Registry Design for Emissions Trading

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EU-China Exchange on Challenges and Best Practices in ETS
Registry Design, Management and Operation
Beijing, China
November 22, 2012

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About Ecologic Institute

- Who we are

  - A private, not-for profit think tank for applied environmental research, policy analysis and consultancy

  - Founded 1995 in Berlin, Germany

  - Offices in Berlin, Brussels, Vienna, Washington DC and San Mateo CA

  - Currently 125+ employees

  - Ranked 6th among Environmental Think Tanks in the 2010 and 2011 Global Think Tank Index of the University of Pennsylvania

- Who we work with

  - International Organisations (UNEP, UNFCCC, CBD, World Bank, OECD)

  - European Union (European Commission, European Parliament, European Environment Agency)

  - National Parliaments and government agencies (e.g. German Environment Ministry, UK DECC, US EPA)

  - Non-Governmental Organisations

  - Educational Institutions

  - Foundations, …

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Importance of a Registry in the Emissions Trading System

- Emission allowances only exist in electronic form – no physical equivalent

- Registry = electronic database, which keeps track of the ownership of emission allowances (=banking system for the ETS)

- In addition to the registry, all transfers of allowances are authorised and recorded by a central hub (CITL in the case of the EU ETS)

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Main functions of the registry

- Definition according to the EU ETS Directive (Art. 19): Registries are "standardised electronic databases containing common data elements

  - to track the issue, holding, transfer and cancellation of allowances,

  - to provide for public access and confidentiality as appropriate and

  - to ensure that there are no transfers which are incompatible with the obligations resulting from the Kyoto Protocol."

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What does the registry do

- The Registry records the following:

  - CO_2 allowances and Kyoto units allocated to and held in operator, person and Government accounts

  - the movement of allowances and units between accounts (including allocations, transfers, surrender and cancellations)

  - annual verified emissions of installations

  - annual compliance status of installations

- The Registry does not record prices and contracted volumes

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Key functions of the Registry

▶ User & account management – each operator *must* have an account, any person *can* have an account

▶ Allocation management – allocation of allowances to the operators' accounts

▶ Compliance management – surrendering of sufficient allowances from the operators' accounts

▶ Transaction management

▶ Reporting management

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Dual function of the registries – EU ETS and Kyoto

- Any party to the Kyoto protocol must maintain its own national registry

- Each state that is part of the EU ETS must maintain an ETS registry

- National registries therefore perform both ETS-related functions and Kyoto functions. Also with a single EU registry, national registries are still needed for Kyoto protocol functions.

- All national registries must be able to connect to the Independent Transaction Log (ITL) under the Kyoto Protocol

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Data Exchange Standards

- Registry must be established, operated and maintained to the functional & technical standard specified by the UNFCCC.

- **DES – Data Exchange Standards** for all registries under the Kyoto Protocol - specifying rules for

  - Data exchange (format, security, time validation etc.),

  - Unit transaction types and processes, transaction checks,

  - Reconciliation procedures,

  - Etc.

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Data Exchange Standards – main elements

- Initialisation: start-up processes a registry will be required to complete before initiating communication and data exchange with the ITL

  - Staffing, registry documentation (database backup, disaster recovery, security plan, time validation plan, operational plan), tests to ensure that the registry works as technically intended

- Transaction specification: to ensure the secure and real time processing of transaction information.

  - Registry architecture; data transfer security; data transfer format specifications; time validation; data and transaction logging

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Transaction logs

- Maintained by the UNFCCC (Independent Transaction Log, ITL) and by the EU (Community Independent Transaction Log, CITL / since 2012: EU Transaction Log, EUTL)

- Purpose of the transaction log:

  - Checks the validity of transfers

  - Forwards requested transfer to the acquiring registry

  - Guarantees completion of the transfer

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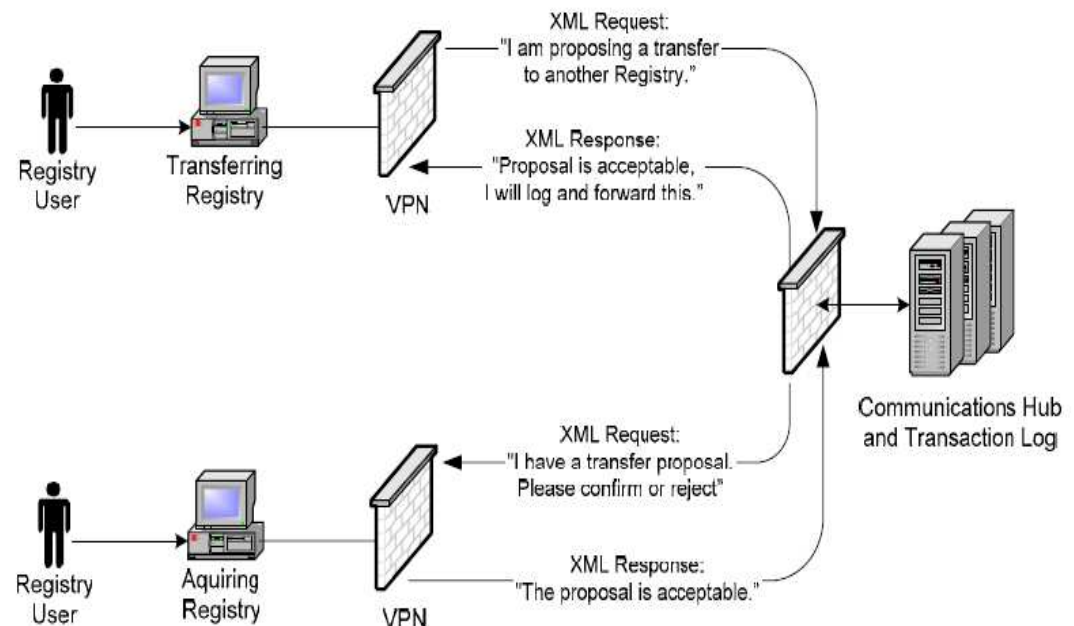
Types of accounts in the EU ETS part of the Union registry

▸ Aircraft operator holding account (any aircraft operator *must* have an account)

▸ Operator holding account (any plant operator *must* have an account)

▸ Person holding account

▸ Verifier accounts (not for holding allowances)

▸ Deletion accounts (to permanently delete EUAs)

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Types of accounts in the Kyoto part of the Union registry

- Former operator holding account (transitional)

- Person holding account

- Cancellation account (for voluntary cancellation of allowances)

- Retirement account (for retiring allowances that count towards the achievement of Kyoto targets)

- National holding account

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Physical set-up of the registry

- Online service: web-based database, accessible through the internet

- Usually involving external service providers

    - Hosting of the registry server – high-security application, availability 24/7

    - Programming / customisation of the registry software

    - Online or telephone hotline support

- Public and private section of the registry: transactions only possible (and visible) for registered users, headline information available for all

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Management of the registry

- In-house staff including account management, IT management, international cooperation, further development and link to policy

- Staff requirement depending on the number of accounts and the degree of external support

  - Small Member State (Ireland >100 accounts): 2.3 fulltime staff at Irish EPA

  - Large Member State (Germany >2,000 accounts): 9 fulltime staff at DEHSt

  - Rule of thumb: one employee can manage 300 – 500 accounts

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Registry software solutions on the market

- SERINGAS (CDC Climat, France) – used in six EU ETS countries, including France, Poland, plus Russia, Belarus, CH, Kazachstan

- GRETA (DEFRA, UK) – used in nine EU ETS countries, including the UK, Italy, Sweden, NL

- ECRA (Siemens, Austria) – used in Austria and Greece

- CR – Community Registry – developed by the EU, customised and used by Germany, Belgium etc.

- PQA (Perrin Quarles Associates), USA - used by New Zealand and United Nations (CDM-Registry)

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Benefits of shared software

- Economies of scale

- Shared costs for testing and development

- Knowledge sharing and support

- Fair system where all licensees have a voice

- Representation at EU and UN level

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Safety issues and fraud

- Some cases fraud in the EU ETS in 2009 / 2010

    - VAT fraud

    - Phishing attack on operators in Germany and elsewhere

- Response: Security measures, safety precautions, changes to the VAT collection system

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VAT fraud in 2009 / 2010

- Carousel trading: taking advantage of VAT exemption for int'l trades

- Fraud by the seller (B): fails to pay VAT to the tax office, seller (C) reclaims VAT from the tax office

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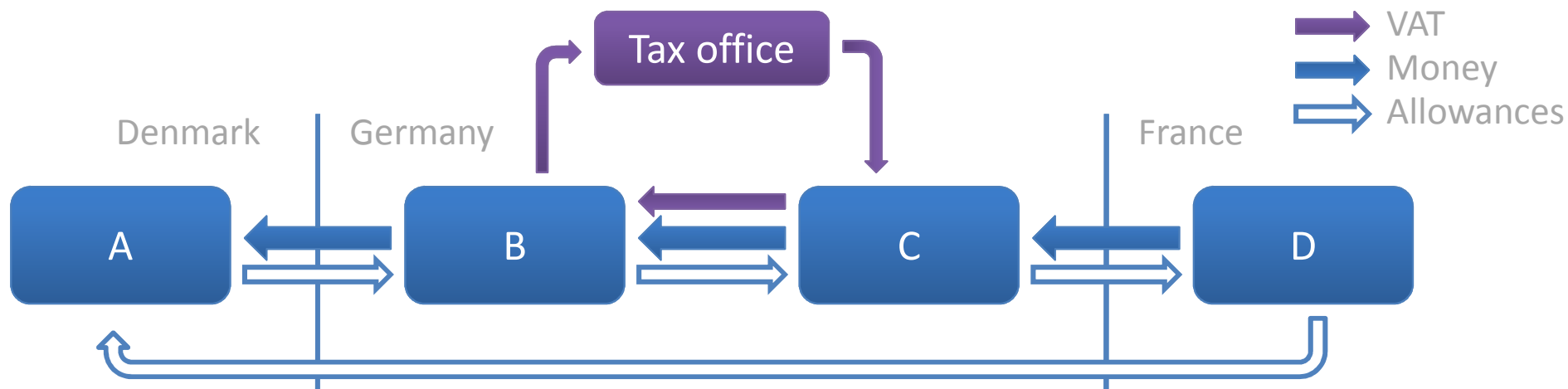
VAT fraud in 2009 / 2010

- VAT fraud not a specific problem of the ETS (or the registry): possible for any high-value good that can be transported at low cost

- Suspicious trading patterns observed in the German registry in 2009

- Tax evasion a criminal offense – pursued by authorities across Europe

- In 2010, 26 arrests were made in Germany and the UK – court trials ongoing, long prison sentence expected. Damage across Europe: €5 bn

- Systematic solution: reverse-charge procedure applies to allowance trading (buyer has to pay VAT, not the seller)

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Phishing attacks in 2010

- Phishing attacks launched in January 2010 – emails sent to registry account holders in Germany and other EU countries

- Seven users disclosed their usernames and passwords

- Accounts were robbed – allowances transferred to accounts abroad

- Registry operations stopped immediately, new usernames and passwords assigned for all account holders

- Since then: range of new safety precautions introduced

- Again: not an inherent ETS problem, but general IT safety issue

Task analysis

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Safety precautions in registries

- Secure, encrypted data transmission (SSL)

- Double authentification for login and transactions: username, passwort, SMS-TAN

- Transactions confirmed by SMS

- Designation of a second authorised representative (dual approval)

- Possibility to set transaction limits

- External auditing of security provisions

- Rules to verify the identity of account holders (incl. criminal records)

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Thank you for your attention

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