WORKSHOP BACKGROUND PAPER No.2

SETTING THE INSTITUTIONAL FRAMEWORK FOR TRANSACTION REGISTRY ADMINISTRATION

By Frederic Dinguirard & Phil Brookfield

September 2015

NOTE: This Background Paper is a preliminary document with a limited number of copies circulated to stimulate discussion and critical comment at the PMR Technical Workshop *"Building Registries to Support the Next Generation of Carbon Markets"*, September 23-25, 2015 – Sacramento, CA. Written comments and suggestions are welcome and should be sent to the PMR Secretariat (pmrsecretariat@worldbank.org) no later than October 15, 2015.

© 2015 International Bank for Reconstruction and Development / The World Bank
1818 H Street NW
Washington DC 20433
Telephone: 202-473-1000
Internet: www.worldbank.org

This work is a product of external consultants with supervision and contribution of the staff of The World Bank. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of The World Bank, its Board of Executive Directors, or the governments they represent.

The World Bank does not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of The World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Rights and Permissions

The material in this work is subject to copyright. Because The World Bank encourages dissemination of its knowledge, this work may be reproduced, in whole or in part, for non-commercial purposes as long as full attribution to this work is given.

Any queries on rights and licenses, including subsidiary rights, should be addressed to the Publishing and Knowledge Division, The World Bank Group, 1818 H Street NW, Washington, DC 20433, USA; fax: 202-522-2625; e-mail: pubrights@worldbank.org.

Content

1. BEFORE YOU BEGIN: ASSESSING REGISTRY ADMINISTRATION NEEDS 4

1.1. SCALE AND SCOPE OF THE MARKET MECHANISM 4

1.2. RESPONSIBILITIES AND RISKS IN REGISTRY ADMINISTRATION 7

1.2.1. RESPONSIBILITIES 7

1.2.2. RISKS 9

1.2.3. MITIGATING MEASURES: "KNOW YOUR CUSTOMER" 11

2. MANDATING A REGISTRY ADMINISTRATOR 13

2.1. KEY CRITERIA FOR CHOICE 13

2.2. EXAMPLES OF REGISTRY ADMINISTRATORS IN EXISTING PROGRAMS 13

3. ADMINISTERING A REGISTRY: OPERATIONS AND RESOURCES 14

3.1. OPERATIONAL TASKS 14

3.2. RESOURCES AND COSTS 17

3.2.1. STAFFING 17

3.2.2. REGISTRY FEES 19

3.2.3. RUNNING COSTS 25

4. OPTIONS TO REDUCE REGISTRY ADMINISTRATION COSTS 26

4.1. FORMALIZING OPERATIONAL PROCEDURES 26

4.2. APPLYING PROPORTIONAL CONTROL AND MONITORING 27

4.3. COMPUTERIZING OPERATIONAL TASKS 27

4.3.1. EXCHANGES OF INFORMATION WITH REGISTRY USERS 27

4.3.2. MONITORING OF ACCOUNT ACTIVITY 27

4.4. TRAINING MATERIAL AND COMMUNICATION SUPPORTS 28

5. COMMON RECOMMENDATIONS AND GUIDANCE ON THE DEVELOPMENT OF AN INSTITUTIONAL FRAMEWORKS FOR REGISTRY ADMINISTRATION 29

Introduction

A registry administrator is the entity responsible for the day-to-day operations of the registry system, involving key responsibilities such as managing users and accounts, or the issuance and cancellation of carbon units as ordered by the authority regulating the Market Mechanism. Registry administrators also monitor transfers, and where appropriate report issues and irregularities to relevant authorities and take follow-up action. While these operations must be performed with a concern for effectiveness and equity of treatment to all participants, clear and robust procedures – such as "know-your-customer" (KYC) requirements – are nonetheless necessary to ensure smooth operations of the registry and compliance with related regulation. Building on existing experience, this Background Paper provides an overview of the key aspects of registry administration, including the responsibilities, risks, processes, resources and costs involved. It also offers practical guidance to support decision-making in setting the institutional framework and operations for registry administration.

1. Before You Begin: Assessing Registry Administration Needs

1.1. Scale and scope of the Market Mechanism

As is the case for the legal framework (see Background Paper No.1), the scale and scope of the Market Mechanism considered will significantly influence the complexity of the institutional arrangements for its registry – in particular the responsibilities, risks, and costs involved in administrating it. These are generally proportionate to the number of participants in the Market Mechanism, the number of accounts to manage, the value of the units held in these accounts, and number of transactions these units are subject to. At the upper end of the scale, the registry administrator may have to operate an electronic IT system with fully automated functions, manage risks of fraudulent activities, and cooperate with a range of authorities (e.g. environment, finance, justice etc.).

For ease of guidance, and based on observations of existing experience, we can roughly distinguish three levels of registry administration – by order of increasing sophistication:

- **Level 1:** Few users and transactions; no interaction with any other IT system (e.g. MRV database); only the administrator can access the registry system (i.e. users have no on-line access to their accounts). The registry can be paper-based, or supported by an excel spreadsheet or other basic accounting tools; reports (e.g. on account holdings and transactions) are issued, published and audited periodically. The financial value of the units and related market and/or fraud risks are low.

- **Level 2:** Communication with other systems is possible but exchanges are limited; the registry is computerized with little automation; user interfaces are provided and accessible through the internet (e.g. check on account balances and related reporting). The execution of operations requires the involvement of the administrator – at least to validate them. The value of account holdings and related risks are moderate.

- **Level 3:** The registry is automated and exchanges a large volume of information with a number of other systems and databases – and potentially other registries. It supports a large market with frequent and numerous transactions; users perform operations directly on-line, with no intervention by the registry administrator. A range of users exists, including non-compliance participants (e.g. banks) or foreign entities – which complicates registry administration procedures, operations, and allocated resources.

Examples of registries are presented below for each of these levels:

Level 1	**The National Emissions Reduction Plan (United Kingdom)[1]**
Main characteristics: • The "Register holder" is the UK Environment Agency (public authority). Its administration is performed by one part-time employee • No IT system exists: quarterly reports are made available online via Excel Spreadsheets • The registry only offers compliant participant accounts (i.e. 79 large combustion plants) • 42 transactions accounted for in 2014. Transfers are initiated by compliant participants filling a dedicated form sent by email to the administrator • Most of the costs are related to drawing up and maintaining the applicable regulations	
Level 1	**National Register of Guarantees of Origin[2] (France)**
Main characteristics: • The register is held by the French Transmission System Operator (TSO) – a public company • The register inventories all of the guarantees of origin issued, and indicates which were used and by whom • No online accounts in users' names exist • One single report in PDF format is regularly updated and published	

Level 2	**National Register[3] of White Certificates (France)**

[1] See: https://www.gov.uk/government/publications/national-emission-reduction-plan-nerp-quarterly-registry
[2] The Guarantee of Origin (GO) is an EU instrument which labels the electricity generated from renewable sources. See: http://clients.rte-france.com/lang/fr/clients_producteurs/services_clients/garantie_registry_pop.jsp
[3] See: https://www.emmy.fr/front/accueil.jsf

Main characteristics:

- A register is administered by a private company, selected via a call for tender
- The register holds named accounts by users available online
- The vendor and the purchaser both sign a transfer order which is then mailed (via post) to the register administrator. Upon reception, the administrator validates the transfer, notifies the transaction counterparts, and updates the balances of the accounts
- An average of 40 transactions per month are registered

Level 3	**Verified Carbon Standard (VCS) Registries**[4]

Main characteristics:

- Two distinct registries, connected manually
- Registry Administrators (i.e. APX and Markit) have been selected by the VCS Association via a call for tender
- Serial numbers are created centrally by the project database, prior to the issuance of Verified Carbon Units (VCUs) stamped with these serial numbers, within the registry appointed by the project proponent (e.g. Markit or APX)
- Central reconciliation
- Transfers are directly made on-line by the users, without intervention by the registry administrator
- Transaction volumes: about 76 million units in 2014

Level 3	**Swiss Emissions Trading Registry**[5]

Main characteristics:

- The registry is administered by the Federal Office for the Environment
- Single national IT system
- Transfers are directly made on-line by the users, without intervention by the registry administrator
- 350 participating operators
- Transaction volumes: very low

Level 3	**Consolidated System of European Union Registries (CSEUR)**[6]

[4] APX VCS Registry: http://www.vcsregistry.com/; Markit Environmental Registry: https://www.markit.com/Product/Registry

[5] Public link: https://www.emissionsregistry.admin.ch/crweb/public/welcome.do;jsessionid=9A512EE68F9CE1A3D49CD59C98B08970

[6] Public link: https://ets-registry.webgate.ec.europa.eu/euregistry/FR/index.xhtml

Main characteristics:

- Each EU Member State appoints a national administrator for national registry
- A single IT system manages both each Member State's independent registry under the Kyoto Protocol, as well as a unique Union's registry supporting the EU ETS operations
- Transfers are directly made on-line by the users, without intervention by the registry administrator
- Volumes: There are up to millions of transactions daily, and several billions of transactions per year. Almost all of these volumes are related to the EU ETS (very few transactions are related to the Kyoto Protocol)

This paper covers institutional and administrative approaches under level 3 registries, which involves a higher level of sophistication and complexity. Issues and options to consider under levels 1 and 2 are therefore de facto also covered.

1.2. Responsibilities and risks in registry administration

1.2.1. Responsibilities

The effective administration of a registry requires a decision on the allocation of responsibilities between the following registry stakeholders: the regulator, the registry administrator, and the account holders – as illustrated in Table 1 below. Such responsibilities can be allocated by law (e.g. United Kingdom, California), and possibly supplemented by contractual agreements involving the registry administrator and each registry user (e.g. France).

Table 1 – Indicative matrix of responsibilities for registry administration

Responsibilities	Examples	Regulator	Reg. administrator	Account holders	Owner of the system	Central hub
Registry architecture	Ensuring the registry complies with regulation	X				
Registry IT system	Ensuring the registry system (hardware and software) is fit for purpose		X			
Accounts administration	Account opening, freezing, closing; suspending access		X			
Customer relation management	Hotline, help desk etc.		X			
GHG-related data entry	Entering verified GHG emissions reports, allocation tables etc.		X			
Compliance obligations	Carrying out periodic compliance operations such as calculations for checking regulatory obligations.		X			
Monitoring of registry activity	Detecting errors and anomalies, resolving incidents, including security-related ones.		X			
Issuance of carbon units	Issuance of carbon units to a customer account or to an account dedicated to provisions for risks.		X			
Allocation of carbon units	Allocation of quotas in ETS	X				
Transfers	Transfer of carbon units between a vendor and a purchaser.			X		
Regulatory operations	Write-back of provisions (buffer credits management). Conversion of units.		X			
Cancellation of units	Ensuring any form of elimination (end of life) of a unit.		o	X		
Cancellation of transactions	Explicit decision to cancel an operation in accordance with the arrangements for the workflow.		o	X		
IT/technical aspects	Availability; security; execution of the computerized processes; management of data confidentiality; management of authorizations for processing operations and data, etc.		X		X	
Control checks	Format of the data, exchange protocol, compliance with the accounting plans, etc.				X	X

o: Under the circumstances laid down by the applicable regulations

1.2.2. Risks

The main risks that a registry administrator is exposed to include the following:

- Non-execution of operations, late execution of an operation, or other operational errors as part of the execution of an operation, leading to:
  - An opportunity cost for the account holder (for example: delay in issuing or allocating a unit), and/or
  - A non-compliant status for the account holder, and/or
  - Reputational damage (e.g. featuring the holder in a public non-compliance report, either mistakenly or due to the fact that the operation for achieving compliance was made impossible due to an action by the registry administrator or the system).
- Entering into relations with an account holder or with a user who subsequently adopts fraudulent behaviour;
- Mistakenly maintaining the account in an active state, or maintaining a user's authorization while the account should have been blocked or the user's authorizations revoked;
- Failure to report suspicious activities/incidents to the relevant authorities.

Such risks are proportionate to the size and financial value of the market, and to the number and variety of its participants, and therefore to the complexity to regulate and monitor the Market Mechanism.

Various measures may be taken to mitigate these risks, and to reduce the impacts and costs of potential incidents – at the following different levels:

Regulation:

Ensure that existing market regulation bodies will effectively manage necessary information and will effectively have authority to investigate and intervene where appropriate. This may lead the regulator to impose eligibility or volume criteria on market participants.

Registry management and administration:

- Raising the awareness of the registry administrator's staff regarding the stakes and risks;
- Training staff regarding control procedures and compliance with requirements related to updating documents, monitoring transactions and declaring suspicions,
- Formalizing operational procedures and checkpoints. Envisaging validation by a second agent for sensitive operations;
- Rigorously managing authorizations of users regarding the registry's data and processing operations;
- Allowing for peer review: key public accounting reports may be reviewed by competent third parties prior to publication;

- Implementing procedures for managing incidents and facilitating on-going improvement of this service;
- Supplying appropriate IT and systems to minimize the risk of human error, such as an on boarding portal to check the identity of account holders and users applying electronically, and/or a Customer Relationship Management (CRM) system to ensure procedures and operational instructions are properly followed. Connecting such systems with the registry may further mitigate the risk of operational errors, and also contribute to data consistency.

Registry IT system:

- Functionalities to mitigate administration risks at the registry level include:
  - Automatic alerts triggered upon detection, or prevention of events in breach of regulatory requirements;
  - Strong (two factor) authentication measures and, more generally speaking, IT security features (session time-out, periodic mandatory renewal of passwords, etc.);
  - Measures allowing for the emergency shut-down of the registry;
  - Periodic checks to ensure the robustness of the system's protection, such as intrusion tests, external audits, etc.
  - Good faith buyer protection measures to ensure clarity over ownership of units, such as control and validation stages before accounting for a transaction.

Contractual arrangements:

- Account agreement:
  - Scope and limits of the registry administrator's responsibilities;
  - Clear ownership rules for any units in the event of dispute; insolvency; death etc.
  - In case of incident, rules for calculating and capping compensatory payments for the aggrieved parties;
  - Operational provisions for the beneficiary of units received mistakenly to return them;
  - Exhaustive inventory of the information to be made public, and mention of the publication calendar;
  - Definition of what information is considered confidential, when and under what circumstances it may be made public (e.g. to law/tax authorities, legal courts, government institutions, insolvency administrators and regulators);

- Insurance:

  The registry administrator may subscribe to an insurance policy in order to cover various risks related to its registry administration activity. Alternatively the regulator – or the registry administrator, when distinct from the regulator – may take financial responsibility (bank of last resort).

1.2.3. Mitigating measures: "Know Your Customer"

The registry is the “entry door” to the market created by the Market Mechanism. Due to this responsibility, the registry administrator requires information and a number of supporting documents about the account holder and each of the physical persons who may act on its behalf (i.e. the users). The registry administrator checks the information received ("know your customer checks") on initial contact, and may then request for regular updates. Depending on the number of users, using automated IT system to collect and manage data may be considered.

Table 2 below includes an indicative and non-exhaustive list of the potential information to be requested from applicants requesting to open an account in a registry. Applicable regulation may require such information be made public or remain confidential, and be updated on a regular basis.

Table 2 – Indicative list of "Know Your Customer" documents for account opening

Document or information	Purpose	Checks to perform
Identity documents	• To confirm the identity of the user	• Should be valid for at least x months • Nationality and associated country risk • Document number • Person with a political profile or not, public figure or not • Public notoriety of the user (web, social networks etc.)
Proof of address	• To ensure that national laws will apply to the user • To enable communication with users	• Reliability of the document as a "proof of address" • Country of residence and associated country risk
Copy of mobile telephone bill	• To enable SMS notifications • To facilitate investigations through the mobile phone operator	• Invoice is effectively in the name of the user • Telephone number should be identical to the one recorded in the registry for sending SMS notifications
Bank account identification number (IBAN)	• To reduce the risk related to the user (the bank has already carried out its own KYC checks and has met the user in person before opening the bank account)	• The document nominatively refers to the user • The bank should be subject to financial regulation in the country where the bank account is held
Email address	• To enable communication with users • To check affiliation of the user	• Confirmation of the email address through a confirmation request; • Eligibility of email address (e.g. no Gmail etc.)
Company Registration number, VAT number (or equivalent)	• To demonstrate compliance with various related regulations	• Via public database, and/or request to competent authorities • Documents are recent and/or still valid
Activity of the company	• To ensure that the primary purpose of the company is consistent with participating in the Market Mechanism	• Discretionary interpretation of the statuses and activity of the company by the registry administrator • Questionnaire on motivations and experience
Company financials	• To assess the solvency of the legal entity	• Income statement, balance sheet, cash flow statement, financial ratio etc.
Proof of authorization	• To assess the statuses and legitimacy of the company's authorized representatives	• Certificate of incorporation, corporate organigram, power of attorney declaration
Criminal record	• To evaluate the risk associated with the user	• Criminal records – esp. regarding terrorism, money laundering, or other fraudulent activities in financial markets
Authenticating documents	• To confirm the applicant's existence and legal status, not to collect documents	• Certification requirements applicable for the country are observed; • Certificating authority is legitimate; • Date of certification is sufficiently recent.
Acceptance of Registry terms and conditions	• To ensure the user understands and consents to the rights, risks and liabilities related to the use of the registry	• Documents duly filled out and sent / approved electronically

2. Mandating a Registry Administrator

2.1. Key criteria for choice

The regulator of the Market Mechanism usually acts as the "competent authority" on registry issues, and can mandate a third party to administrate the registry. Registries in existing systems are administered by various types of entities. While certain regulators have assigned the registry to a government agency – generally in charge of environmental issues (e.g. United Kingdom, Germany, New Zealand, etc.), others have mandated a range of independent and reliable third parties.

Several criteria may be considered when appointing a third party to administer the registry:

- **Specific expertise:** Because it is the core infrastructure supporting market activities, administrating the registry requires specific skills, procedures and tools to manage operations in compliance with evolving regulation. Key criteria include proven experience in markets and related infrastructure operations – potentially in a regulated environment.

- **Level of service:** Registry administration requires available resources and skills appropriate for ensuring smooth operations of IT systems, and an acceptable level of customer services management.

- **Risks management**: The range of responsibilities and risks involved in registry administration requires delegating administration to an entity which has track-record, capabilities, and appropriate status to endorse and manage them.

- **Costs and resources:** Costs considerations involve the assessment of the counterfactual cost scenario whereby registry administration – and potentially IT – services are provided internally, i.e. by the regulator itself. In addition, the financial viability and availability of human resources dedicated to registry administration services – especially over the long-run – are key to assessing the suitability of potential administrators.

2.2. Examples of registry administrators in existing programs

The following examples illustrate how the above criteria are, in practice, weighted more or less strongly by countries, depending on local priorities and resources. This results in a wide range of entities (e.g. public vs. private) appointed as registry administrators in the different Market Mechanisms which are in existence today.

Specific expertise in market finance – and particularly regarding environment-related commodities, as well as experience in market infrastructure management and development, have been the primary drivers of the decision of the French government to mandate Caisse des Dépôts et Consignations – a public institutional long-term investor – to act as the National GHG Registry Administrator under Kyoto's International Emissions Trading and the EU ETS. The same goes with Spain, where the company Iberclear was appointed by the Spanish Office

of Climate Change[7] based on its experience building and managing the clearing and settlement systems for the Spanish Stock Exchange Market.

The Verified Carbon Standard Association (VCSA), which manages the VCS offset credit program, appointed 2 private entities (i.e. APX (USA) and Markit (UK)) through competitive tender, based on the experience, reliability, and sustainability of their services and related IT infrastructure. The decision to appoint multiple and competing registry providers was driven, in particular, by the need to keep costs down. Both entities must ensure continued compliance with the registry procedures[8] published by the VCSA which includes collecting fees on behalf the VCSA in addition to their own.

In the Czech Republic, the government appointed OTE, a joint-stock company fully owned by the state which operates the country's electricity and gas market. Such mandate was attributed through the Czech Emissions Trading Act and overseen by the Ministry of the Environment, i.e. the regulator. By doing so, the regulator caps registry costs in the EU context where registry regulation and IT have experienced turbulences and did operate significant changes in the last ten years.

Denmark has transferred the responsibility for the EU ETS Registry to the Danish Business Authority[9] which enables the Danish registry administrator to have access to all companies registered throughout the country. Because registry access is only granted to Danish resident entities, data collection is conducted is a systemic way (i.e. electronic means) which in turn, brings costs down while ensuring that the information collected is reliable and up-to-date.

3. Administering a Registry: Operations and Resources

3.1. Operational tasks

This section provides an overview of the set of tasks (i.e. processes) which may be involved in registry administration.

In the design phase and implementation of a Market Mechanism, mapping these processes helps to delineate the overall organization of the registry administrator, and to mobilize the appropriate resources and skills needed to execute such processes. In the operating phase, a more precise mapping may be needed to improve the efficiency of execution, especially if certain tasks are computerized. For example, in Section 3 of this report, the task "issuance of units" is described in a comprehensive workflow.

Figure 1 below identifies three types of processes:

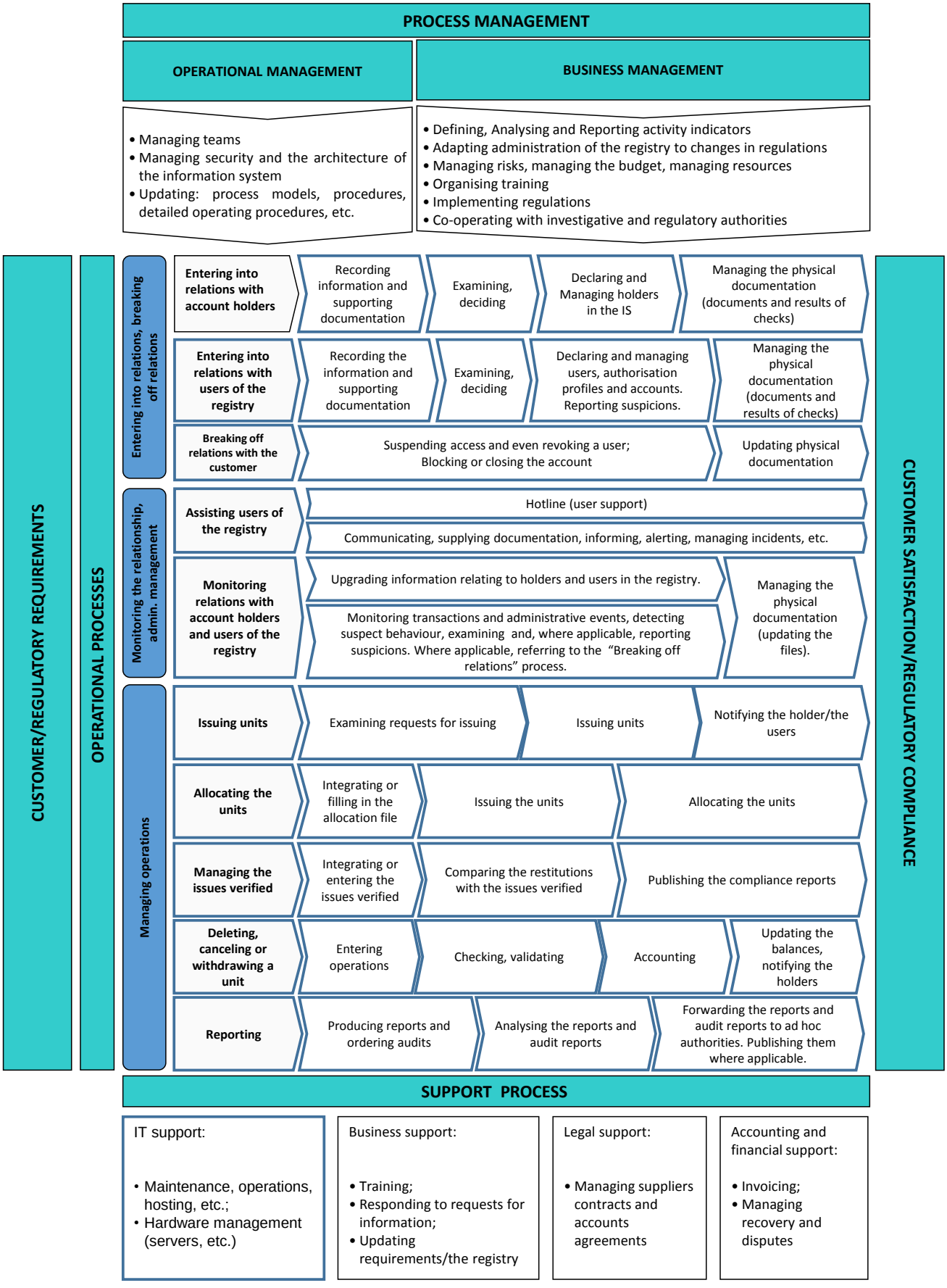
[7] The Spanish Office of Climate Change is a General Directorate of the Ministry of Agriculture, Food and the Environment.

[8] Source: http://www.v-c-s.org/sites/v-c-s.org/files/Registration%20and%20Issuance%20Process,%20v3.6%280%29.pdf

[9] Source: http://danishbusinessauthority.dk/the_eu_ets_registry

- Management processes, on the upper part of the diagram: these processes result in decisions from the registry administrator on its operational strategy and business directions.
- Operational processes, on the central part of the diagram: these processes represent the core registry administration activities: monitoring the relationship with users, and managing registry operations;
- Supporting processes, at the bottom of the diagram: these processes represent the activities that support the operational processes with the resources required for their proper execution.

Figure 1: Indicative mapping of registry administration processes



3.2. Resources and costs

Depending on the contribution level from the public budget, financial arrangements for registry administration may vary. Proceeds from potential sales and/or auctions of emissions allowances by the regulator (e.g. ETS) may also provide resources to (partly) cover the costs incurred. The structure of the registry fee scheme, which represents the costs borne by registry users (i.e. account holders), can also take a number of forms (e.g. flat-rate, transaction-based, differentiation based on user categories etc.)

3.2.1. Staffing

We will distinguish here between managing staff and operating staff.

Managing staff

Managing the registry administration team will especially require performing the following tasks:

- Daily supervision of management operations for the registry, processed by the team of managers, carrying out arbitrages and determining the management orientations, ensuring compliance with the administrative deadlines for dealing with requests and, more generally speaking, dealing with the quality of the registry administrator's provision of service;
- Being the direct contact person for the regulatory authorities to whom he/she reports the activity, and for the other ministerial entities that have relations with the registry;
- Representing the registry outside of the department: national and international bodies, at the request of the regulatory authorities;
- Producing activity statistics for the registry every month;
- Managing the execution of the KYC (Know Your Customer) processes: entering into relations and monitoring relations, particularly updating supporting documentation, and monitoring compliance operations;
- Periodically organizing a statistical check of the accounts based on their historic profiling (detection of atypical levels of activities, etc.);
- Supervising tests of the new tool and exchanges with the supplier of the Registry, under the framework of the development of the IT system;
- Supervising management of customer relations, and monitoring any incidents and disputes;
- Proposing improvements (rules of the mechanism, functioning of the registry, etc.);
- Identifying and managing major malfunctions.
- Identifying and managing suspicious activities such as tax avoidance, evasion or fraud, money laundering, sanctions avoidance, theft etc.

In order to properly perform these tasks successfully, the following skills are essential:

- Legal skills;
- Rigorousness in maintaining the confidential nature of the information;
- Very good qualities in terms of interpersonal relations, organizational skills, and document drafting skills;
- Managerial capacity, ability to make decisions;
- Passion for team work;

- Ability to adapt to peak periods of activity;
- Knowledge of the stakes linked to sustainable development and knowledge of the Sustainable Development Orientation Law;
- Knowledge of how a registry or something equivalent functions (accountancy, maintaining/keeping an account, etc.);
- Ability to use IT systems and mastery of standard officeware tools;
- Knowledge of back-office management methods;
- Understanding of Quality Assurance mechanisms
- Independence and rigorousness;

Operating staff

Operating registry administration under the management authority requires both multi-tasking for everyday tasks involving intervention on the registry, as well as specialization for certain tasks - such as the checks performed prior to account opening or unit issuance.

Operational continuity must be ensured, and takes priority over the allocation of tasks as initially planned.

Therefore, operating the registry mainly requires the following tasks:

- Managing the regulatory operations set out in the texts implementing the Sustainable Development Orientation Law: issuing sustainable development loans, opening accounts, etc.
    - Handling administrative tasks: setting account parameters, and opening, closing and updating accounts;
    - Informing customers of changes in regulations;
    - Managing relations with the regulatory authorities and inspection bodies;
    - Where applicable, producing specific reports (monitoring sensitive operations, disputes, etc.);
- Updating documentation (requested from customers and making updated documents available)
- Ensuring compliance checks on customer files by implementing the KYC (Know Your Customer) criteria:
    - Checking the comprehensiveness of each of the customer files concerned (pre-existing customers or requests for opening new accounts);
    - Making individualized requests for the additional documents required, where applicable;
    - Monitoring the use of procedures and following up as appropriate;
    - Checking the compliance of the documents received;
    - Reporting inconsistencies and instances of non-compliance;
- Keeping accounts: updating, activating or deactivating the account opened and to be opened in the registry;
    - Periodically checking movements under the framework of risk prevention (fraud, money laundering, theft, etc.) and normal surveillance of operations;
    - Updating, improving and drawing up the procedures applicable to the activity;
    - Managing authorizations to use the registry;
    - Applying the procedures (e.g. for opening accounts);
    - Advising management when procedures need updating;

    - Providing feedback about anomalies in the software in relation to the supplier of the registry;
    - Ensuring support and technical advice functions to users of the registry.
- Managing assistance provided to customers;
    - Drawing up and updating Frequently Asked Questions (FAQ) to be put together in particular with a view to starting up the registry system;
    - Ensuring telephone Hotline services and e-mail services during opening hours: answering customers and enhancing the FAQ where need be;
    - Quickly reporting incidents and keeping a summary report of the incidents that have occurred up to date;
- Ensuring regular reporting to the manager of the registry and his assistant, and referring matters to them in the event of an issue;
- Taking part in team meetings (regulatory changes, IT changes, etc.);
- Proposing improvements to the quality and performance of the service.

These missions require ongoing contact with multiple external contacts and with support services.

In order to properly perform these tasks successfully, the following skills are essential:

- Demonstrate great rigorousness and keeping the information confidential.
- To follow the confidentiality rules and, where applicable, the professional ethics measures specific to the activity;
- Demonstrate an interest in issues relating to environmental goals;
- Show proven experience in terms of middle office and/or back office control procedures;
- Demonstrate good personal relations and organisational qualities;
- Demonstrate a feel for good customer relations;
- Demonstrate ability to adapt to a cyclic activity and to a market environment exposed to specific risks;
- Demonstrate ability to use, and a passion for, IT systems and mastery of standard officeware tools;
- Demonstrate independence, rigorousness, and the capacity to take the initiative and work in a team.

3.2.2. Registry fees

In order to generate financial resources for the administration and maintenance of the registry, a potential solution consists of charging for a range of registry operations and services. However, charging for registry services will also generate a specific workload to produce and mail invoices, to monitor payments received and in some cases, to handle contentious situations.

Table 3 below provides an overview of different operations and services which can be charged to registry users, and includes examples from existing registries.

Table 3 – Overview of fees in existing registries[10]

Registry Service	Example of registry and cost
Account opening (charged once)	- Max./Min ratio: 18 - Min. - Max Values[11]: USD 110 to 2,000
- Climate Action Reserve: USD 500 - France: EUR 600 (USD 666) to EUR 1,800 (USD 2,000) - Ireland: EUR 350 (USD 388,9) - Croatia: KN 750 (USD 110,5) [12] - UK: GBP 190 (USD 297,2) none for compliant entities[13] - No fee in Belgium	
Account Management (annual fee)	- Max./Min ratio: 54 - Values: USD 55 to 3,000
- Climate Action Reserve: USD 500 per account and per year[14] - France: from EUR 360 (USD 400) to EUR 3,000 (USD 3,333) [15] - Austria: fixed fee (USD 278 to USD 1,666 depending on the type of Account Holder) plus a variable fee proportional to verified emissions[16] - Germany: EUR 400 (USD 444) per account for the 2013-2020 commitment period (except for operators account) i.e. USD 55,6 per account and per year [17] - Norway: NOK 1,200 (USD 146,2) per account and per year (except for operators account which do not have to pay that fee)[18] - Belgium: EUR 548,99 (USD 610) per account and per year without any exemption[19] - UK: annual fee of GBP 380 (USD 594,5) except for compliant entities[20] - Some other EU Countries such as Ireland have no annual fee[21] - Gold Standard Foundation: USD 500 per account per year	
Issuance / Labelling of unit(s)	- Max./Min ratio: 11 - Values: USD 0.06 to 0.65

- Climate Action Reserve charges USD 0.22 per unit
- Gold Standard Foundation: USD 0.65 per credit issued (including registration fee) [22]
- VCSA (collected by registry administrators which may also apply their own additional fees):
  ○ USD 0.05 per VCU for a CCB label (in addition to issuance fee)[23]
  ○ USD 0.10 per VCU for the first 1 million VCUs
  ○ USD 0.09 per VCU for an additional 1 million VCUs	

[10] Source for currency exchange rates: http://www.xe.com/fr/currency/hrk-croatian-kuna?c=EUR – average rate as of year 2015 calculated on 2015, august the 15th.

[11] Minimum value will be considered as the lowest but different from zero applicable fee.

[12] Source: http://www.azo.hr/HowMuchIs

[13] Operators and aircraft operators

[14] Source: http://www.climateactionreserve.org/how/program/program-fees/

[15] Source: http://www.seringas.caissedesdepots.fr/sites/www.seringas.caissedesdepots.fr/IMG/pdf/5.fr_tarif2014.pdf

[16] Source: http://www.emissionshandelsregister.at/ms/emissionshandelsregister/en/en_ehr_unionregistry/ehren_fees/

[17] Source: http://www.dehst.de/SharedDocs/Downloads/EN/Registry/Account-person-holding-trading.pdf?__blob=publicationFile

[18] Source: http://www.kvoteregister.no/docs/Terms%20and%20conditions.pdf

[19] Source: http://www.climateregistry.be/EN/BE/accounts.htm

[20] Source: https://www.gov.uk/guidance/eu-ets-charges

[21] Source: http://www.epa.ie/climate/emissionstrading/union%20registry/access/#.VctPNPnDHhE

[22] Source: http://www.goldstandard.org/wp-content/uploads/2013/01/v2.2_ANNEX-L.pdf

[23] CCB Standard fee schedule as of 1, July 2015.

	○ USD 0.08 per VCU for the subsequent 2 million VCUs ○ USD 0.06 per each VCU issued over 4 million
Conversion of unit	- Max./Min ratio: NS - Values: NS
- VCS: USD 0.05 per unit converted from another GHG program into VCUs	
Holding	- Max./Min ratio: NS - Values: NS
- Slovakia: EUR 0.015 (USD 0.023) per unit held on each account.	
Transfer	- Max./Min ratio: 4 - Values: USD 0.01 to 0.04 per unit
- Climate Action Reserve: USD 0.03 per unit paid by the transferor (i.e. seller) - Alberta Emission Performance Credit Registry: CAD 0.02 (USD 0.02) per unit transferred. No fee for intra-company transfers. Export: CAD 0.05 (USD 0.04) per unit. There is a minimum of CAD 50 (USD 38) per transaction; - Gold Standard Foundation: USD 0.01 per credit, paid by the transferor	
Retirement	- Max./Min ratio: NS - Values: NS
- Alberta Emission Performance Credit Registry: CAD 0.05 per unit retired for compliance purpose; no fee for voluntary retirements - Climate Action Reserve: no fee for retirement	
Verified Emissions	- Max./Min ratio: NS - Values: NS
- France: EUR 0.0104 (USD 0.0116) to EUR 0.056 (USD 0.562) per tCO2e emitted - Austria: variable account maintenance fees (USD 0.00001 to USD 1.991 per ton) based on verified emissions.	
Change in authorized representatives[24]	- Max./Min ratio: 1.3 - Values: USD 86 to 111
- Ireland: EUR 100 (USD 111,1) per application to change account details and/or authorized representatives further to account opening [25] - United Kingdom: GBP 55 (USD 86) except for compliant entities - Most other EU Member States (e.g. France): no fee	
Periodical Review of Documentation (KYC)	- Max./Min ratio: NS - Values: NS
- France: 1,250 EUR (USD 1,389) to EUR 3,792 (USD 4,213) per account holder and EUR 300 (USD 333) per user for each documentation review	

Notes:

- Administrators of others IT systems connected to transaction registries, such as project databases or repository of agreed verifiers, may also charge registration fees or listing fees which are not included in the above table.
- Regulators may also charge compliance participants for services related to the reporting of GHG emissions. For example, the UK regulator charges for collecting monitoring plans

[24] Some Registries may provide functions enabling account holders to manage users authorizations and privileges by their own and at their own risk.

[25] Applicable to aircraft operators only, see: http://www.epa.ie/climate/emissionstrading/union%20registry/access/#.VctPNPnDHhE

(e.g. aircraft operators). Part of those fees are also meant to cover for registry costs, but such arrangements avoid further invoicing operations which come at a cost. Regulators (e.g. Scotland, Northern Ireland etc.) collect such fees and then use the resulting proceeds to pay the Environment Agency for its registry services.

The review of the fee structure across a number of existing registries shows that:

- Not all registry fee schedules are publicly available (e.g. VCS Registries supported by APX and Markit);
- Some registries provide their services for free (e.g. New Zealand) or divide their costs by the number of accounts and subsequently charge an annual fee revised each year (e.g. Belgium);
- Registries supporting the same Market Mechanism and using the same IT tools (e.g. EU ETS national registries[26]), may apply significantly different fee schedules: The same service may be provided for free in one registry, while other registries charge this service at different prices, and sometimes apply different exemption rules.

Decision making regarding the fee structure may consider the following parameters:

- **[E&A] Equity of treatment and acceptability of prices:** a balance may have to be found, so that less active entities participating in the Market Mechanism pay less than the major players. However, if this approach leads to disproportionate prices, acceptability issues may arise.

- **[P&T] Predictability and timing of revenue to recover registry costs:** the fees charged during the whole life-cycle of a carbon unit start with registration fees, possibly proportional to the expected issuance volumes (e.g. in the CDM registry[27]). Up to several years later, issuance fees, transfer fees will be charged either to the transferor or to the transferee. Lastly, retirement fees may be charged to the transferor. For the registry administrator it may be very challenging to predict volumes (issued, transferred, retired) and when these transactions will occur, especially regardingthe predictability of incomes resulting from account maintenance fees.

- **[C] Complexity**: the more complex the fee structure, the more complex it is to manage invoicing, and the larger the likelihood for operational mistakes to occur. Some registries made the choice to keep it simple with one a unique fee to recover all of their costs.

- **[Et] Declination of ethical choices:** the right balance between having “each citizen pay” to tackle climate change (e.g. New Zealand[28] will not charge any registry service) which includes covering registry costs (e.g. through tax and hence national budget) and “the polluters pay principle” has to be considered. Another approach consists of charging for

[26] Source: http://ec.europa.eu/clima/policies/ets/registry/documentation_en.htm

[27] https://cdm.unfccc.int/Reference/Guidclarif/reg/reg_guid07.pdf

[28] www.eur.govt.nz/how-to/guides-hmtl/guide-to-registering-as-a-user see Q&A: “Will registering cost me anything? No."

participation in the Market Mechanism as a whole without any additional registry-specific fee (e.g. Shenzhen, China).

Table 4 below outlines pros and cons of the various types of fees which may apply to registry administration services (i.e. as listed in Table 3).

Table 4 – Comparing registry fee schedules

Registry Service	Pros	Cons
Account opening (charged once)	- [E&A] Incomes are correlated with the costs of account opening (KYC checks)	- [P&T] Low predictability of incomes - [P&T] No contribution to on-going operational costs
Account Management (annual fee)	- [E&A] Can be based on expected use of the account[29]; - [P&T] Predictable incomes	- [E&A]Acceptability: Not always correlated to the use of registry services by account holders
Issuance of unit(s)	- [E&A] If price is proportional to the amount issued, this fee contributes to a proportionate share of registry costs among market participants	- [E&A] This fee is charged while market participants may not have yet found a buyer for the units issued, as opposed to retirement fees - [E&A] Likely to affect obligated more than market participants - [P&T] Low predictability of incomes
Conversion of unit	- [E&A] Incomes correlated with the intervention of the registry administrator	- [E&A] Likely to affect obligated more than market participants - [P&T] Low predictability of incomes
Holding	- [E&A] If proportional to the amount held, contributes to an equitable share of registry costs among market participants - [P&T] High predictability of incomes	- [P&T] If registries are connected, may incentivize users to pool the units they hold within the cheaper registry
Transfer	- [E&A] If proportional to the amount transferred, contributes to a proportionate share of registry costs among market participants	- [E&A] Likely to affect market more than compliant participants; - [P&T] Low predictability of incomes
Retirement	- [E&A] Acceptability: the value of the retirement (either regulatory compliance possibly avoiding a penalty or voluntary offset) is presumably significantly higher than applicable registry fees - [P&T] High predictability of incomes in the case of an ETS	- [E&A] Likely to affect compliant more than market participants - [P&T] Timing: incomes occur at the end of the units' lifecycle, whereas registry costs occur mainly at the beginning of units' lifecycle
Verified Emissions	- [Et] Complies with the "polluters pay principle" - [P&T] Predictable incomes - [E&A] Contributes to a proportionate share of registry costs among market participants	- [E&A] Acceptability: not directly linked to the use of registry services - [E&A] Likely to affect obligated more than market participants - [P&T] Aiming at reducing GHG emissions, this source of income is slated to diminish over time
Change authorized representatives	- [E&A] Incomes are correlated with the intervention of the registry administrator	- [C] Counting for such interventions may be complex - [P&T] Low predictability of incomes
Periodical Review of Documentation (KYC)	- [P&T] Incomes are predictable and correlated with the intervention of the registry administrator and contributing to the system's security	- [C] Counting for such interventions may be complex

[29] See Section « Proportioned checks and monitoring ».

Table 4 above shows the complexity related to establishing a fees schedule which can both provide certainty regarding the timing (and amount) of revenue without adding complexity to the administration of the registry, and ensure that transaction costs paid by registry users remain acceptable and appropriate.

In most to all cases, fee schedules are reviewed periodically and are subject to change, enabling progressive improvement of the balance between those criteria.

3.2.3. Running costs

Staffing costs are one substantial cost component for a registry administrator. Table 5 below provides a tentative estimate of the workload involved:

Table 5 - Breakdown of the workload linked to registry administration (case of an ETS)

	Managing staff	Operating staff	Example of key tasks
Users application management	10%	30%	Documentation collection, control, and updating etc.
Users hotline	0%	50%	System upgrades, forgotten passwords, guidance etc.
Day-to-day registry operations	10%	20%	Manual system operations, reporting etc.
Management	80%	0%	Managing teams, regulatory monitoring, relations with the authorities etc.

Below 500 users, it is estimated that at least two to three people are necessary to ensure on-going availability during the hotline's opening hours. Above and beyond 500 users, additional staff may be required to provide hotline services.

Among the various options available for reducing the workload of the registry administrator, the following may be mentioned:

- The standardization of tasks, which requires to formalize administrative procedures
- The computerization of tasks
- The publication of training and support material

In addition, certain tasks may be subcontracted, in particular those related to IT, hotline, or invoicing aspects.

4. Options to reduce registry administration costs

On a daily basis, administration of the registry may involve a substantial workload, especially due to unexpected events and users' demands. Quite frequently, the routine work such as KYC checks or basic system operations have to be interrupted in order to manage urgent demands from line management, authorities or users. One outcome of this is, for example, that the processing of one particular file may be carried out by several different staff. In this context, it may sometimes be challenging for the registry administrator to comply with tight processing deadlines and requirements imposed by regulation, while continuing to offer a high and even quality of service to users.

The following section provides a few "technical" options to deal with this issue, keeping in mind that none of them may substitute to the diligence and involvement of the registry administrator's management and staff.

4.1. Formalizing operational procedures

Each of the activities involved in registry management may be subject to a formalized procedure. Applying formal Quality Assurance systems demands resources, but can help to structure the internal documentation (e.g. processes, procedures, operating instructions). In case of an issue, having an externally audited Quality Assurance system in place may also prove helpful. It is possible to draw good practices from such standard without investing in any formal certification.

Procedure indicates what has to be done, how to do it and, where applicable, whether double validation (i.e. by another staff) is necessary. When sensitive activities such as "Know Your Customer" checks are performed, it is also useful to follow an operating instruction listing all the controls to be performed and outcome expected.

For example, the UNFCCC Secretariat is developing a quality management scheme based on ISO 27000[30] for information security management which is expected to be approved at the COP/MOP in Paris in December 2015. ISO 9001[31] is another quality management standard used by a number of registry administrators (e.g. France's CDC and the UK's Environment Agency.). It is important to note, however, that for the time being none of these registries are required by law to comply with quality management standards such as ISO 9001 or ISO 27000.

A further step in formalization consists of performing some procedures and operating instructions using IT systems. This may improve effectiveness and equity of treatment of all users, while reducing the risk of operational errors.

[30] Source: http://www.iso.org/iso/home/standards/management-standards/iso27001.htm?=

[31] Source: http://www.iso.org/iso/iso_9000

4.2. Applying proportional control and monitoring

As part of the application process, it may be asked from the prospective account holder to provide an estimate of its activity in the registry (e.g. number of transactions, amount of units held). Such information will then allow the administrator to perform KYC checks and transactions monitoring in a way that is proportional to the related risk related to the estimated user's activity. This may reduce costs for the registry administrator, but also for applicants which is of particular importance for small and medium sized entities. This option may require that the registry IT records these estimated figures, and block the account when limits are reached.

4.3. Computerizing operational tasks

4.3.1. Exchanges of information with registry users

Part of the workload when setting-up new users or periodically updating files mainly consists of following-up with them to obtain missing, incomplete, or non-compliant documents. Such administrative workflow generates a significant workload, which is proportionate to the number users and to the variety of their profile (e.g. compliant entities vs. banks) and jurisdictions of origin. So are the risk of human error and delayed action by the registry administrator.

Computerizing these tasks enables some of this workload to be transferred to the user, and enables the automation of exhaustive controls (e.g. missing documents) and follow-up notification (e.g. out-of-date documents). Another advantage related to automating this workflow is that is facilitates monitoring of the state of progress such as the identification of the files for which processing takes too much time, or spreading the allocation of files for processing to staff. Finally, connecting such a supportive IT system to the registry further increases the efficiency of business processes and data consistency.

REMA (Registry Management) is one example of such Customer Relationship Management (CRM) tool and was developed by the Belgian Registry Management team (part of the Belgian Ministry of Food and the Environment). It is licenced - free of charge - to several EU Member States.

4.3.2. Monitoring of account activity

If the volumes of transactions and the number of administrative events (i.e. change in user, opening/closure of accounts etc.) are substantial, monitoring them to detect suspicious forms of behaviour may be complex and time-consuming, in particular if the registry is connected to other registries. Using supporting tools to monitor transactions may help deal with both issues.

Examples include:

- Germany has created a German analYsis Module (GYM) used to monitor transaction and identify the fraudulent ones;

- Denmark has automated the UK's risk analysis procedure for new accounts and users. This module cross-checks the information received by the registry with that held in the Danish Business Authority, and person and tax registers to ensure the reliability and accuracy of such information held.

Connecting such tools to the registry IT and quality systems further increases their reliability, equity of treatment of all account opening applications received, and their contribution to registry administration operational efficiency. For example, the UK is developing an online application process which would check the integrity of requests to open accounts, appoint users or alter registered data. The system will use a mixture of public, commercial and government sources to confirm 80%+ of submitted data (95% of UK data). The objective is to reduce the administrative effort currently spent checking supplied documentation manually. The process will be similar to that used by the US government visa waiver system[32] and the UK Financial Conduct Authority[33]. Final decisions would still be made by the registry administrator.

4.4. Training material and communication supports

Providing registry users with a set of guidance documents and other training supports reduces the amount of incoming calls on the registry user hotline. Initial activity and feedback from the hotline can help estimate the needs for such material. A number of options exist to develop training material and communication supports, ranging from simple step-by-step operating procedures (e.g. incl. screenshots) to video tutorials or live training sessions either face-to-face or on-line which allow for real-time interactions between users and the registry administrator.

A few examples of such training supports are provided below:

- California Air Resource Board provides User Guides and User Reference Documents available online, and also proposes training webinars[34];
- The European Commission provides EU Registry users with a « first time registry user video"[35] available online.

Conclusion

The nature, scope, scale and complexity of the Market Mechanism dictates the responsibilities of registry administrators, ranging – in the lower end of the scale – from operational, accounting and reporting operations, to additional task related to reinforced users controls and registry activity oversight – in the upper end of the scale. While existing experience shows a diversity of entities in charge of registry administration nonetheless, several common principles remain: compliance with regulation, independence, and acceptable costs.

---

[32] https://esta.cbp.dhs.gov/esta/

[33] https://www.gov.uk/registration-with-the-financial-conduct-authority

[34] Source: http://www.arb.ca.gov/cc/capandtrade/markettrackingsystem/markettrackingsystem.htm

[35] http://ec.europa.eu/clima/sites/registry/media/1-FirstTimeUser.mp4

5. Common recommendations and guidance on the development of an institutional frameworks for registry administration

Table 6 – Matching recommendations for registry legal framework and administration

	Establishing a legal framework for registries	Implementing registry administration
(a)	Build the Register/Registry in a manner commensurate with the nature, scope and scale of the proposed Market Mechanism.	• Assess risks facing registry management and potential mitigation measures.
(b)	Identify what is required to establish the immediate legal framework necessary to support the role of the Register/Registry in the context of the Market Mechanism and the timeframe required to achieve that.	• List the tasks and operations to be performed by the registry administrator. • Mandate an appropriate entity to administer the registry (incl. third party). • Empower the registry administrator to perform operations (e.g. refuse to open an account, or to block an account or to revoke a user's right)
(c)	Identify the other areas of laws likely to be impacted by the intended Market Mechanism and identify the necessary responsible entity to address those laws (e.g. ministry of environment, ministry of finance, ministry of trade etc.).	
(d)	Establish a plan to coordinate and consult on issues, obstacles to achieving the necessary changes (e.g. delay, lack of expertise, authority of budget). The changes determined need to be consistent and not conflict with each other with a view to implementing the policy objectives of the Market Mechanism.[36]	• Facilitate cooperation between the registry administrator and relevant authorities (e.g. financial regulator, energy regulator, justice etc.). • Formalize exchanges and reporting (e.g. regular meetings, expert groups etc.)
(e)	Recognise limitations – seek expertise and support where required (including from other government agencies) and do so in a timely manner.	

[36] In a recent special report on 'The integrity and implementation of the EU ETS' by the European Court of Auditors (the "**EU Audit Report**"), the Court concluded, that "At the Commission, the development and operation of the Registry has been a complex project which was hindered by internal coordination issues and resource constraints ..".

(f)	Do not avoid the hard issues (e.g. what is the legal nature of the carbon credit) as, sooner or later, the issue will get highlighted via a market incident where the fallout will be far more difficult to manage.	• Consider user criteria and processes related to registry access in order to benefit from the protection of existing applicable regulations (e.g. financial passport for non-compliant participants) • Consider specific features related to registry use and activity (e.g. limit on the transfers for certain categories of users)
(g)	Ensure the allocation of responsibility, roles of regulators or administrators are clear and unambiguous. It is important that along with the allocation of roles and responsibilities, sufficient budgets are provided to enable their discharge.[37]	• Estimate the resources and costs associated with registry administration – and identify relevant measures and options to reduce them if needed. • Consider options for ensuring the financial viability of registry administration (e.g. budget, fee schedule etc.)
(h)	If the scope of the Market Mechanism is to create a tradable carbon asset, recognise the success of a market product is dependent on the market participant's confidence in it and provide what is necessary to achieve that confidence.	• Set-up robust monitoring and oversight of registry activities

[37] The same EU Audit Report concluded that "that the organizational structure and available resources in the Commission services did not sufficiently facilitate the management and development of the Registry."