general design requirements of the technical standards.

**II. PRINCIPLES**

5. The elaboration and implementation of the technical standards for the exchange of data between registry systems shall:
  - (a) Effectively facilitate the mechanisms under Articles 6, 12 and 17<sup>2</sup> and the modalities for the accounting of assigned amounts under Article 7, paragraph 4;
  - (b) Ensure the accuracy of data and of the exchange of data;

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<sup>1</sup> Attached to decisions 17/CP.7 and 19/CP.7, respectively.

<sup>2</sup> In the context of this annex, “Article” refers to an article of the Kyoto Protocol, unless otherwise specified.

- (c) Ensure the transparency and auditability of transaction processes;
- (d) Ensure the transparency of non-confidential information;
- (e) Promote efficiency in transaction procedures;
- (f) Ensure the security of data storage and data exchange;
- (g) Promote the maximum resilience and availability of registry systems;
- (h) Allow the independent design of individual registry systems that, at minimum, are consistent with the technical standards for data exchange between registry systems.

### III. INTERFACE BETWEEN REGISTRY SYSTEMS

#### A. Message sequences

6. In the course of conducting their activities, registry systems shall transmit and receive standardized messages, at minimum, for the types of message sequences listed in table 1, in accordance with standardized message sequences to be developed. Such messages shall use formats and protocols that allow messages to be electronically processed by the receiving registry systems.

<b>Table 1</b> <b>Minimum standardized message sequence types for registry systems</b>
<i>Transactions</i> <ul style="list-style-type: none"><li>1. Issuance of units in a national registry or the CDM registry</li><li>2. Internal transfer of units (a) from the CDM registry pending account to another account or (b) from an account to a cancellation or retirement account</li><li>3. External transfer of units to a national registry</li><li>4. Carry-over of units, as appropriate, to the subsequent commitment period</li></ul>
<i>Other activities</i> <ul style="list-style-type: none"><li>5. Reconciliation of data between registries and the transaction log</li><li>6. Testing of connections between registry systems</li><li>7. Notification of change to online status of the transaction log</li><li>8. Notification of change to offline status of the transaction log</li></ul>

7. The message sequences and content shall incorporate, as appropriate:
- (a) Time certification, using a common format;
  - (b) Message identification, uniquely identifying the relevant message sequence, stage of the message sequence and message;
  - (c) The transaction number assigned by the registry system initiating the message sequence;
  - (d) The transaction record associated with the transaction number, as generated by the registry system initiating the message sequence, containing information, as appropriate, on:
    - (i) The total quantity of units involved;
    - (ii) The serial numbers of units involved, in blocks of consecutive numbers;
    - (iii) The account number of the transferring account;

- (iv) The account number of the acquiring account;
  - (e) The status of the transaction;
  - (f) An indication of units for which a discrepancy has been notified by the transaction log, until it has been resolved;
  - (g) Provision for the termination, by the acquiring registry, of a transaction for which a discrepancy has been notified by the transaction log that has not been terminated by the transferring registry;
  - (h) Confirmation responses to notify that a message has been received;
  - (i) Error messages, as necessary, identifying the point of failure.
8. A common language protocol shall be used for each type of message sequence. The language protocol for the messages shall be able to support a structured messaging format and shall be independent of the platform and the software vendor.
9. The messaging format shall allow for the possibility of changes and additions to the data contained in a message. Message formats shall allow any interpreting software to determine the content and structure of the data contained within each transaction. The character set used in the message shall also be independent of software vendor and be able to support non-Roman characters.
10. Message content and the interaction between the systems shall be modelled using a standard notation.

#### **B. Transaction rules**

11. A specific point shall be identified in each message sequence at which the transaction shall be deemed unequivocally final.
12. Subsequent messages in the sequence shall be sent in a time frame consistent with the functional and/or technical specification to be developed. The transaction log shall cancel transactions after a specified period of time has elapsed without a response to a message.
13. Units for which a transaction process is initiated shall not be available to other transactions until the initiated transaction process is completed or terminated. The transaction log shall verify, as part of its automated checks, whether units are already subject to a transaction process.

### **IV. REGISTRY SYSTEM REQUIREMENTS RELATED TO DATA EXCHANGE**

#### **A. Number elements**

14. Each unique serial number assigned by a registry to a unit shall consist of at least the elements contained in table 2<sup>3</sup>, in accordance with formats and codes to be developed.

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<sup>3</sup> The elements of this table are without prejudice to paragraph 15 of decision \_\_\_/CP.8.

<b>Table 2</b>				
<b>Elements of serial numbers</b>				
<i>Element</i>	<i>AAU</i>	<i>RMU</i>	<i>CER</i>	<i>ERU</i>
Originating Party identifier	yes	yes	yes	yes
Issuance commitment period	yes	yes	yes	yes
Unit type	yes	yes	yes	yes
LULUCF activity	no	yes	yes	yes
Project identifier	no	no	yes	yes
Unique number	yes	yes	yes	yes

LULUCF: Land use, land-use change and forestry

15. Registry systems shall associate with the serial number of each unit an indicator of whether the unit is valid for use towards commitments under Article 3, paragraph 1, in accordance with paragraph 43 of the annex to decision -/CMP.1 (*Modalities for the accounting of assigned amounts*).

16. Each unique account number assigned by a registry shall consist of at least the elements contained in table 3, in accordance with formats and codes to be developed.

<b>Table 3</b>			
<b>Elements of account numbers</b>			
<i>Element</i>	<i>Holding account</i>	<i>Cancellation account</i>	<i>Retirement account</i>
Party identifier	yes	yes	yes
Commitment period	no	yes	yes
Account type	yes	yes	yes
Unique number	yes	yes	yes

17. Each unique transaction number assigned by a registry shall consist of at least the elements contained in table 4, in accordance with formats and codes to be developed. The transaction number shall be assigned by the registry initiating a transaction and shall thereafter be associated with the transaction record relevant to that transaction.

<b>Table 4</b>
<b>Elements of transaction numbers</b>
Originating Party identifier
Commitment period
Date
Transaction type
Unique number

## **B. Infrastructure**

18. The interface between registry systems shall operate through a central communications hub integrated with the transaction log.

19. Registry systems shall apply common protocols and procedures for the testing, initiation and suspension of the operation of registry systems or parts thereof.

20. Registry systems, and the exchange of data between them, shall apply security measures that ensure:

(a) Confidentiality: data transmitted between registry systems shall be encrypted so as to be unreadable by any party not involved in the transaction;

(b) Authentication: the communicating registry systems shall be uniquely and securely identified and identifiable. The transaction log shall act as the central reference database for authentication information;

(c) Non-repudiation: there should be a single full and final record of all actions such that those actions cannot be disputed or repudiated;

(d) Integrity: data exchanged between registry systems shall not be modifiable by any party not involved in the transaction;

(e) Auditability: a full audit trail shall be maintained for each message and message sequence to document all processes, actions and messages and the date and time at which they occurred.

21. The ability of the transaction log to receive and process messages shall be scalable.

22. The scheduled downtime of registry systems shall be kept to a minimum. Registry systems shall have systems and procedures in place to isolate any problems and minimize the interruption or suspension of their functions.

23. The transaction log shall maintain a publicly accessible list of units, and the relevant transaction records, that are subject to a notification of a discrepancy that has not yet been resolved.

24. A separate messaging test environment shall be maintained by each registry system, in conjunction with its operational system, in order to allow registries to test the development and amendment of their messaging infrastructure without disrupting the operational messaging framework.

25. Each registry system shall implement measures, including automated internal checks, to:

(a) Ensure that its data records and transactions are accurate;

(b) Ensure that data are protected against unauthorized manipulation and any change in data is automatically and securely recorded using journaling and auditing functionality;

(c) Ensure that it is protected against exposure to security compromises, such as through viruses, hackers and denial of service attacks;

(d) Ensure that it has robust systems and procedures for safeguarding data and recovering data and registry service in the event of a disaster;

(e) Prevent inconsistencies and, where they are found, halt transactions until the inconsistencies have been resolved;

(f) Prevent discrepancies from occurring.

**C. Data**

26. The transaction log and registries shall reconcile their data with each other in order to ensure data consistency and facilitate the automated checks of the transaction log. The transaction log shall, on a daily basis, compare a statement from each registry of its unit holding position against the records of the transaction log. The transaction log shall notify each registry of the result. In the event of an inconsistency being found, all transactions in question shall be halted until the inconsistency has been resolved.

27. Each registry system shall retain its records of unit holdings and transactions pertaining to a commitment period at least until any questions of implementation relating to emissions or assigned amount information, for which the data records were created, have been resolved.

28. In order to facilitate the automated checks of the transaction log, registries shall, in a timely manner, provide the following information and ensure that it remains up to date:

- (a) Confirmation of the completion or termination of transactions;
- (b) The authorization, or removal thereof, by Parties of:
  - (i) Legal entities to participate in Article 6 projects under decision -/CMP.1 (*Article 6*);
  - (ii) Private and/or public entities to participate in Article 12 project activities under decision -/CMP.1 (*Article 12*);
  - (iii) Legal entities to transfer and/or acquire ERUs, CERs, AAUs or RMUs under decision -/CMP.1 (*Article 17*).

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