



Summer School MRV, Izmir, 2016



Data management of DEHSt under EU ETS, Lessons Set Up and Further Development

29th September 2016

Delia Fahle, Samuel Höller

German Emissions Trading Authority (DEHSt),
Chemical Industry and Industrial Combustion Installations

Outline

- German Emissions Trading Authority (DEHSt)
- IT-Structure of DEHSt
 - Data Collection: Form Management System
 - Data Transfer: Virtual Post Office
 - Data Storage: Records- and Document-Management-System DOMEA®
 - Data Evaluation: Installation Data Base
- Further Processing of Data
- Lessons Learnt

German Emissions Trading Authority (DEHSt)



German Emissions Trading Authority (DEHSt)

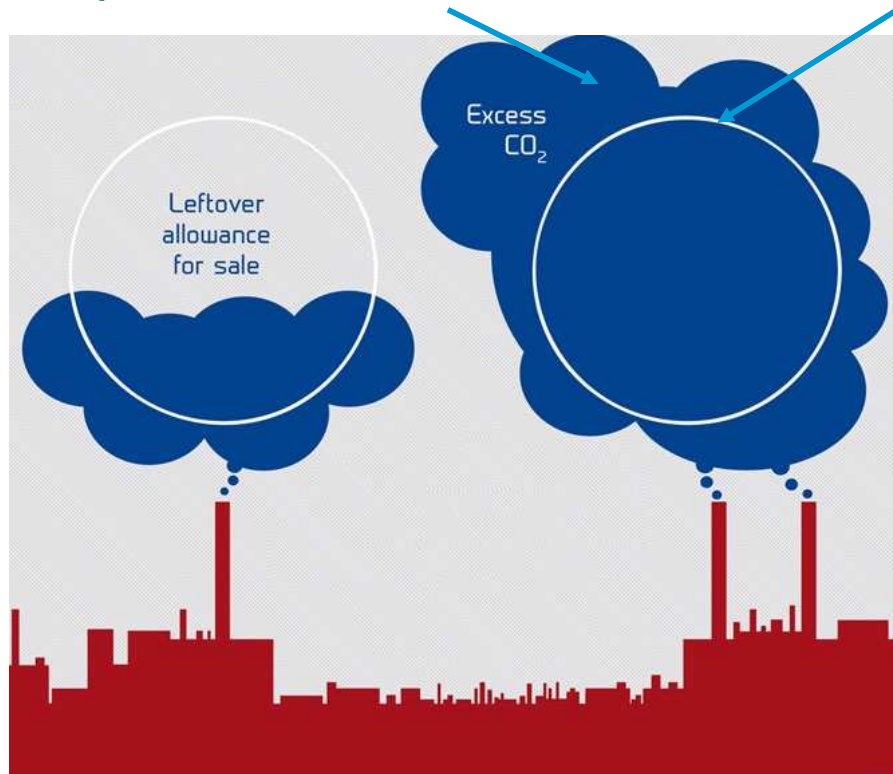
All relevant sectors are combined in our Authority:

- Industrial Sectors (staff of ~50 persons): Knowledge of the industrial processes
- Customer Service: First contact for operators. Service answers a lot of general questions and hence safe capacity of persons in charge.
- Legal Office: in Germany we have a lot of objections against allocation orders or sanctionings of emissions reports. Therefore we have some specialized lawyers.
- Economic Aspects: reporting to EU Commission or public, evaluation and enhancement of ETS
- IT (staff of ~15 persons): Creating or specifying of IT tools. Contact point for IT problems or to external IT experts
- Registry: Administration of EU Registry for German operators

Tasks of DEHSt

Reported Emissions

Free Allocation



Source: odpowiedzialny.lotos.pl (modified)



Source: http://ec.europa.eu/index_en.htm



Source: https://www.dehst.de/DE/Klimaschutzprojekte/klimaschutzprojekte_node.html

Tasks of DEHSt

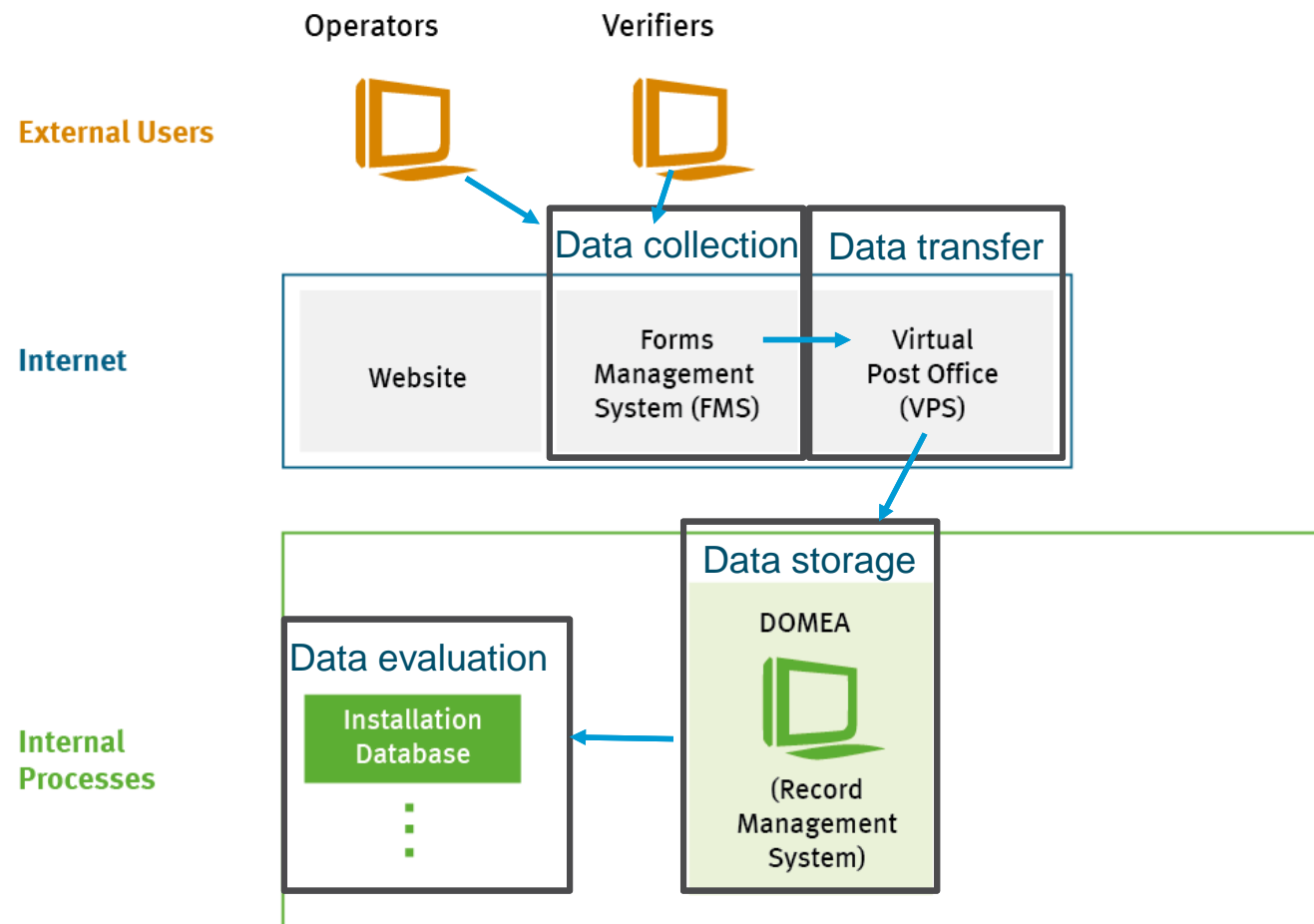
1. Provide the infrastructure for emissions trading in Germany
 - Allocate the EU allowances to installation and aircraft operators
 - Check and examine operators' monitoring plans and reports
 2. Contribute to the development of emissions trading
 - Draft national and international reports
 - Co-operate with EU and UNFCCC
 3. Approve JI and CDM projects
 - Designated National Authority (DNA) / Designated Focal Point (DFP)
- But no trading of certificates

This is How the Compliance Cycle Works in EU ETS



- DEHSt's tasks
- Operator's tasks
- Verifier's tasks

Four Important Aspects of Data Management at DEHSt



IT-Structure of DEHSt Components

Online Services for External Users

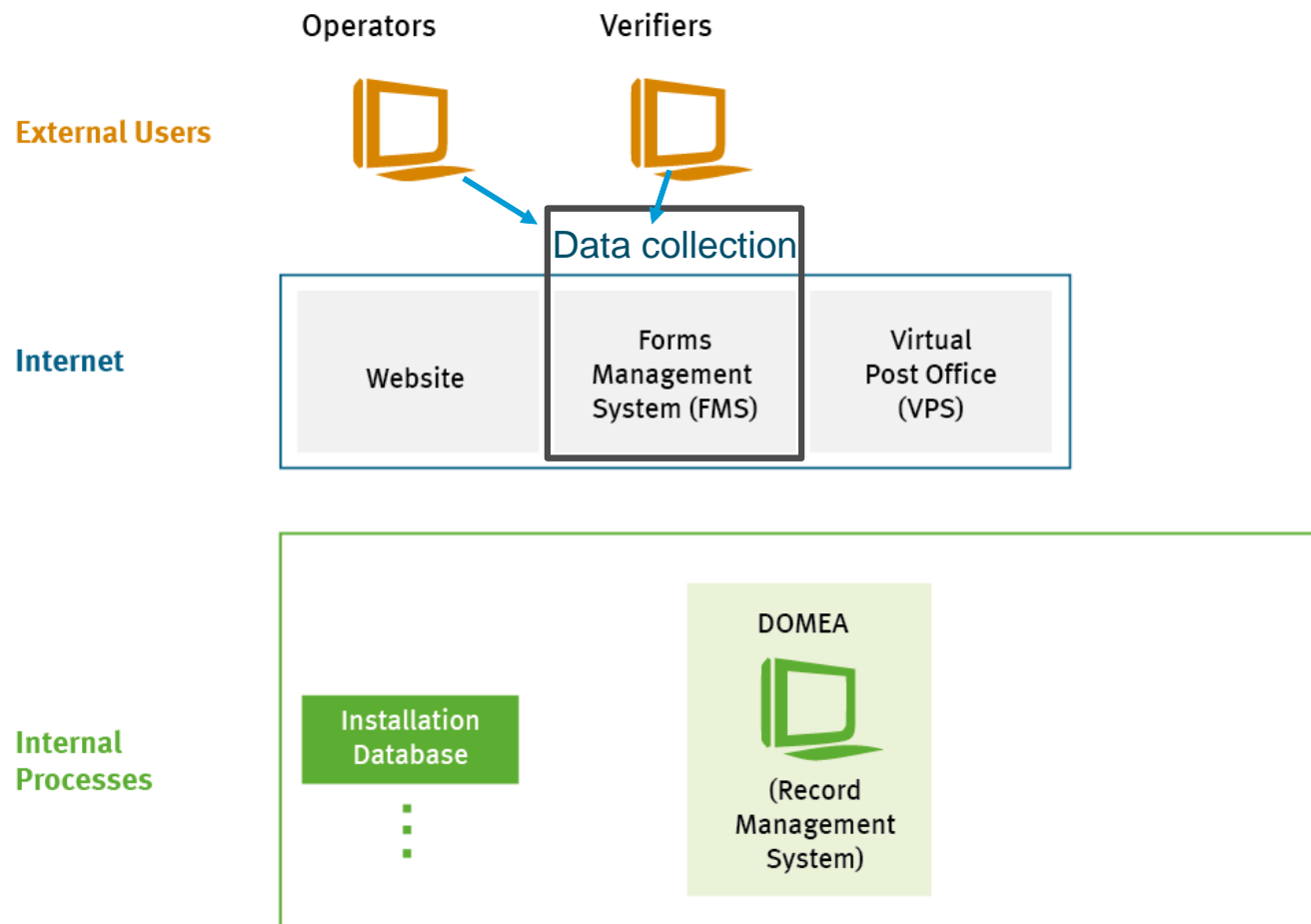
- Data collection: Form-Management-System (FMS) provides electronic forms for data collection
- Data transfer: Virtual Post Office (VPS) supports electronic encryption and signature

Internal Users

- Data storage: Workflow system and document management (DOMEA)
- Data evaluation: Installation data base (ADB)

Data Collection Form-Management-System (FMS)

Operators Provide Data via FMS



Form-Management-System (FMS) is Available via DEHSt Website

The screenshot shows the DEHSt website interface. At the top, the logo for 'Umwelt Bundes Amt' and 'DEHSt' (Deutsche Emissionshandelsstelle) is visible. A navigation bar includes links for 'Kundenservice +49 (0)30 8903 5050', 'Hilfe', 'Kontakt', 'Inhaltsverzeichnis', 'Glossar', 'Presse', 'Über uns', and 'Deutsch'. Below this, a menu bar highlights 'Luftverkehr / Aviation' among other options like 'FMS-Startseite', 'Stationäre Anlagen', and 'Strompreiskompensation'. The main content area is titled 'Formular-Management-System - Luftverkehr / Aviation' and contains several paragraphs of text explaining the system's purpose and usage. A sidebar on the left lists various reporting and monitoring plans. A 'Support' section on the right provides contact information for telephone, fax, email, and internet.

Umwelt Bundes Amt **DEHSt**
Für Mensch und Umwelt Deutsche Emissionshandelsstelle

Kundenservice +49 (0)30 8903 5050 | Hilfe | Kontakt | Inhaltsverzeichnis | Glossar | Presse | Über uns | Deutsch

FMS-Startseite | Stationäre Anlagen | **Luftverkehr / Aviation** | Strompreiskompensation

> FMS-Startseite > **Luftverkehr / Aviation**

Formular-Management-System - Luftverkehr / Aviation

Please, choose on left side the application.

The DEHSt reserves for itself to adapt the versions of the form applications to a new stage of development at any time, to provide further functionalities as well as to optimize or cancel existing functionalities.

As a rule, data which have been entered in the pre-version remain unchanged.

Please note that all applications which are offered over this page have a common user administration at their disposal. You find these under "User Management for the Aviation Sector".

Please note that DEHSt provides its software applications for a certain period of time only. We switch off old applications, which are no longer valid for reporting or applying for allocation. However, should you need access to an old software please contact our [customer service](#).

Support

Telefon, Fax und E-Mail

Telefon: +49 (0)30 8903-5050
Fax: +49 (0)30 8903-5010
E-Mail: emissionstrading@dehst.de
Internet:
www.dehst.de

- > Report Annual Emissions 2013-2020
- > Monitoring Plan Tonne-Kilometre Data 2014 (special reserve)
- > Monitoring Plans for Annual Emissions 2013-2020
- > Report Annual Emissions 2010-2012
- > Monitoring Plan Annual Emissions 2010-2012

www.formulare.dehst.de

(For stationary installations only in German. Aviation in English)

FMS is an Electronic Form to Provide Installation Data

Allgemeine Informationen

DEHSt Aktenzeichen14310-0000

Version(nicht ausgefüllt)

Letzte Änderung28.01.2016

ModusLesemodus

Formularverwaltung

Deckblatt

Betreiber

Versandbevollmächtigter

Zusammenfassung

Betriebsänderungen

Anlage

Ansprechpartner (1)

Produktion (Elektrische Energie)

Produktion (Thermische Energie)

Messgeräte

Messgerät (Track scales manufacture)

Messgerät (Turbine meter manufacture)

Messgerät (Draft survey)

Messgerät (Truck scale manufacture)

Analyseverfahren

Analyseverfahren (Bomb calorimeter)

Analyseverfahren (Radmacher-Hoverat)

Analyseverfahren (Process gas chrom)

Prüfung

Deckblatt

Ein Wert ist erforderlich.

Betriebsänderungen

Ein Wert ist erforderlich.

Ein Wert ist erforderlich.

Überwachungsplan nach § 6 TEHG

Angaben zur Anlage

Name des BetreibersHeater Corporation

Name der AnlageCHP Station Helen Heater

BundeslandRheinland-Pfalz

Nummer der Betriebseinrichtung[Federal State]-[No.]

Angaben zum Überwachungsplan

Hat die Anlage ein DEHSt-Aktenzeichen?☒ ja☐ nein

DEHSt-Aktenzeichen14310-0000

Überwachungsplan ist gültig ab01.01.2013

Werden CO₂-Emissionen überwacht?☒ ja☐ nein

Werden N₂O-Emissionen überwacht?☐ ja☒ nein

Example of an Emissions Report Made by Operator

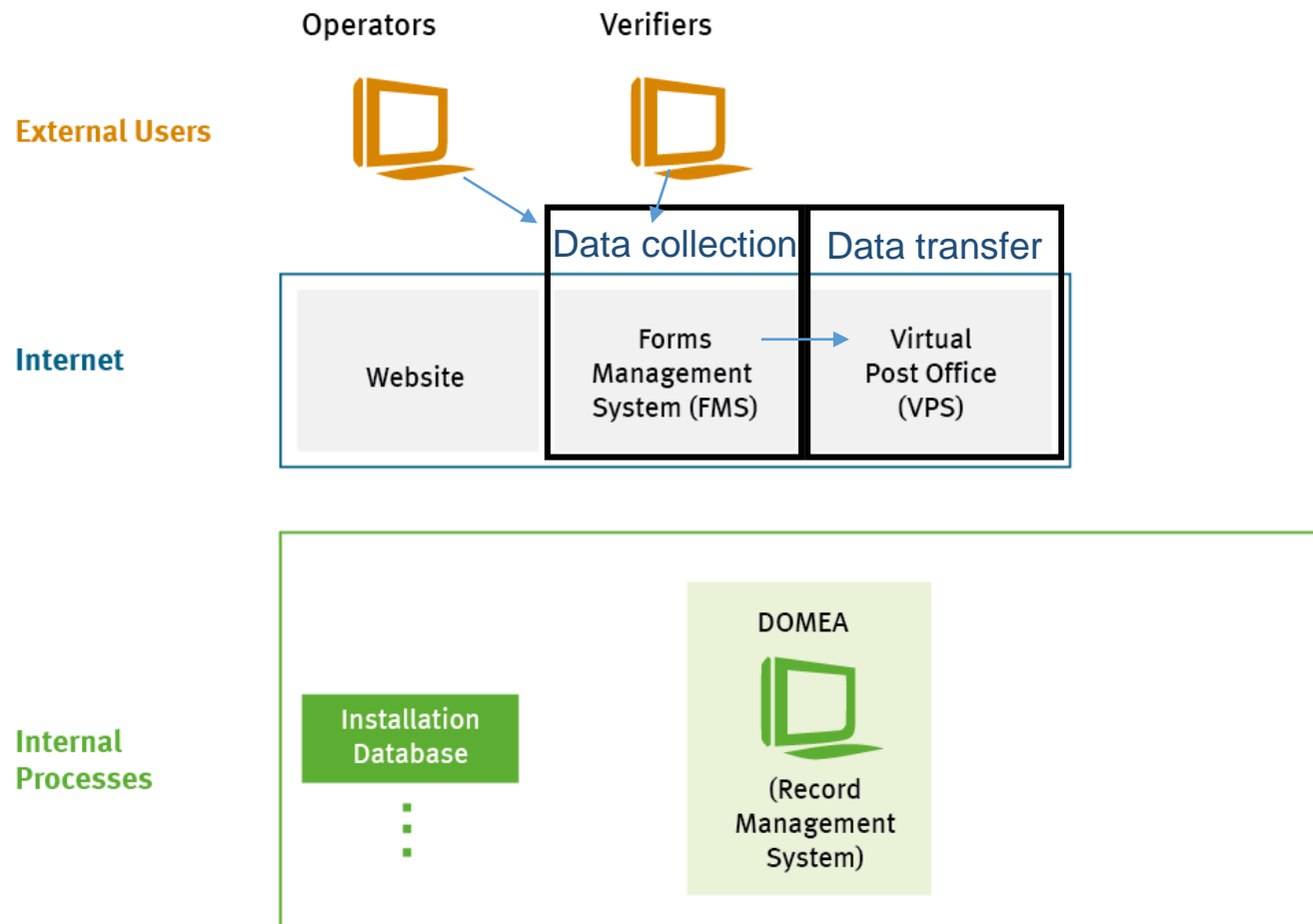
FUEL STREAM (EMISSION FACTOR RELATED TO CALORIFIC VALUE)			
Is there any deviation from the tier of the Monitoring Guidelines (target-tier)?	No.		
Consumed fuel			
Quantity			
Tiers according to the Monitoring Guidelines (target-tier)	121,547.5	t	
Tiers according to the monitoring plan (chosen tier)	4		
Net calorific value			
Value	28.3380	GJ/t	Default value 28.3000
Tiers according to the Monitoring Guidelines (target-tier)	3		
Tiers according to the monitoring plan (chosen tier)	3		
Emission factor			
Value	0.0925	t/GJ	Default value 0.0930
Biomass percentage	00	%	
Tiers according to the Monitoring Guidelines (target-tier)	3		
Tiers according to the monitoring plan (chosen tier)	3		
Oxidation factor	1.0		
CO₂-emissions			
	318608.208	t CO ₂	
The material data is ...	X	appropriate.	not appropriate.
The information about the tiers is...	X	appropriate.	not appropriate.
The report was carried out according to the chosen tier?	X	Yes.	No.

FMS Guides the Operator through the Application

- Server-based electronic system
 - No installation of software on your computer
- Set of forms plus some special selectable forms depending on the type of installation
 - Guides the operator through the system
 - Helps to give all obligatory information
- Automated checks and information on missing or implausible data (forms with missing data are written in red letters)
 - Helps to give all obligatory and plausible information
- Operator and verifier have different access rights
 - Both work on the same data set, but with different write protection
 - No transfer of data necessary

Data Transfer Virtual Post Office (VPS)

Data is Transferred to DEHSt via Virtual Post Office (VPS)



Electronic Communication is Regulated within the Greenhouse Gas Emission Allowance Trading Law

§ 23 Greenhouse Gas Emission Allowance Trading Law:

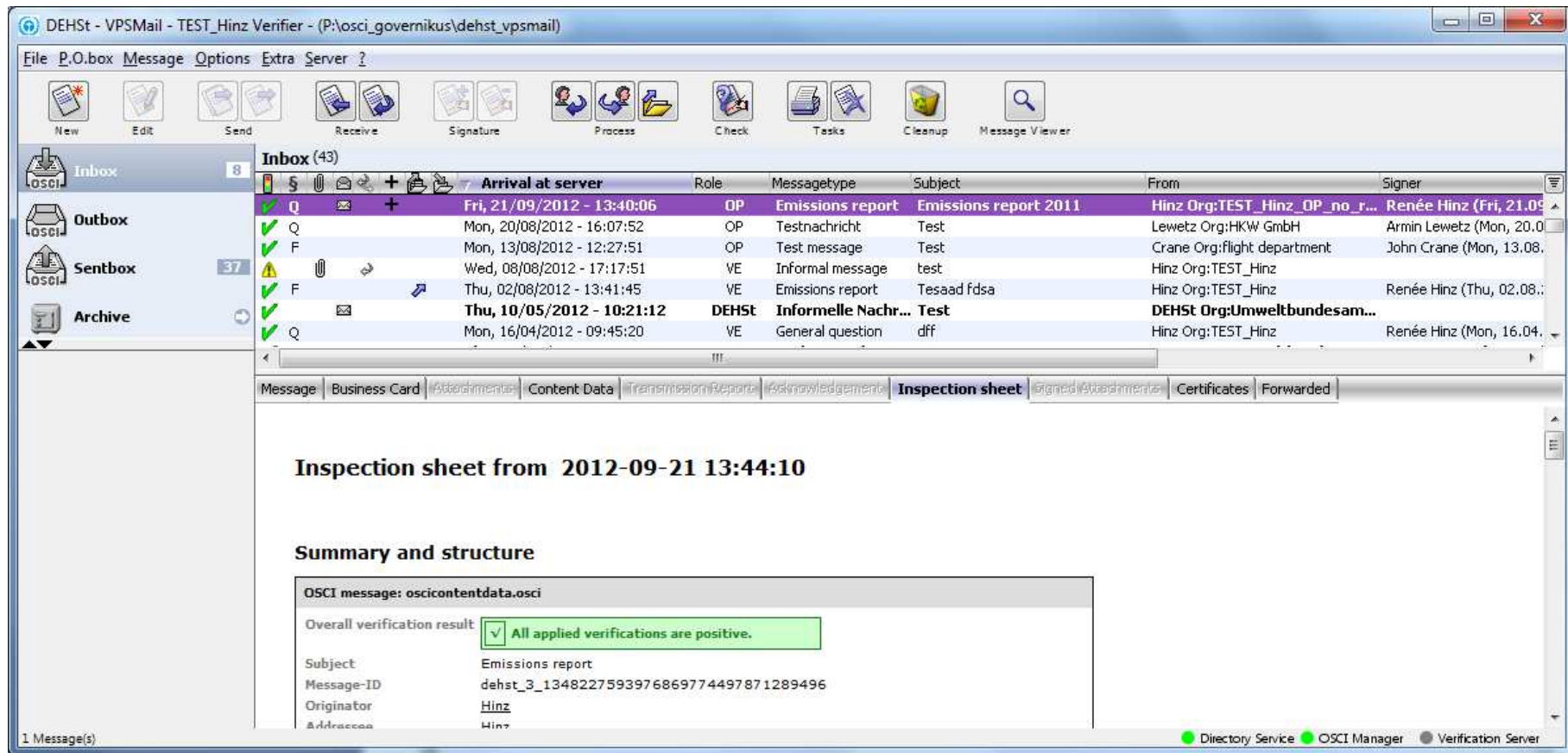
Electronic Communication

The responsible authority may regulate the use of

- Electronic forms → FMS
- Electronic communication and certain encryption → VPS
- Electronic signature according to German laws → VPS

The authority publishes the requirements according to § 23 in the official publication and on the website.

Virtual Post Office (VPS) is a Client Like Outlook



Virtual Post Office Consists of Electronic Signature and Secure Transfer

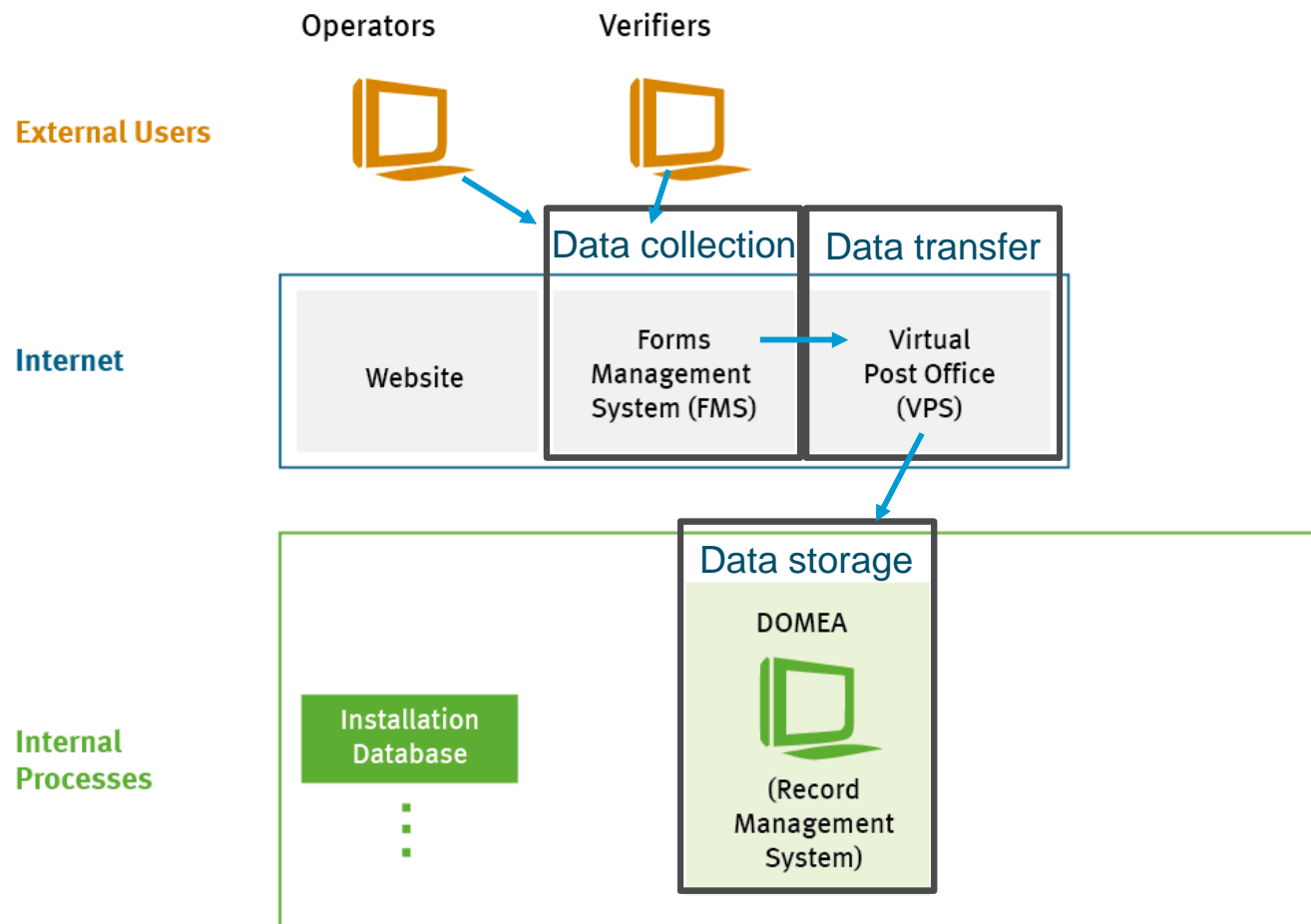
- VPS is the Central security gateway and communication server for German eGovernment

It consists of

- Electronic Signature:
 - Supports legal binding electronic communication according to German law of electronic signature by qualified electronic signature instead of manual signature
- Secure transfer:
 - Enables secure, traceable and confidential electronic communication on base of End-to-End (E2E) encryption technology
- Alternative: Trusted encrypted e-mail, but not within German legislation.

Data storage Record-Management-System (DOMEA)

Received Data is Stored with DOMEA at DEHSt



All Files are Stored Electronically with DOMEA System

- DOMEA means DOcument Management and Electronic Archiving in electronic business
- Implementation of eGovernment from the beginning of ETS in Germany in 2004.
 - Implements electronic file, including registration and archiving
 - Administrates electronic files in an electronic workflow management system
 - Ensures integrity, traceability and lawfulness of administrative actions
 - Provides knowledge transfer within the Administration by giving same access to files for all employees at DEHSt.

→ Electronic file is the leading file

Record View of the Workflow- System of DOMEA

Vollzugsakte --> 14310-0002

Akte ?

14310-0002

- Dokumente (0, 0)
- Historie
- Referenzen (0)
- Vorgänge im Umlauf (10)
 - 14310-0002/101
 - 14310-0002/107
 - 14310-0002/114
 - 14310-0002/116
 - 14310-0002/117
 - 14310-0002/119
 - 14310-0002/121
 - 14310-0002/122
 - 14310-0002/123**
 - Dokumente (0, 2)
 - Historie
 - Prozess
 - Referenzen (0)
 - Akte bei zdA/ Mappen (2)
- Vorgänge zdA (16)
 - 14310-0002/100
 - 14310-0002/98
 - 14310-0002/99
 - 14310-0002/102
 - 14310-0002/103
 - 14310-0002/104
 - 14310-0002/105

Metadaten Standort Dokumente (24) Historie Prozess Info Referenzen (0)

Vorgangszeichen: 14310-0002/123 Erstellt am: 21.02.2014

Prozess: Emissionsberichterstattung Erstellt von: E 1.2

Dringlichkeit:

Vorgangsbetreff: Emissionsbericht 13

Anmerkungen:

Fristen: Fristenverwaltung

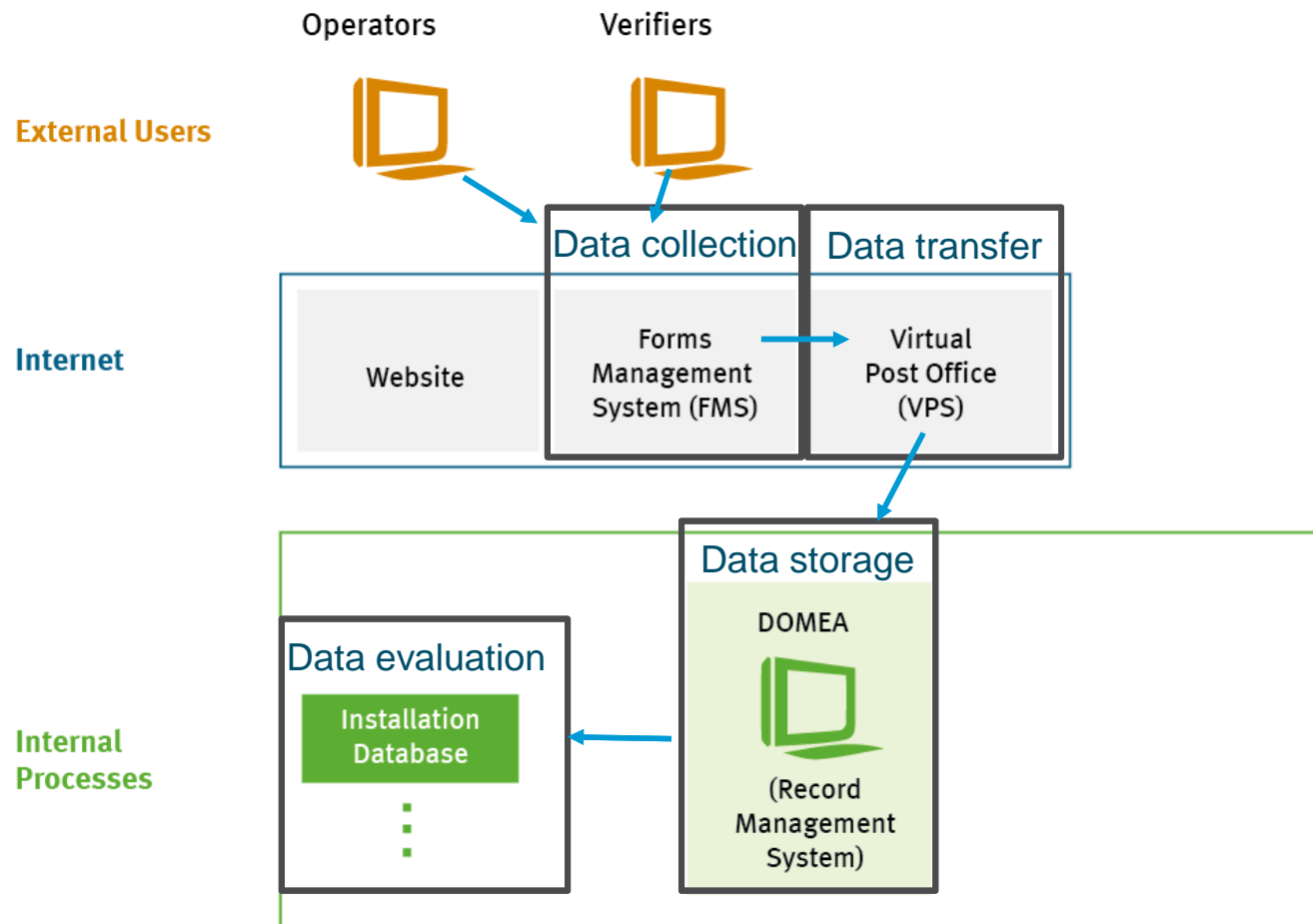
Aktenplaneintrag: Anlagen gem. Anhang 1 Ziff. I - III TEHG Aktenzeichen E 1.4:

Altes Aktenzeichen:

Aktenbetreff:

Data Evaluation Installation Data Base (ADB)

Data Evaluation with the Installation Data Base (ADB)



ADB is a Helpful Tool for Data Evaluation

Vorgänge zum Aktenzeichen

Aktenzeichen:
 Betreiber:
 Anlagenbezeichnung:
 Bearbeiter:

- 2020 Emissionsberichte
 - Emissionsbericht 2014, VNr. 135
 - Arbeitsversion (abgeschlossen (Sb.), Et
 - Emissionsbericht
 - Kraftwerk
 - CO2, Kraftwerk**
 - Zwischenversionen
 - Emissionsbericht 2013, VNr. 130
 - 2020 Überwachungspläne
 - 2020 Mitteilungen zum Betrieb
 - 2020 Ausgangszuteilung

Stoffströme

Prüfen






Herkunft	Stoff (Katalog)	Menge	Einh.	Emissionen [t CO2]	Stoff Nr.	Klassifizierung	Fehler
Verbrennung	Rohbraunkohle	750.889	t	677.432,833	B1	emissionsstark	○○○
Verbrennung	Trockenbraunkohle	2.214,9	t	4.845,593	B5	emissionsschwach	○○○
Verbrennung	Heizöl schwer	5,246	t	16.763,855	B2	De-Minimis	○○○
Verbrennung	HEL	10,8	t	34,092	B6-	De-Minimis	○○○

Parameter **Bezug**

Parameter				Angaben zu Abweichungen	
Name	Wert	Einh.	Ermittlungsmethode	Parameter	Erläuterung
Menge	750.889	t			
EF	0,1128	t/GJ	Analyse		
Hu	7,998	GJ/t	Analyse		
Biogener Anteil	0	% C			
Nachh. Biom.	0	% C			
OxF	1	[1]			
CO2 (FMS)	677.432,833	t			

„ADB“ is the German abbreviation for installation data base.

ADB has Automated Checks to Support Persons in Charge

Übersicht Probleme		Prüfmodul und Ausführungen					
Zeile: <input type="text" value="1"/> von: <input type="text" value="7"/>		 Speichern		 Abbrechen			
		Manuell (Sb.)	FM-Nummer	Elementname	Prüfergebnis	Kommentar Sb.	
▪		<input type="checkbox"/>	PM207_CHK_001_b		Für den Stoffstrom „Ersatzwert für Flüssigbrennstoff“ mit der Nummer 6 ist der Berechnungsparameter EF mit dem Wert 0,26006 außerhalb des festgelegten zulässigen Bereichs (0,0 bis 0,25).		
▪		<input type="checkbox"/>	PM208_CHK_005		Für den Stoffstrom „Heizöl EL nach DIN 51603, Teil 1“ mit der Nummer 1 und der Bezeichnung „Heizöl EL“ wurde angegeben, dass es sich um einen De-Minimis-Stoffstrom handelt. Die aus diesem Stoffstrom resultierenden Emissionen übersteigen aber die für diese Anlage maßgebliche Obergrenze.		
▪		<input type="checkbox"/>	PM205_CHK_002		Der im FMS technisch zugrunde gelegte Überwachungsplan sowie die ggf. weiteren angewandten Überwachungspläne (siehe Reiter „Angaben aus EmB“) liegen nicht in der ADB vor oder sind nicht für das Berichtsjahr 2015 gültig. (Ggf. liegt ein Überwachungsplan in einer Zwischenversion vor, mit Status „Antrag abgelehnt“.)		

ADB is a Helpful Tool for Data Evaluation

- Internal administration of all installations
- Used for different processes, e.g. checking monitoring plans, validation/checking of emissions reports, calculation of allocation
- Offers functions for checking data consistency, completeness and plausibility
 - Statistical analysis (e.g. source stream parameters)
- Information is structured in a different way than in FMS
 - Easier for us to check data:
 - All source streams with most relevant information in one view
 - important for technical understanding of the installation

Automated Checks are Implemented in the ADB

- Automated checks of plausibility of data (e.g. in the emissions report)
 - Check of data of former years
 - Comparison of data with similar installations

➔ Very useful assistance for our daily work!

➔ But: **Database can only check single data!**

Some checks are only possible with technical understanding of the installations/manpower (e.g. completeness of the source streams)

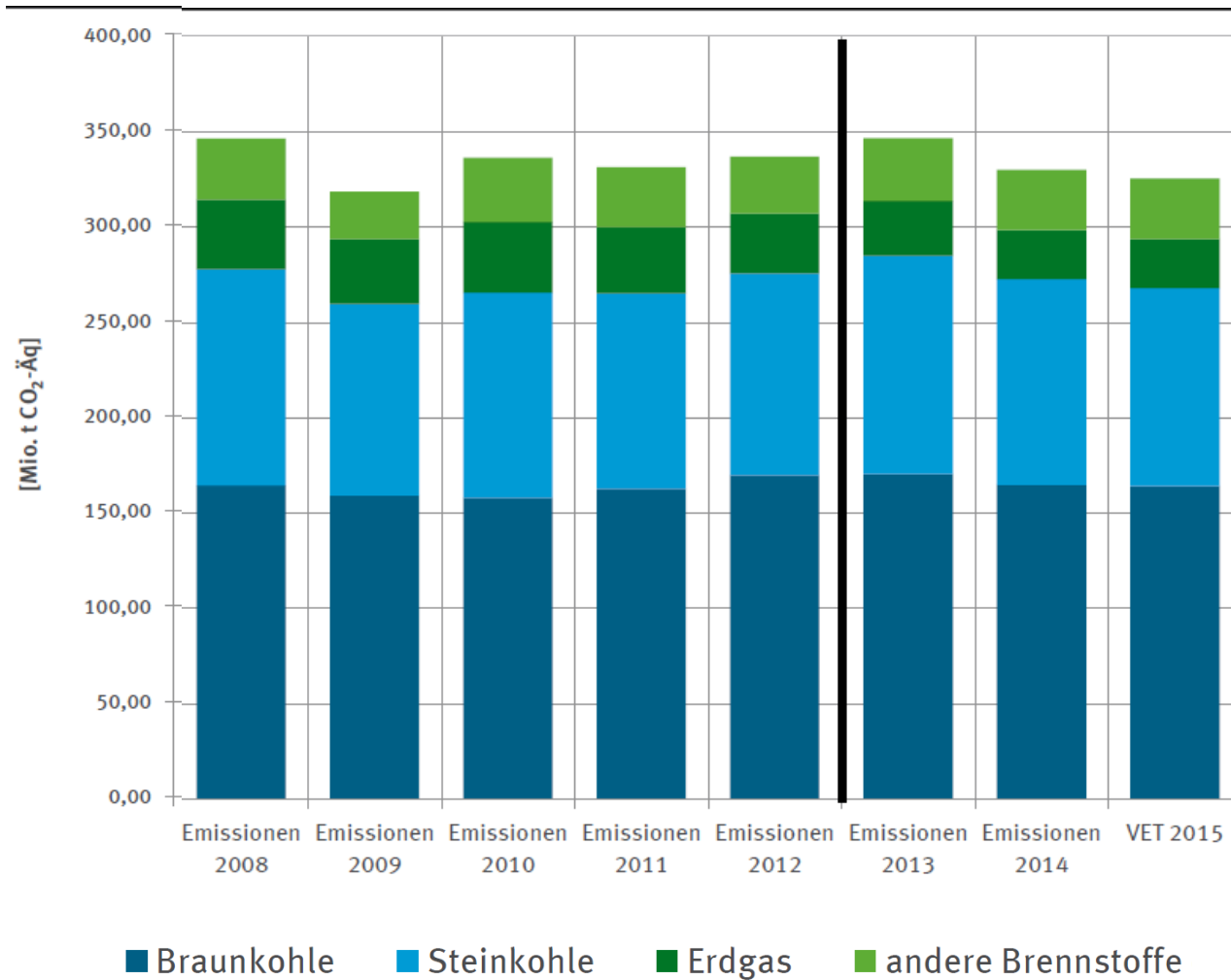
Further Processing of Data

Data Contains Valuable Information for Further Processing of Data and Statistical Analyses

Data from operators is used for three purposes

- Compilation of reports
 - to the public (e.g. yearly emissions)
 - to the EU Commission (e.g. energy content of fuels, amounts of source streams)
- Improvements of the ETS system
 - Creation and development of national standard values for MRV
 - Enhancements for allocation rules (e.g. adjustments of benchmarks)
- Scientific usage of data
 - Careful with confidential data (anonymization and aggregation needed)!
 - Scientific publications

Report on Verified Emissions Table 2015



Data from installations in Germany (VET 2015)

Improvement of ETS: Update of National Values

ANNEX 4: STANDARD FACTORS (DEHST LIST)

a) Fuel	Emission factor	Calorific value	
		t CO ₂ / GJ	GJ/t GJ/1000 Nm ³
Waste tyres (biogenic carbon content 27 %)	0.088	28.2	
Anthracite (heat generation)	0.098	31.5	
Lignite briquette, Lusatia	0.101	19.4	
Lignite briquette, Rhineland	0.099	19.7	
Lignite dust, Lusatia	0.099	21.6	
Lignite dust, Middle Germany	0.098	19.1	
Lignite dust, Rhineland	0.098	22.0	
Diesel fuel	0.0741	42.6	
Natural gas, <u>Altmark</u>	0.056		11.7
Natural gas H			

Source: Guidance for preparing monitoring plans and Emission reports for stationary installations in the 3rd trading period (2013-2020) in Germany

Source: Guidance Document n°9, European Commission



EUROPEAN COMMISSION

DIRECTORATE-GENERAL
CLIMATE ACTION

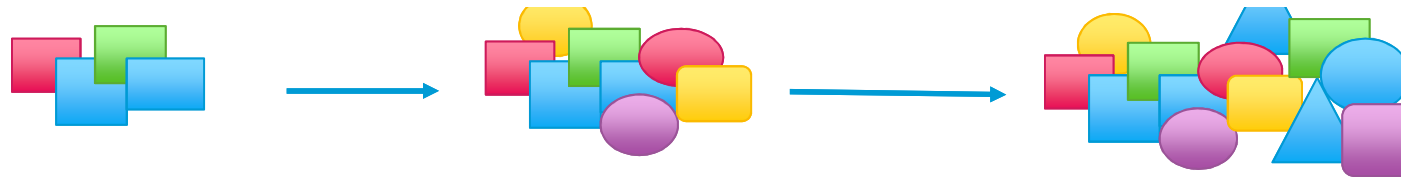
Directorate B - European & International Carbon Markets

Guidance Document n°9
on the harmonized free allocation methodology for the EU-ETS
post 2012

Sector-specific guidance

Lessons Learnt

Data Systems are Getting More and More Complex by Time



- Try to start with an easy structure.
- Start with a system that focusses on main aspects e.g.
 - confidentiality of data
 - Large installations/emitters, large source streams, etc.
- If there are already existing and working structures, use them to built up your system.
- IT preparation takes time and does not fully compensate manual validation
 - Set-up of complex systems are cost intense (can be >1 Mio. €)

Setting Priorities is Important to Focus on Relevant Issues

Installation category	Number of installations in Germany	Total annual emissions amount
Category C > 500 kt CO ₂ (Äq)	145	380 Mio. t CO ₂ (Äq) 82 %
Category B > 50 kt CO ₂ (Äq)	412	63 Mio. t CO ₂ (Äq) 14 %
Category A < 50 kt CO ₂ (Äq)	1,348	18 Mio. t CO ₂ (Äq) 4 %

Data from installations in Germany (VET 2014)

Complex Systems Might Need a Change in IT- Structure

Development of DEHSt-IT-Structure

- Installation data base is so complex that it has to be renewed
- Some software rights will expire

→ Chance for us to create a new structure of whole data management

Our Goals for a Renewed DEHSt- IT- Structure:

- Integration of different applications
- Web-Portal for data acquisition without separate data transfer
- Higher integration level between data acquisition, documentation, processing and notification

There are Many Ways to Reach the Same Goal



- The „right way“ for creating a data management system is depending on...
 - Technical or legal restrictions/requirements
 - Size of data pool, possibility to focus on specific data
 - Depth of checking the data
 - Financial and personal capacities for checking and evaluating data
 - purposes of the managed data

Thank you for your attention!

Delia Fahle, Samuel Höller

E-Mail: emissionstrading@dehst.de

Internet: www.dehst.de

This presentation is based on a speech held by the German Emissions Trading Authority (DEHSt) and is not clear for publication. Check against delivery. References and quotations from the presentation must at all times be approved in written form by the DEHSt.

Umwelt 
Bundesamt

DEHSt
Deutsche
Emissionshandelsstelle