CDDA version 18 (2020)

Contents

1 Introduction & Background

This document describes the activities, discussions and procedures surrounding the process of the new CDDA version production. Due to the changes in the CDDA workflow and CDDA model, a large number of issues and discussions have arisen during the work, which are also presented in this document.

1.1 The Nationally designated areas inventory (CDDA)

The Nationally designated areas inventory (CDDA) is an Eionet core data flow and holds information about protected areas and the national legislative instruments, which directly or indirectly create protected areas. The dataset contains data on nationally designated sites and designated boundaries in EEA member and cooperating countries. The CDDA data is delivered by each country as tabular dataset and as spatial dataset.

The CDDA is maintained by the European Environment Agency (EEA) with support from the European Topic Centre on Biological Diversity (ETC/BD). The dataset is used by the EEA for its main assessments, products and services.
In addition, the CDDA is the official source of protected area information from European countries to the World Database of Protected Areas (WDPA) https://www.protectedplanet.net.

https://rod.eionet.europa.eu/obligations/32

Reporting obligation for: Nationally designated areas (CDDA)

Overview | Legislation | Deliveries | History

Title	Nationally designated areas (CDDA)
Description	The European inventory of nationally designated areas holds information about protected areas and the national legislative instruments, which directly or indirectly create protected areas. This reporting obligation is an Eionet core data flow. Reporting under this obligation is used for EEA Core set of indicators. Delivery process is managed by EEA.
Legal instruments title	EEA AWP

Reporting dates and guidelines

National reporting coordinators	National Focal Points (eionet-nfp)
National reporting contacts	Nationally designated areas (CDDA) Reporters (reportnet-awp-cdda-reporter)
Reporting frequency	Annually
Next report due	15/03/2021
Date comments	
Report to	European Environment Agency
Other clients using this reporting	
Reporting guidelines	CDDA specification in Reportnet Data Dictionary [Valid since 03/12/2017]
Information	Background information on CDDA reporting is available in CDR help at http://cdr.eionet.europa.eu/help/cdda
Principle repository	Agreed national data repository for Reportnet
Data used for	Nationally designated areas (CDDA)

1.2 Definition of terms

Before going into further detail on the QA/QC process of the CDDA database, please consider the following definitions of important terms and key activities of the process. These reflect the terminology used within the present report.

Table 1-1 Definition of terms

Validation / Quality control (QC)	Validation is the process by which the accuracy and consistency of products are evaluated and the

	associated uncertainties are quantified (Justice et al., 2000). Product *accuracy* is assessed by a comparison with independent data sources such as ground-based measurements, more detailed data or well-calibrated models. Inter-comparison with other equivalent products is also part of the validation process allowing building up a community reference product when no or not enough independent data are available. Quality control, or QC for short, is normally carried out after the end of the production and aims at providing the user with measurable / quantitative information how well the product meets the pre-defined specifications.
Verification / Quality assurance (QA)	The act of reviewing, inspecting, testing, checking, auditing, or otherwise establishing and documenting whether items, processes, services, or documents conform to specified requirements. Verification is a qualitative process in which intermediate or final results of the production process are commented and potential deviations from the specifications are highlighted. The verification will be performed during the course of production and is meant to increase data and production quality. Quality Assurance (QA) is a way of preventing mistakes or defects in products and avoiding problems when delivering solutions or services to customers. QA is applied to physical products in pre-production to verify what will be made meets specifications and requirements, and during manufacturing production by validating whether lot samples meet specified quality controls. QA is also applied to software to verify that features and functionality meet business objectives, and that code is relatively bug free prior to shipping or releasing new software products and versions.

The processes described in the current report are part of a QA verification procedure, as the output does not provide quantitative results about the database quality and is used as an element of a process to correct and improve the latest integrated European database version. Potential issues are identified and the final data collection described which is the base for the compilation of an European database.

2 The CDDA model

The detailed CDDA data model description can be found in the CDDA guidelines:
http://cdr.eionet.europa.eu/help/cdda/CDDAv17%202019%20guidelines%20v1.pdf

The CDDA reporting for 2020 can be divided into two different types of delivery:

- Type 1 – which comes from and are defined by the INSPIRE Protected Sites
- Type 2 – which comes from the revised CDDA tabular data

Type 1 includes the spatial data and overlaps with certain CDDA reporting elements.
Type 2 includes the remaining tabular CDDA reporting elements. The Type 2 part delivery is a table with considerable similarity to the current CDDA database specifications. Field names and code lists are however all revised and new. Both Type 1 and Type 2 data files hold mandatory CDDA information.

The two parts of the CDDA reporting (Type 1 and Type 2) are linked by use of a common identifier at data set level as well as on object level:

Figure 2-1 The two parts of the CDDA reporting

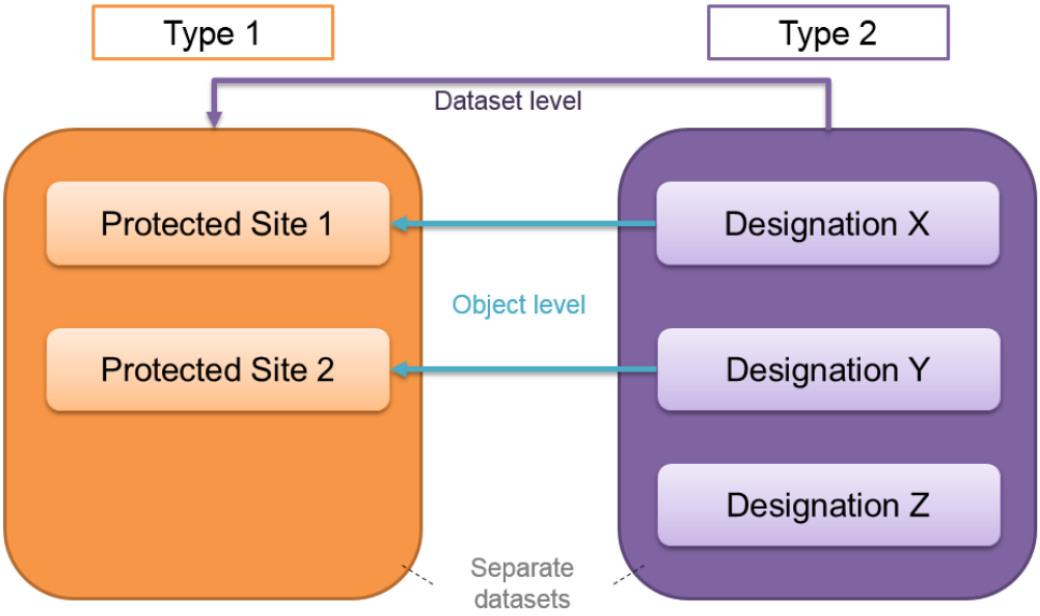
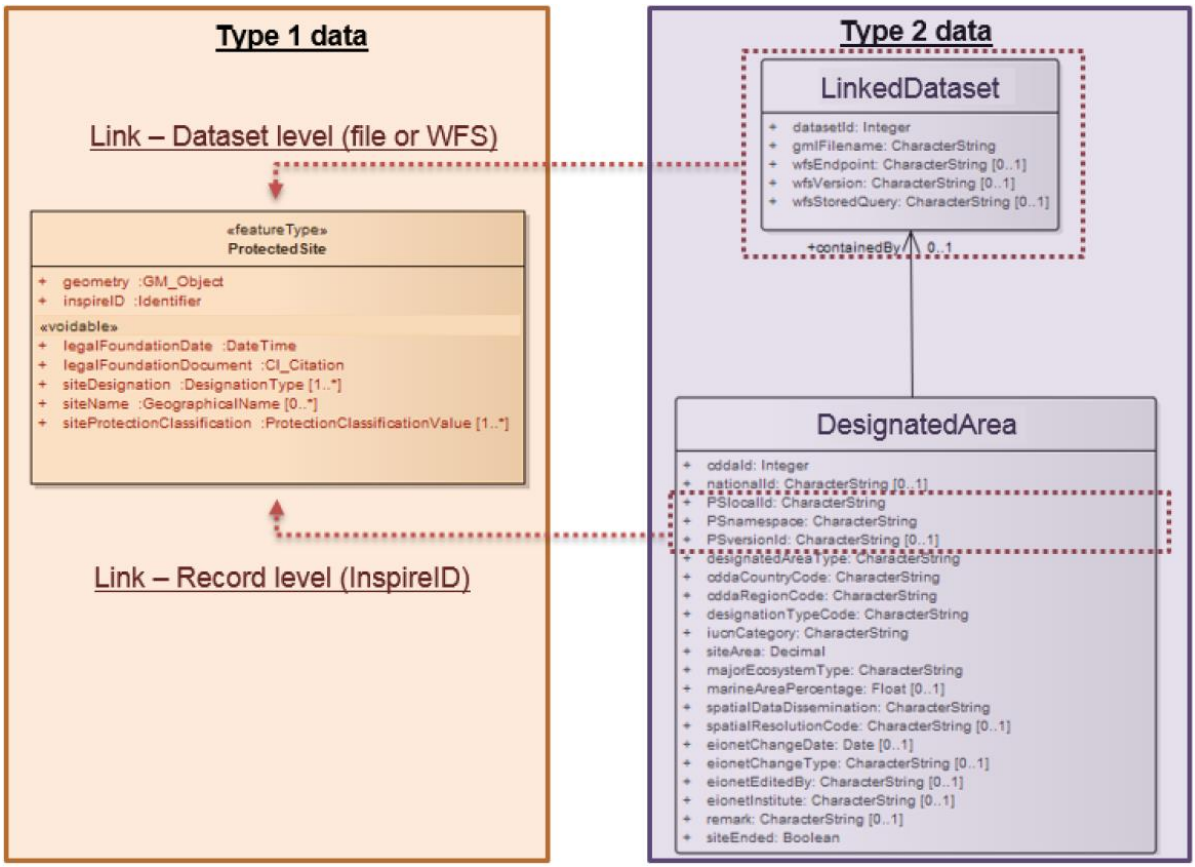


Figure 2-2 CDDA model in UML INSPIRE Protected Sites (left) and the DesignatedArea and the LinkedDataset tables (right)



2.1 Tabular data (type 2 data)

The type 2 represent the tabular CDDA information. The type 2 dataset is built up by two tables:

- DesignatedArea
- LinkedDataset

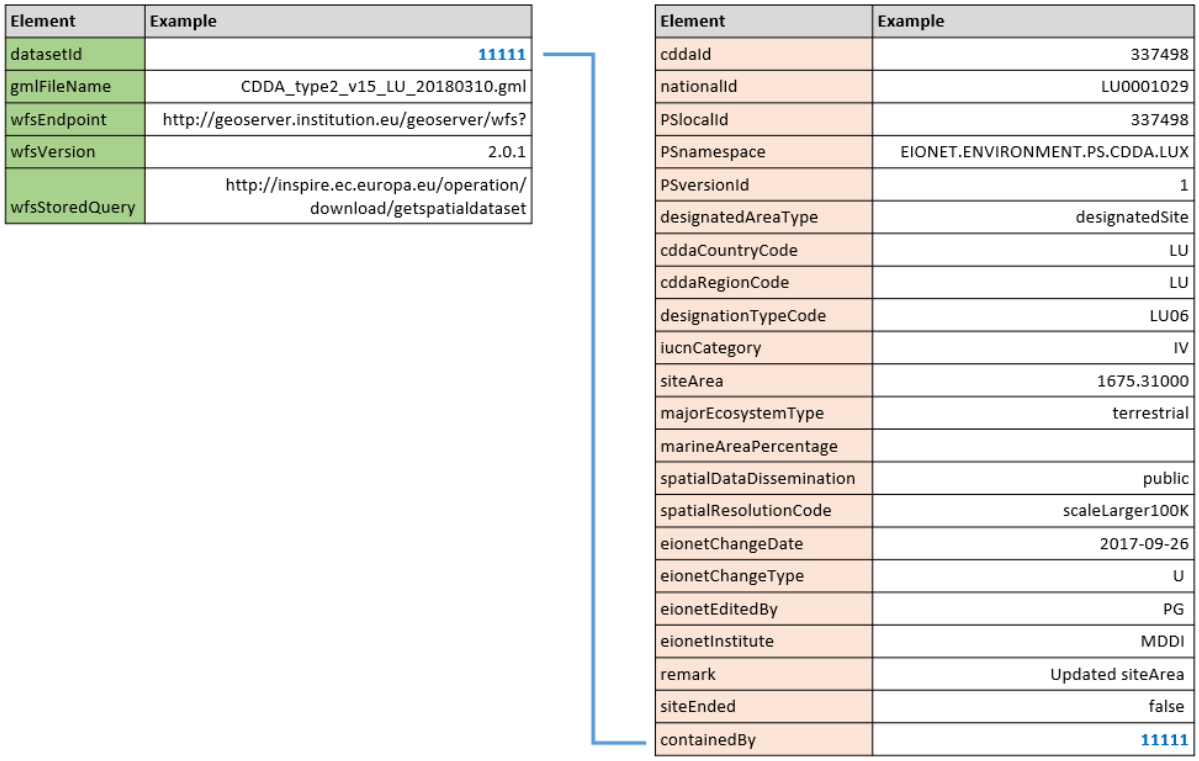
The **Designated Area** table is the main CDDA table which is primarily constructed from the pre-2018 CDDA Sites table. The elements are not part of the INSPIRE Protected Sites data model with one exception: iucnCategory. The IUCN category is included in the siteDesignation data type of the INSPIRE Protected Sites.

The **Linked Dataset** table acts as a bridging element between the records of the Designated Area table and the records of an external GML file or the INSPIRE Protected Site records which contain the relevant spatial information.

All information about the different elements can be found in the Data Dictionary (http://dd.eionet.europa.eu/datasets/3344).

The following figures shows an example of the different tables and elements of type 2:

Figure 2-3 Example of CDDA type 2 data (including an example of a designated area in Luxembourg)



Element	Example
datasetId	11111
gmlFileName	CDDA_type2_v15_LU_20180310.gml
wfsEndpoint	http://geoserver.institution.eu/geoserver/wfs?
wfsVersion	2.0.1
wfsStoredQuery	http://inspire.ec.europa.eu/operation/download/getspatialdataset

Element	Example
cddaId	337498
nationalId	LU0001029
PSlocalId	337498
PSnamespace	EIONET.ENVIRONMENT.PS.CDDA.LUX
PSversionId	1
designatedAreaType	designatedSite
cddaCountryCode	LU
cddaRegionCode	LU
designationTypeCode	LU06
iucnCategory	IV
siteArea	1675.31000
majorEcosystemType	terrestrial
marineAreaPercentage	
spatialDataDissemination	public
spatialResolutionCode	scaleLarger100K
eionetChangeDate	2017-09-26
eionetChangeType	U
eionetEditedBy	PG
eionetInstitute	MDDI
remark	Updated siteArea
siteEnded	false
containedBy	11111

In 2018 EEA had provided the different national institutes with Excel CDDA template files and technical specifications via country folders on Eionet projects (https://projects.eionet.europa.eu/cdda-restricted-distribution/) with access for CDDA reporters, NRC biodivdata and NFPs.

Based on the prefilled template and specification, for the first years countries have updated the tables with national CDDA information. After the national update, the database (in Excel or xml format) was uploaded to the CDR. Since the reporting for CDDA 2020 no template files are provided anymore. Instead the countries are asked to use the latest data as base for their CDDA update.

Further information about the Type 2 dataset are available in the Data Dictionary (http://dd.eionet.europa.eu/datasets/3344) or the CDDA guidelines on the CDDA reference page (http://cdr.eionet.europa.eu/help/cdda/).

2.2 Spatial boundary data (type 1 data)

All geometric information is stored in the CDDA Type 1 dataset. The specifications of the Type 1 data are based on the official INSPIRE Protected Sites specifications which are available here: http://inspire.ec.europa.eu/id/document/tg/ps

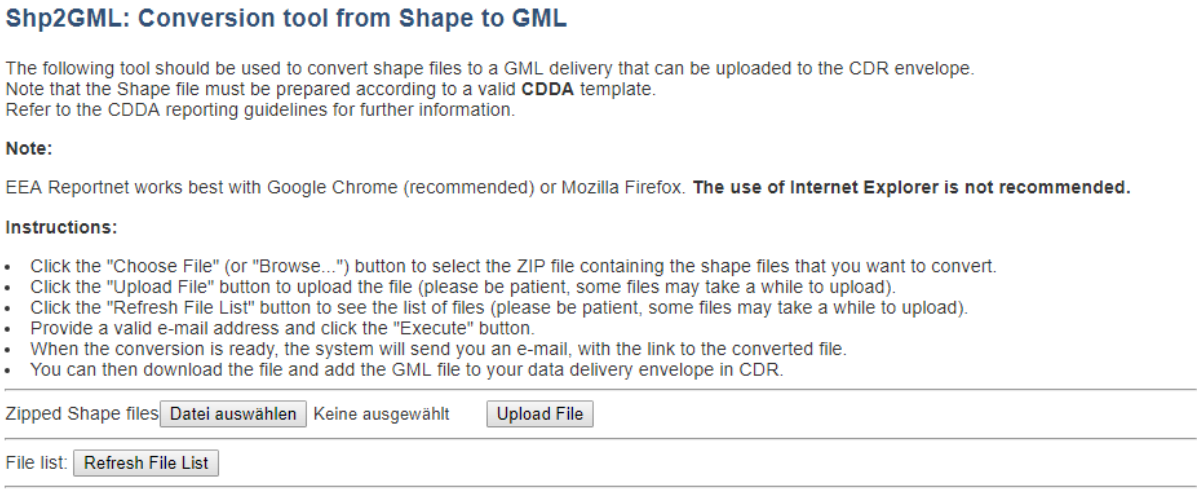
For the CDDA delivery the following subset of INSPIRE PS attributes are required:

- Geometry
- inspireID
- legalFoundationDate
- siteName

Shapefile and GML file templates were available prefilled with the CDDA data reported in the previous version via country folders on Eionet projects (https://projects.eionet.europa.eu/cdda-restricted-distribution/) which countries could use for updating the CDDA type 1 dataset. Since the CDDA 2020 reporting these templates are not updated anymore. Instead the countries are asked to use their latest reporting to update the CDDA data.

Countries which have already implemented INSPIRE can upload the CDDA Type 1 data directly in gml-format. For countries which are working with the shp-format a transformation tool was provided which transformed the spatial CDDA data from shape to gml format: http://cdr.eionet.europa.eu/help/cdda/FME_processes/Shp2GML.html

Figure 2-4 Shp2GML – conservation tool to transform CDDA data from shape into gml

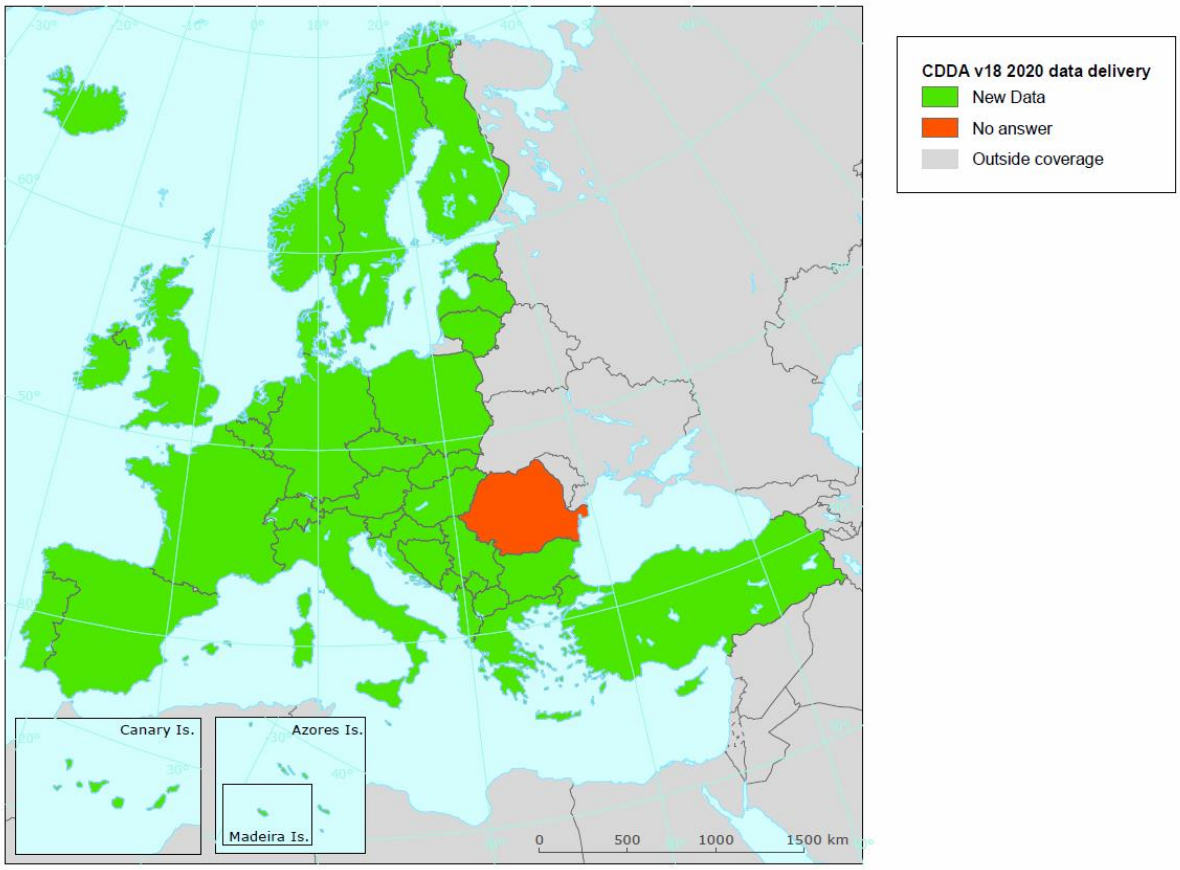


Additional specifications about the CDDA delivery can be found here: http://cdr.eionet.europa.eu/help/cdda

3 The national CDDA v18 country deliveries

Every year, the member countries provide the most recent status of protected sites to EEA. The entire CDDA dataset covers 39 countries as well as Greenland (Denmark) and the French Overseas Departments and Territories and Overseas Collectives. The following chapter provides a short overview of the single country deliveries. Further information on individual CDDA deliveries can be found in the new CDDA-QA country documents. All details can also inspected in the corresponding Tableau dashboard here:
https://tableau.discomap.eea.europa.eu/t/Natureonline/views/CDDA_v18_2020_overview/S01CDDA-STORY2020

Map 3-1 Countries CDDA data delivery in 2020



Except for one country the EEA did receive answers and updated or at-least revised datasets from all countries in the EEA39.
A detailed overview is given in the following table. It presents the reporting responses for the three latest reporting cycles. The cells highlighted in orange or red show countries that have not provided data or non-conform data for various reasons (e.g. no new national CDDA sites or no response).

Table 3-2 Data deliveries and data updates for CDDA version 16, 17 and 18

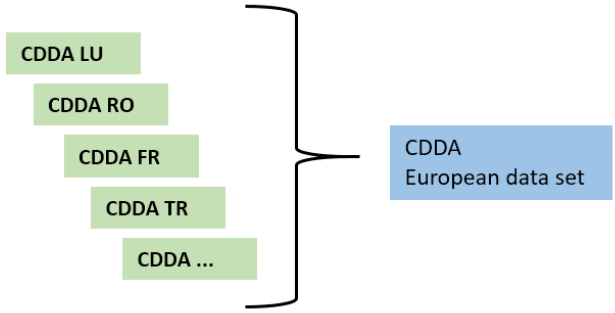
Country	ISO2	Version 16 (2018)	Version 17 (2019)	Version 18 (2020)
Albania	AL	new data	new data	new data
Austria	AT	non-conform data	new data	new data
Bosnia and Herzegovina	BA	no reporting	no reporting	new data
Belgium	BE	new data	new data	new data
Bulgaria	BG	new data	new data	new data
Switzerland	CH	new data	new data	new data
Cyprus	CY	no reporting	no reporting	new data
Czechia	CZ	new data	new data	new data
Germany	DE	new data	new data	new data
Denmark	DK	new data	new data	new data
Estonia	EE	new data	new data	new data
Spain	ES	new data	new data	new data
Finland	FI	new data	no reporting	new data
France	FR	new data	new data	new data
United Kingdom	GB	new data	new data	new data
Greece	GR	new data	new data	new data
Croatia	HR	new data	new data	new data
Hungary	HU	new data	no reporting	new data
Ireland	IE	new data	new data	new data
Iceland	IS	new data	new data	new data
Italy	IT	new data	new data	new data
Liechtenstein	LI	no reporting	no reporting	new data
Lithuania	LT	no reporting	no reporting	new data
Luxembourg	LU	new data	new data	new data
Latvia	LV	new data	new data	new data
Montenegro	ME	new data	new data	new data
North Macedonia	MK	new data	new data	new data

Malta	MT	new data	new data	new data
Netherlands	NL	non-conform data	new data	new data
Norway	NO	new data	new data	new data
Poland	PL	new data	new data	new data
Portugal	PT	new data	new data	new data
Romania	RO	new data	no reporting	no reporting
Serbia	RS	new data	new data	new data
Sweden	SE	new data	new data	new data
Slovenia	SI	new data	new data	new data
Slovakia	SK	new data	new data	new data
Turkey	TR	non-conform data	new data	new data
Kosovo	XK	new data	new data	new data

4 European CDDA dataset production

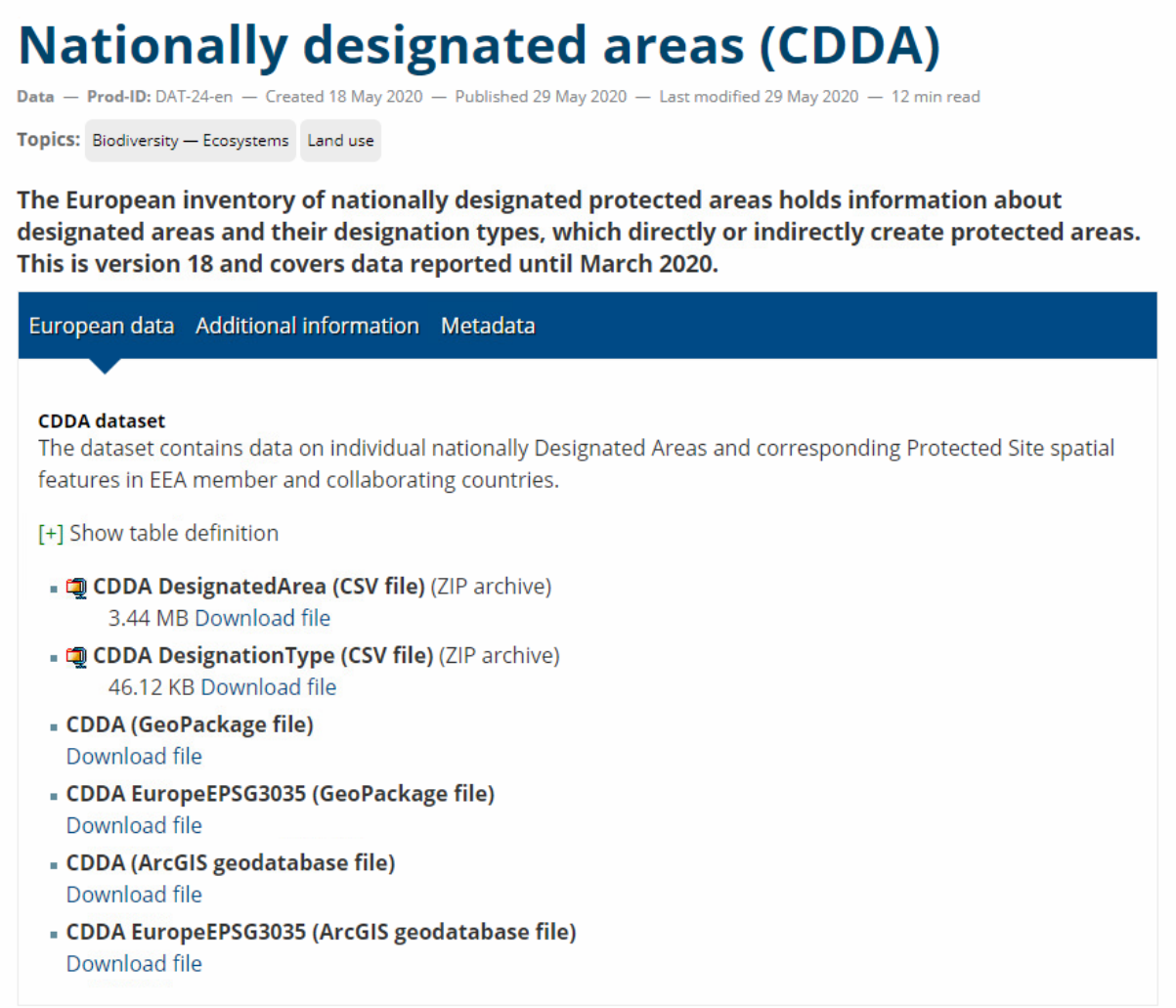
The final CDDA v18 data set is the union of all individual national type 1 and type 2 data sets. After successful QC, all single datasets are combined to one European CDDA dataset. If countries did not deliver any data in CDDA 2020 data collection, or the delivery was not technically accepted, data from their most recent delivery, as transformed by EEA to new structure, is used to complete the European data set.

Figure 4-1 European CDDA dataset



The new data set is published on the Nationally designated areas EEA website:
https://www.eea.europa.eu/data-and-maps/data/nationally-designated-areas-national-cdda-15

Figure 4-2 Nationally designated areas (CDDA) website



5 Verification

The spatial and tabular data were checked by **EEA** and **ETC/BD** at two points during the CDDA v18 production workflow:

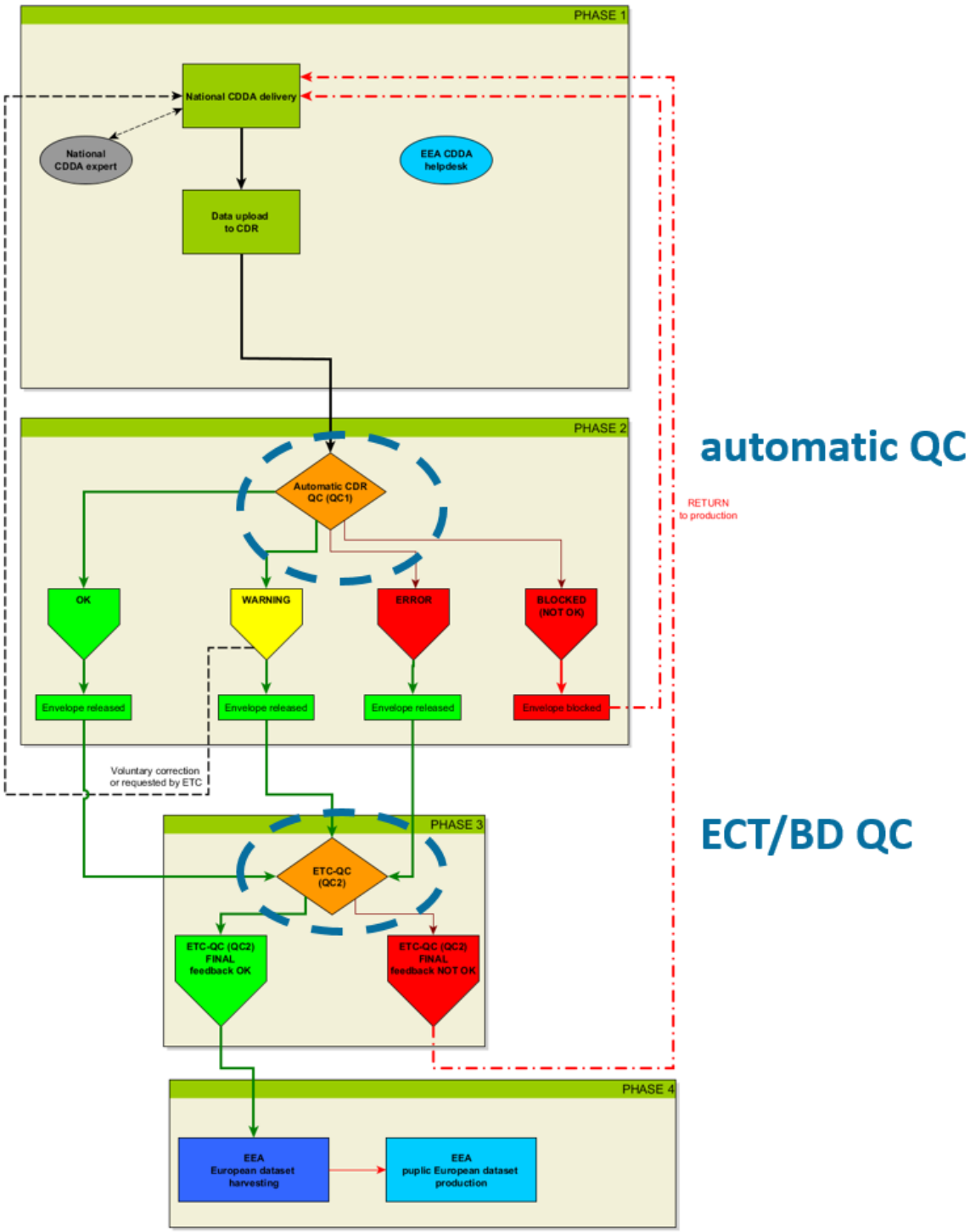
- Automatic QC
- ETC/BD QC

Automatic quality assurance takes place after uploading the data to CDR. When the automatic QC is completed, a QC report is published on CDR. The checks performed can be found in the CDR QC test list here: http://cdr.eionet.europa.eu/help/cdda/CDDA_QC_TestList_v07.xlsx
If the report does not contain any blockers (i.e. QC checks that indicate missing or wrong elements), the next step can be started – the ETC-QA.
Figure 5-1 shows a simplified representation of CDDA production. The workflow is divided into four phases:

- phase 1 - national CDDA production and upload to CDR
- phase 2 - automatic QC

- phase 3 – ETC/BD - QC
- phase 4 - European CDDA dataset production

Figure 5-1 CDDA workflow (the two quality steps are marked with a blue dotted circle)



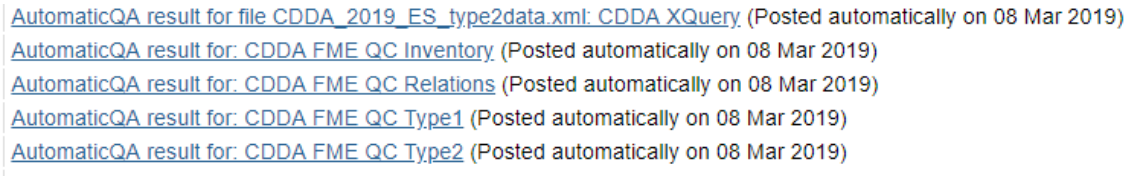
5.1 The automatic QC

After uploading the data and releasing the envelope, automatic QC starts.
The following single checks were carried out during the check:

- TEST 1 on Type 2 data inventory (Designated Area (a) and Linked Dataset (b))
  - 1a./ 1b. Mandatory values test
  - 2a./2b. Record uniqueness test
  - 3a./3b. Data types test
  - 4a. Valid codes test
- TEST 2 on Type 1 data inventory
  - 1. Inventory test – ProtectedSite
  - 2. Inventory test – DesignatedArea
  - 3. InventoryTest – LinkedDataset
- TEST 3 relation test between type 1 and type 2 data
  - 1.a/b. Presence test - gml file
  - 2.a/b. Relational test - DesignatedArea link to ProtectedSite
  - 2.c Relational test - DesignatedArea link to ProtectedSite through LinkedDataset
  - 3. Geometry coherence test
  - 4. Relational test - ProtectedSite link to ended DesignatedArea
- TEST 4 Type 1 data QC
  - 1. Mandatory values test - ProtectedSite
  - 2. Uniqueness test - ProtectedSite
  - 3a. Coordinate reference system test
  - 3b. Coordinate reference system test encoding
  - 4. Geometry validity test
  - 5. Positional check
  - 6. Format test - legalFoundationDate
  - 7. Range test – legalFoundationDate
- TEST 5 Type 2 data QC
  - 1.a Conditional mandatory value test - containedBy
  - 2.a Uniqueness test - DesignatedArea records - cddaId
  - 2.b Uniqueness test - DesignatedArea records - PSlocald, PSnamespace
  - 3. Reference test - cddaId
  - 4. Missing data test - cddaId
  - 5. Reference test - cddaCountryCode and cddaRegionCode
  - 6. Reference test - designationTypeCode
  - 7. Logical coherence test - designationTypeCode, cddaCountryCode and cddaRegionCode
  - 8. Logical coherence test - majorEcosystemType and marineAreaPercentage
  - 9.a Relational test - DesignatedArea link to LinkedDataset
  - 9.b Relational test - LinkedDataset link to DesignatedArea

After the tests an automatic feedback on EIONET with the QC results is published.

Figure 5-2 QC feedback on CDR (overview of the QC feedback links)



Four different types of feedback are returned:

- OK – the QC check was successful – no error was found
- WARNING – some information for future deliveries or questionable data content
- ERROR – major issues found which are not blocking the release of the envelope
- [BLOCKER]- major issues were found which blocking the release of the envelope

The following figure shows an example of a feedback without further issues:

Figure 5-3 QA feedback on CDR (type 2)

If no blocker appears, the directory is passed to the ETC-QA procedure.

5.2 ETC/BD- QA

The ETC/BD-QA is a combination of automatic and manual quality checks. By use of FME scripts as well as manual inspection different technical specifications of the reported data are controlled.

The first part of the manual check by the ETC contains the checking of issues returned and highlighted in the automatic QA. Depending on the issue the causes for these are analysed and the need for a potential correction is evaluated. The results of this recheck of the returned issues (WARNINGS / ERRORS) is communicated to the country for further clarification and potential correction via the CDDA Helpdesk. For specific significant issues identified already in the automatic QC routines, which influence the data quality, a correction is coordinated with the responsible institution in the country to re-upload revised data. For minor issues and issues which result from elements only mandatory starting with 2019, the country is only informed. It is up to the country in such cases to decide if they will deliver revised datasets or leave the reported datasets as they are.

In the second part of the ETC-QA further checks are performed on the delivered data mainly concerning the spatial part (type 1) and detailed assessment of issues returned in the automatic QC. This part consists of comparing the delivered data to the previous reporting, reference information such as country borders or marine territories and further checks for logical consistency (see also **Error! Reference source not found.**).

In detail the following specifications are checked:

1. Examination of check results from automatic QC
2. Logical consistency of the coordinate reference system used
3. Examination of geometry issues returned in the automatic QC
4. Control of protected area positions found to be outside the country territory (comparison to European country border dataset and Marine regions EEZ outlines)
5. Significant differences in site areas defined in type 2 data and the actual area described by the geometries in the type 1 data (buffer of 10% acceptable differences applied)
6. Logical consistency of defined major ecosystems for protected areas
7. Spatial consistency compared to previous reporting identifying partial or systematic shifts in geometries. Check for differences in delineation such as decreased resolution….
8. Check of type 2 content for logical consistency
9. Comparison of sites names between current and previous reporting to identify potential erroneous links or use of siteCode ↔ cddaId relations
10. Rerun of automatic QC

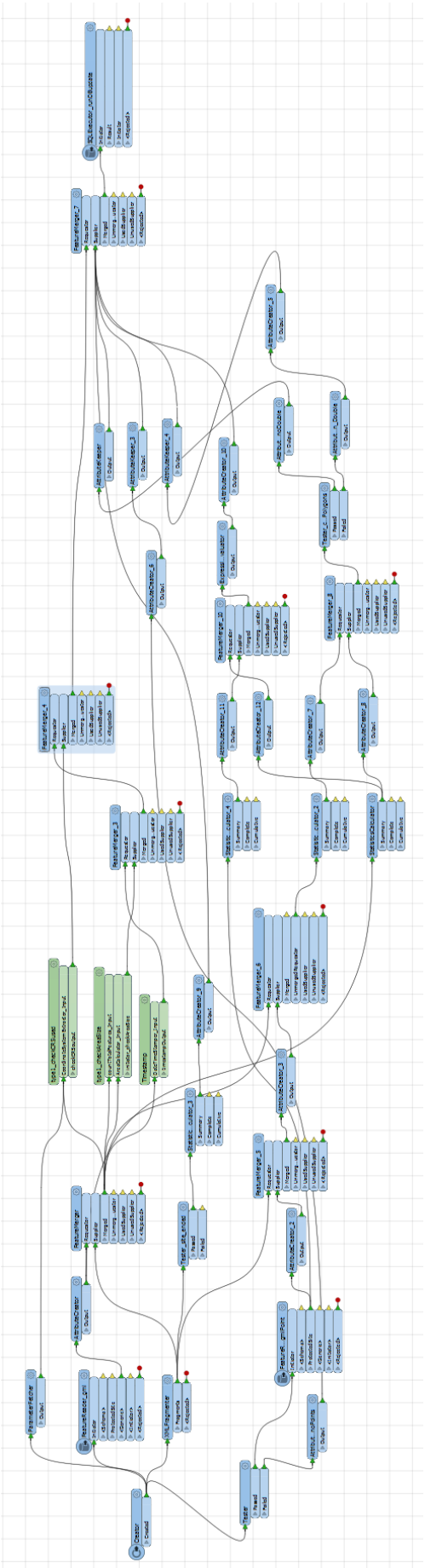


Figure 5-4: FME workflow for partially automatized quality checks in ETC-QC (path in common workspace structure: S:\Common workspace\Bio\CDDA\CDDA_data\CDDA_v18_2020\f03_CDDA_QAQC_ETC\f01_FME_scripts\final_feedback_checks_2020_v01.fmw)

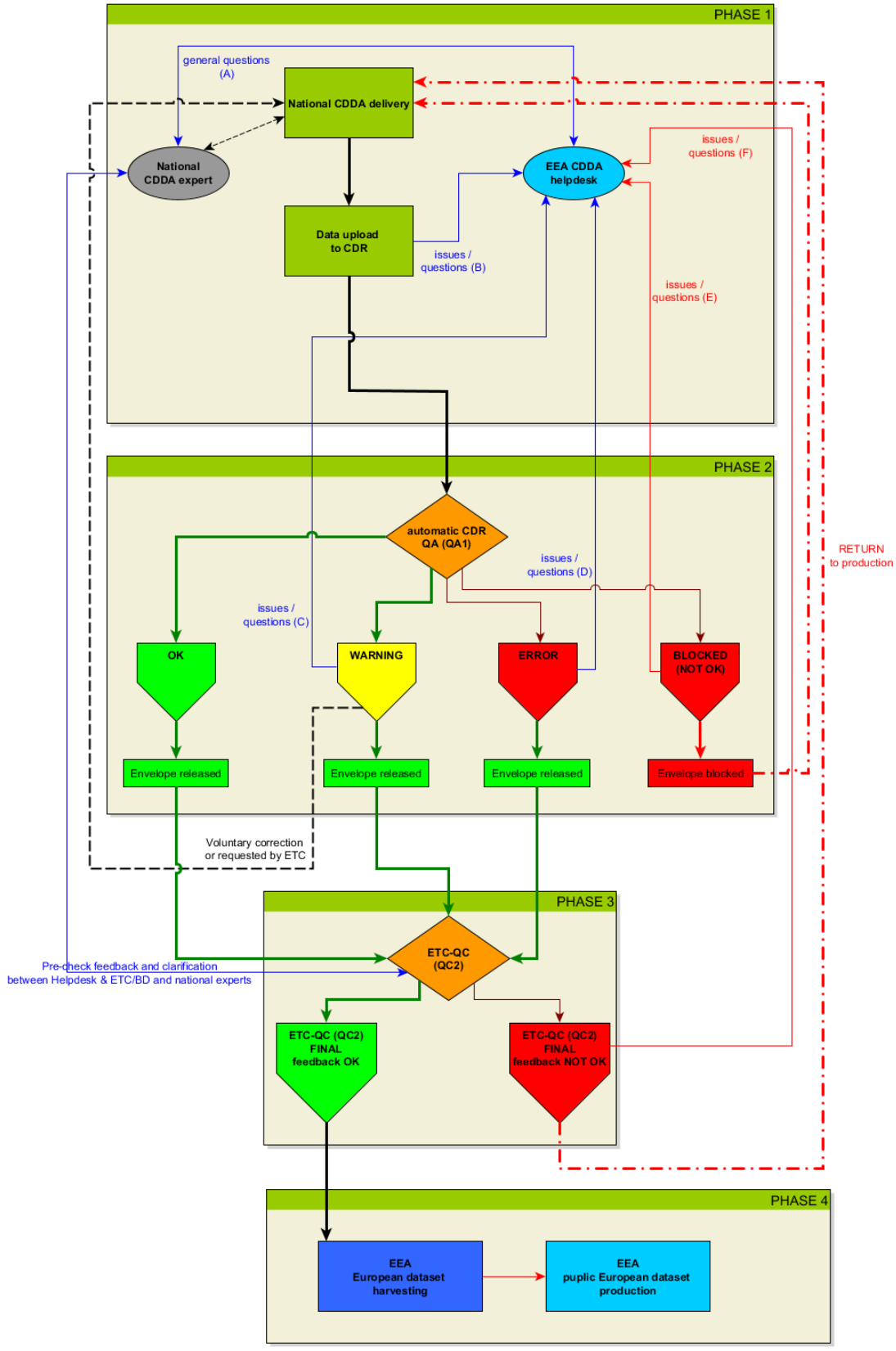
6 Collected issues during the CDDA reporting

Throughout the CDDA process, various questions and problems arose. The observations and issues identified are communicated to the country via the CDDA Helpdesk. The Helpdesk offers a point of connection to the countries allowing for discussions and questions from both sides. By that the Helpdesk is accounting for a huge part in the whole CDDA reporting procedure. Already in preparation of the CDDA data to be reported the countries can contact the experts in the EEA/ETC to discuss open questions.
There was a lively discussion between the countries and the EEA/ETC-BD using the EEA helpdesk to solve problems, answering questions and to explain some processing step more in detail.
This chapter collects and lists these questions and problems to develop improvements for the next release in 2021.

The figure below illustrates the different connection-points of discussion between the member countries and EEA/ETC as coloured dashed lines. In order to structure these questions and the problem collection, these were divided into the four phases of the process:

1. Pre-reporting and data preparation phase on country side (PHASE 1)
2. Automated quality checks in the common data repository (CDR) (PHASE 2)
3. Extended quality checks, revision of automatic QC results and reporting evaluation by the ETC/BD (PHASE 3)
4. Production of the compiled European CDDA database by EEA (PHASE 4)

Figure 6-1: CDDA reporting process with consultation of the CDDA Helpdesk (blue and red line)



6.1 Major issues during the production and upload phase (PHASE 1)

During the preparatory phase of the reporting (countries producing the INSPIRE-conform datasets according to the new data requirements) the following main difficulties and common issues have been detected. As both the preparation and the first evaluation in the automatic QC are strongly connected to each other, some issues appear in combination of the preparation part (PHASE 1) and 1st level QC (PHASE 2).

a) As the legalFoundationDate is mandatory since the previous reporting some countries had to find corresponding dates to define the attribute. For few sites the final definition of the corresponding year requires archive research which cannot be carried out on a short-term base.
b) In few countries the group responsible for the CDDA reporting has changed and the general data requirements had to be explained to create an understanding of which conditions need to be fulfilled and why.
c) Some countries already use a data harvesting from the national databases. The resulting data extracts in some cases were not compliant with the data specifications of the new CDDA reporting (see also 6.2) requiring further adjustment.
d) For the national harvested data in some cases further technical issues arose causing illogical data (e.g. incorrectly read polygon coordinates) or unsuitable data not corresponding to the data specifications.

6.2 Major issues during the automated QC1 (PHASE 2)

a) Geometry invalidities such as self-intersections (common error) or non-OGC conformance → minor issues often related to data processing like conversion from GDB → Shapefile → .gml
   → not weighted very high in evaluation of the reporting
b) Sites found to be located outside country
   → partially actually outside the country territory (foreign territory or marine areas not belonging to a specific country) but mostly areas in marine regions assigned to the reporting country not covered by the reference boundaries used in the automatic QA
c) As sites defined as pure marine or terrestrial are supposed to have no marine area percentage defined, on few cases an issue was found as for such fully marine or terrestrial sites a negligible percentage of marine respectively non-marine area was defined. In such cases the countries can decide to generalize this small share of ecosystem (up to 5%) and define the site as fully on or the other without providing a marine percentage.
d) Few countries report positive site areas although sites are only represented as points in the type 1 part. Often exact outlines of these sites are not known and site areas are taken from legislative journals or publications. Another reason can be the sensitivity of the protected site so the boundaries are not public and only a point position is reported.
e) Since all sites reported in tabular form must be also linked to a corresponding spatial object in the type 1 part of the reporting, in few cases the automated QC rejected the first reporting try as for some sites no spatial data had been provided.
f) Multiple attribute elements both in the type 1 and type 2 are mandatory values. Countries not fulfilling this requirement in some cases consulted with the helpdesk to understand and solve the reasoning behind.

g) Due to a change in the library of valid CRS source definitions, now only allowing for the opengis.net definition, for some countries the used CRS source is not valid anymore as still the obsolete “urn” CRS definition is used.
h) The format of legalFoundationDate in few cases is differing from the required format. Especially for countries using their national INSPIRE services the format sometimes deviates between the official national INSPIRE service and the one required by the CDDA specifications such as defining fractions of seconds in addition

6.3 Major issues during in the ETC QC phase (QC2) (PHASE 3)

a) Significant differences between areas reported in type 2 and the actual extent of the geometries in type 1 representing the site (still after applying a 10% buffer for the values)
b) Naming differences between names defined in the previous CDDA v17 and recent version 18 There are three types of differences:
    - Positive differences (Correction or further detailing of site names especially introduction of correct national spelling using special characters such as ‘é’, ‘å’ or ‘ž’ or providing the official full name instead of abbreviation)
    - Negative differences (erroneous replacement of special characters by other letters, deletion of name parts, allocation of wrong names to sites which were previously correct). These issues are mostly related to errors introduced when using incomplete or incorrect encoding when processing the data.
    - Adaption of site names reducing the complexity of names (as proposed by INSPIRE).
c) One country basically replaced the previously reported data by a fully new set of data. This renders a comparison of both reportings principally impossible. Nonetheless the new reported data is of much higher quality and this replacement is highly appreciated as an enhancement.
d) Differences in geometries which are not negative but the result of partially highly improved resolution of national inventories on protected areas and corrections/adaptions of already existing sites. In consequence large numbers of differences appear.
e) Questionable definition of major ecosystems (e.g. area located fully in marine area with no obvious island or terrestrial appearance defined as ‘terrestrial’)
f) Cumbersome use of linkedDataset element defining dedicated entries for each protected site described in the designatedArea element making the type 2 very complex without need.

6.4 Compilation of European CDDA dataset by EEA (PHASE 4)

Most issues related to the data reported by the countries have already been solved or blocked in the previous phases of the QA. The compilation is a purely internal process of harvesting the country data and compiling it into a wall to wall dataset. Only very few difficulties/issues appeared in this phase:

a) Encoding of spatial projections used by some federal states differing from the expected standard encoding required special handling of few spatial reportings (e.g. reverse axis order due to diverging CRS encoding).

7 Facts and figures from the new CDDA dataset

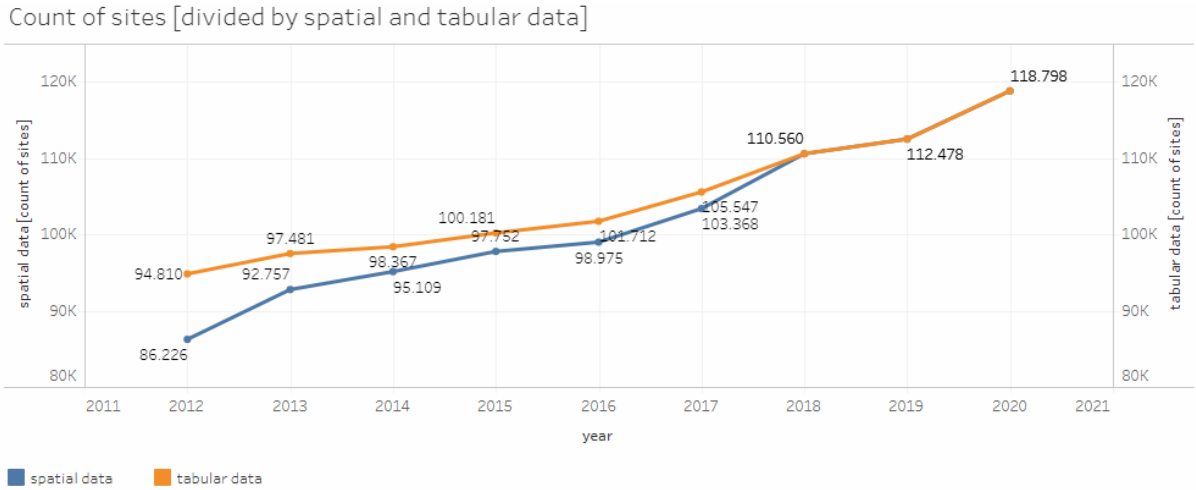
The new CDDA dataset includes 118 798 different sites located in 39 countries. Compared to the previous version we had a significant increase in the number of sites:

Table 7-1 Count of CDDA sites compared to previous version

CDDA version	count of sites	
	tabular	spatial
Version 2020 v18	118,798	118,798
Version 2019 v17	112,478	112,478
Version 2018 v16	110,560	110,560
Version 2017 v15	105,547	103,368
Version 2016 v14	101,712	98,975
Version 2015 v13	100,181	97,752
Version 2014 v12	98,367	95,109
Version 2013 v11	97,481	92,757
Version 2012 v10	94,810	86,226

Due to the requirement only allowing a reporting of tabular sites with corresponding spatial information the number of spatial data matches the tabular quantity.

Figure 7-1 Number of tabular and spatial records in the different CDDA versions



7.1 Overview of the country deliveries

Out of the 39 countries participating in the EEA only one country (Romania) did not respond to the CDDA data call. On the positive site new reportings from countries, which have not provided data since multiple years, have been received (Liechtenstein, Lithuania, Cyprus, Bosnia and Herzegovina). Furthermore with Bosnia and Herzegovina one country has replaced rather out-dated information with more recent and accurate spatial and tabular information. See Map 3-1 for a map of the counties which have delivered new data.

The following table shows the changes in number of sites for the different countries between the CDDA deliveries from 2019 and the new version from 2020.

Table 7-2 Changes of number of sites between the 2019 and 2020 CDDA deliveries (Dashboard)

	Count of sites						Difference		
Country	2019 V17 Point	2019 V17 Polygon	2019 V17 Total	2020 V18 Point	2020 V18 Polygon	2020 V18 Total	Diff 2019-2020 Total	Diff 2019-2020 Total (%pts)	INFO
AL	742	58	800	742	58	800	0	0.00	no changes
AT		1,213	1,213		1,222	1,222	9	0.74	increase
BA	13	33	46	13	27	40	-6	-13.04	decrease
BE		1,455	1,455		1,511	1,511	56	3.85	increase
BG		1,047	1,047		1,049	1,049	2	0.19	no changes
CH		6,832	6,832		10,423	10,423	3,591	52.56	increase
CY		59	59		59	59	0	0.00	no changes
CZ		2,687	2,687		2,712	2,712	25	0.93	increase
DE		17,643	17,643		17,746	17,746	103	0.58	increase
DK		587	587		596	596	9	1.53	increase
EE	920	16,147	17,067	899	17,277	18,176	1,109	6.50	increase
EL		803	803		803	803	0	0.00	no changes
ES		1,798	1,798		1,816	1,816	18	1.00	increase
FI		13,300	13,300		14,268	14,268	968	7.28	increase
FR		3,864	3,864		3,905	3,905	41	1.06	increase
HR	86	322	408	74	335	409	1	0.25	no changes
HU		308	308		311	311	3	0.97	increase
IE		309	309		309	309	0	0.00	no changes
IS		112	112		117	117	5	4.46	increase
IT		875	875		876	876	1	0.11	no changes
LI		41	41		44	44	3	7.32	increase
LT		479	479		479	479	0	0.00	no changes
LU		131	131		134	134	3	2.29	increase
LV		677	677		680	680	3	0.44	no changes
ME	49	3	52	42	12	54	2	3.85	increase
MK	4	75	79	4	70	74	-5	-6.33	decrease
MT		263	263		269	269	6	2.28	increase
NL		194	194		194	194	0	0.00	no changes
NO	1	3,103	3,104		3,187	3,187	83	2.67	increase
PL		2,051	2,051		2,057	2,057	6	0.29	no changes
PT		232	232		234	234	2	0.86	increase
RO		944	944		944	944	0	0.00	no new data
RS		369	369		377	377	8	2.17	increase
SE	1,157	14,645	15,802	1,170	14,893	16,063	261	1.65	increase

SI	865	1,175	2,040	865	1,042	1,907	-133	-6.52	decrease
SK		1,191	1,191		1,191	1,191	0	0.00	no changes
TR		4,015	4,015		4,086	4,086	71	1.77	increase
UK		9,409	9,409		9,468	9,468	59	0.63	increase
XK	135	57	192	149	59	208	16	8.33	increase
EEA39	3,972	108,506	112,478	3,958	114,840	118,798	6,320	5.62	increase

In total we have an increase of 5.6 percent of CDDA sites between 2019 and 2020. One country did not deliver new data.

Another interesting statistic besides the number is the area of the CDDA sites. For the following statistic the official reported "siteArea" is used.

Table 7-3 Changes of site area between the 2017 and 2018 CDDA delivery

	Site area [km²]			Difference total area [km²]		Difference total area percentage		Trend	
Country	**2018 v16**	**2019 v17**	**2020 v18**	**2019-2018 Total area**	**2020-2019 Total area**	**2019-2018**	**2020-2019**	**2018-2019**	**2019-2020**
AL	4779	5036	5036	257	0	5.39	0.00	increase	no change
AT	26324	26810	27821	486	1011	1.84	3.77	increase	increase
BA	354	354	1922	0	1568	0	443.03	no change	increase
BE	5996	6014	2690	18	-3325	0.31	-55.28	no change	decrease
BG	6450	18111	18112	11661	1	180.8	0.00	increase	no change
CH	3679	3679	4981	0	1303	0	35.40	no change	increase
CY	5156	5156	5156	0	0	0	0.01	no change	no change
CZ	14205	14173	14193	-32	20	-0.22	0.14	no change	no change
DE	133166	136494	134696	3328	-1798	2.5	-1.32	increase	decrease
DK	996438	994159	994749	-2279	590	-0.23	0.06	no change	no change
EE	24390	24945	25656	555	711	2.27	2.85	increase	increase
EL	38103	38103	38103	0	0	0	0.00	no change	no change
ES	81105	149495	150582	68390	1087	84.32	0.73	increase	increase
FI	38042	38042	38544	0	501	0	1.32	no change	increase
FR	1654269	1013335	2029770	-640934	1016434	-38.74	100.31	decrease	increase
HR	8123	8123	8179	0	56	0	0.70	no change	increase
HU	8505	8505	8485	0	-20	0	-0.23	no change	no change
IE	2006	2006	2006	0	0	-0.01	0.00	no change	no change
IS	20870	22072	24325	1202	2253	5.76	10.21	increase	increase
IT	60227	60376	60377	149	1	0.25	0.00	no change	no change
LI	82	82	73	0	-9	0	-11.22	no change	decrease
LT	11504	11504	11509	0	5	0	0.04	no change	no change
LU	1944	1959	1963	15	4	0.77	0.23	increase	no change
LV	16851	16836	16839	-15	4	-0.09	0.02	no change	no change
ME	1667	1667	1848	0	182	-0.01	10.89	no change	increase
MK	2297	2297	2297	0	0	0.01	0.00	no change	no change
MT	5023	5717	5720	694	3	13.82	0.04	increase	no change

NL	22013	34175	34191	12162	15	55.25	0.04	increase	no change
NO	96048	182681	186994	86633	4312	90.2	2.36	increase	increase
PL	104145	104167	103537	22	-630	0.02	-0.60	no change	decrease
PT	257471	257489	257550	18	61	0.01	0.02	no change	no change
RO	14053	14053	14053	0	0	0	0.00	no new data	no new data
RS	6349	6413	6490	64	77	1.01	1.20	increase	increase
SE	57313	57360	59032	47	1672	0.08	2.92	no change	increase
SI	34261	34065	169391	-196	135326	-0.57	397.26	decrease	increase
SK	12188	23939	12333	11751	-11605	96.41	-48.48	increase	decrease
TR	60412	111512	113321	51100	1809	84.59	1.62	increase	increase
UK	178568	175203	187194	-3365	11991	-1.88	6.84	decrease	increase
XK	1410	1410	1411	0	1	0	0.07	no change	no change
EEA39	4015786	3617518	4781129	-398268	1163611	-9.92	32.17	decrease	increase

For Bosnia and Herzegovina a high increase of more than 440% of area is identified in the table. This is mostly due to new national data and a new counterpart responsible for data on protected areas in the country. Multiple former vague described sites which were also mostly represented by point data only have been replaced by actual spatial mappings and corrected tabular information.

7.2 The type 1 (spatial) delivery

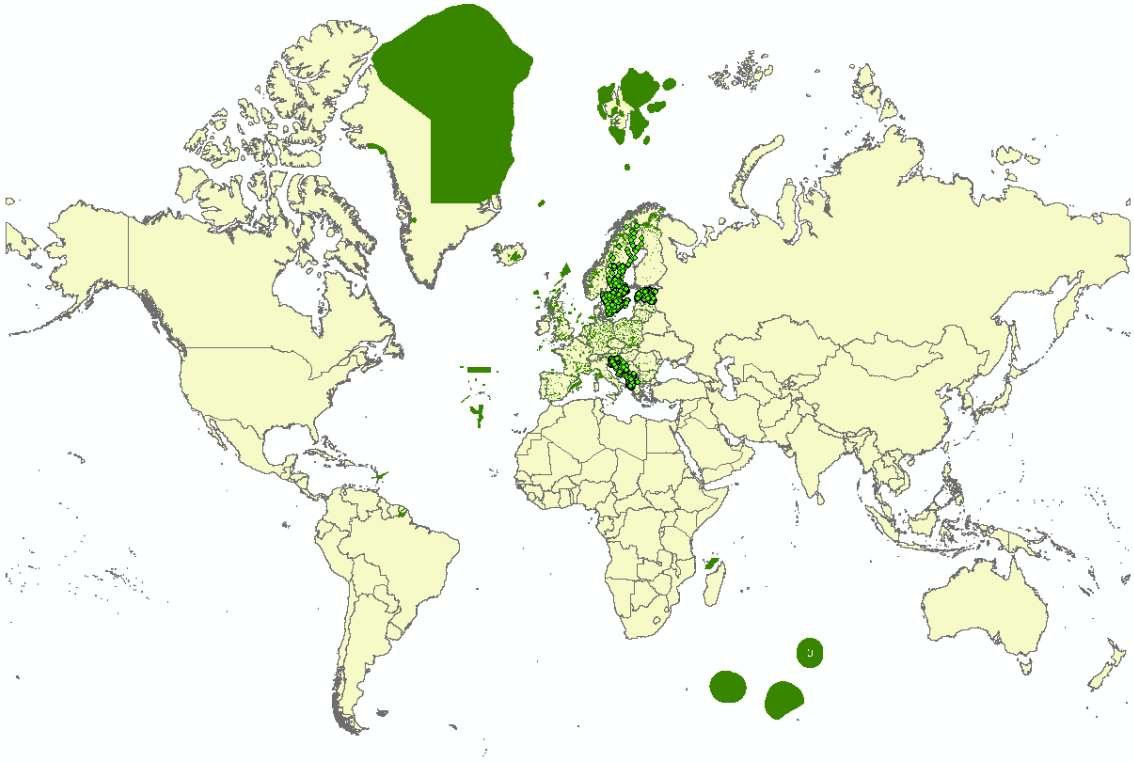
Spatial data (ProtectedSite / type1) delivered in form of points and polygons:

Table 7-4 Type 1 – count of points and polygons

Dataset	Total number of sites
ProtectedSite (Type 1) - Polygons	114 840
ProtectedSite (Type 1) - Points	3958
ProtectedSite (Type 1) - Points & Polygons	118 798

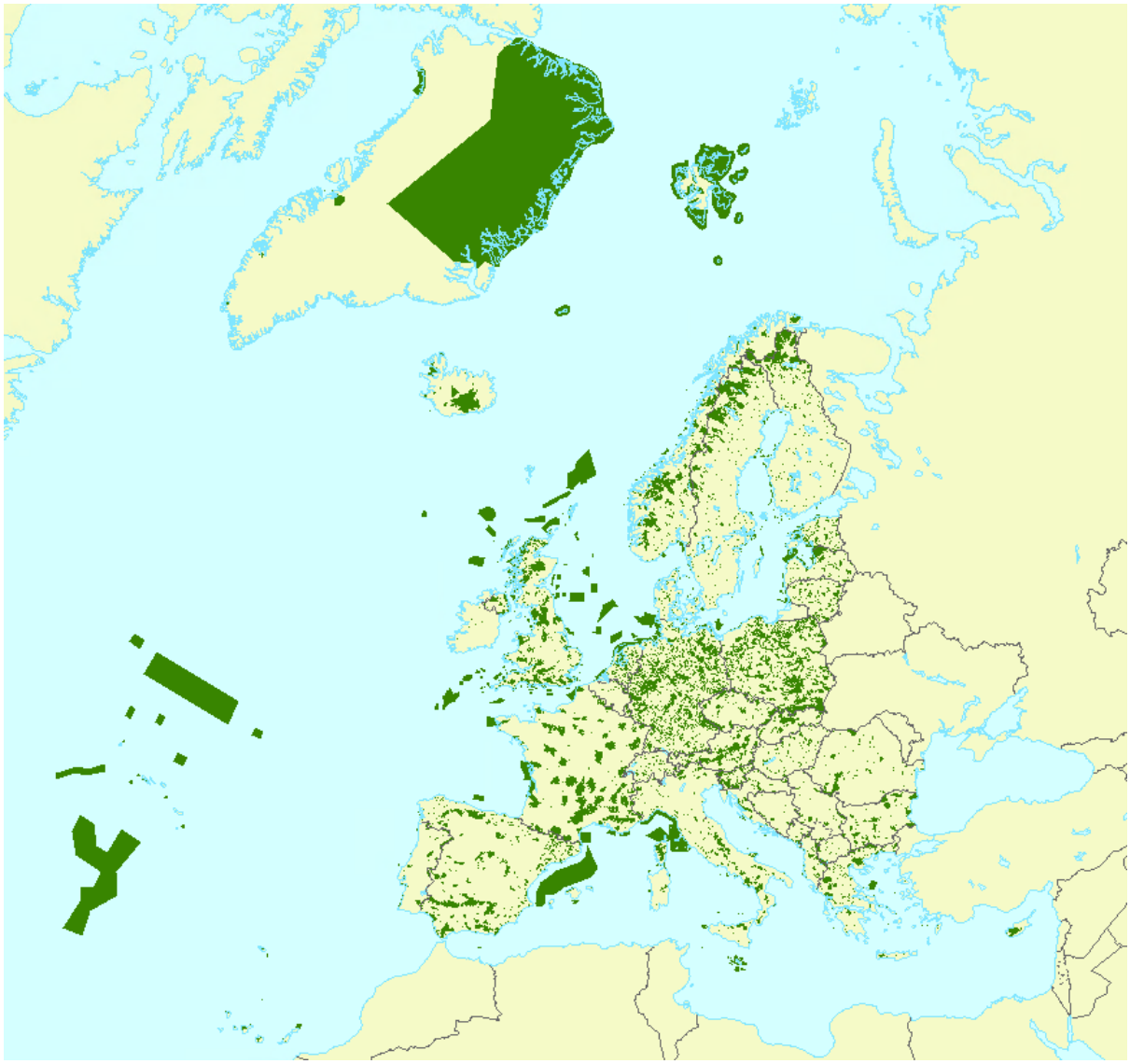
The following map shows the full CDDA dataset with all delivered sites:

Map 7-1 CDDA v18 with all public polygon and point sites (also sites from overseas territories) in WGS84

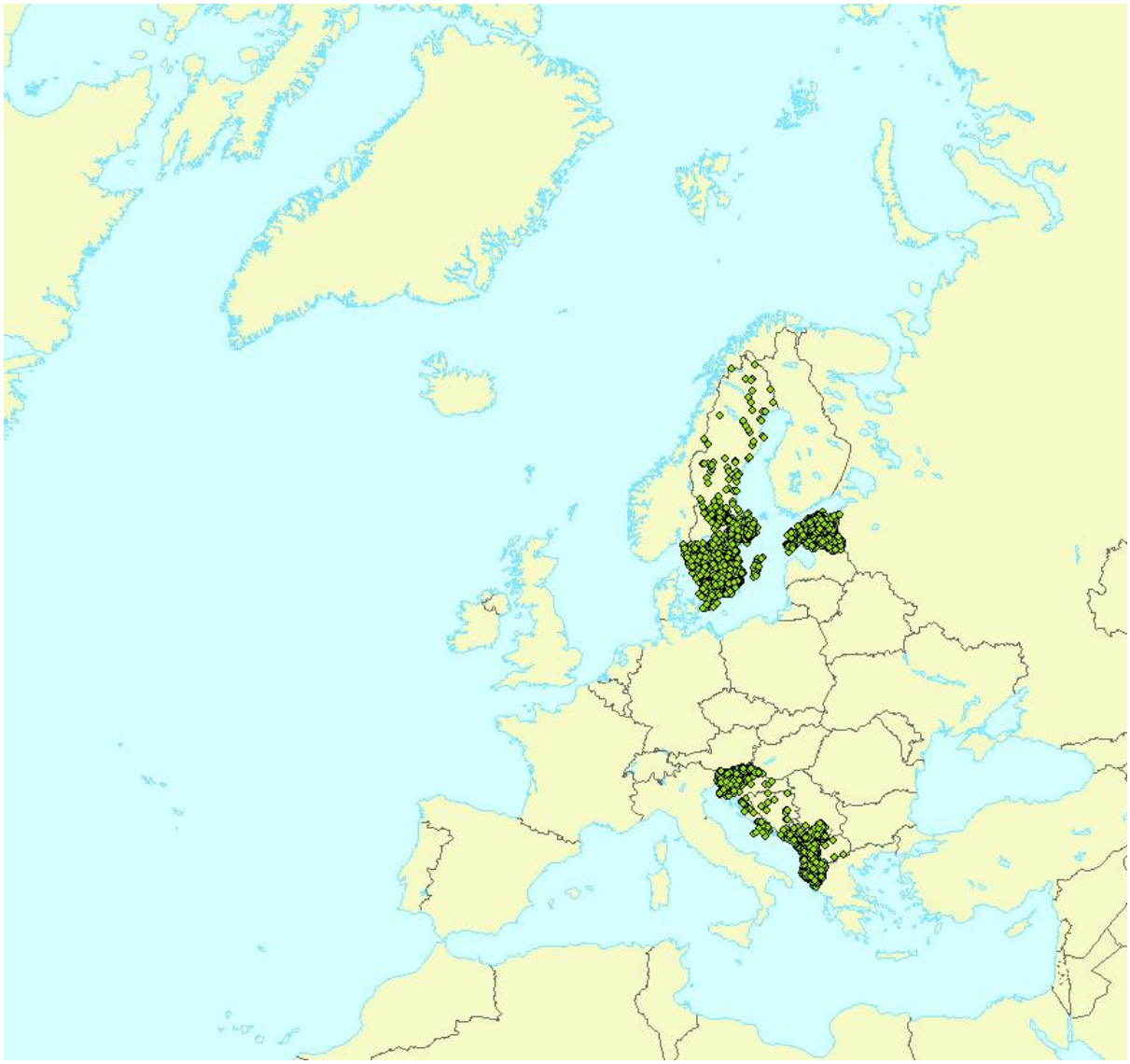


To get a better impression of the sites located on the European continent, the following maps with CDDA sites in LAEA projection can be used:

Map 7-2 European polygon sites in LAEA projection



Map 7-3 European sites (points) in LAEA projection



7.3 Information on major ecosystem types

One important CDDA information is the "Major ecosystem type" - http://dd.eionet.europa.eu/dataelements/92556. For every CDDA site the major ecosystem type: marine, marine-terrestrial or terrestrial should be specified.

The following table shows the count of CDDA sites classified by the major ecosystem type for the different countries:

Table 7-5 Distribution of count of CDDA sites per major ecosystem

	Count of sites			
Country	marine	marine and terrestrial	terrestrial	Total
AL	1	1	798	800
AT			1222	1222
BA			40	40
BE	2	15	1494	1511
BG	1	3	1045	1049
CH			10423	10423
CY	2		57	59
CZ			2712	2712
DE	11	81	17654	17746
DK	11	12	573	596
EE	51	175	17950	18176
EL	3	40	760	803
ES	34	88	1694	1816
FI	17	658	13593	14268
FR	41	52	3812	3905
HR	2	20	387	409
HU			311	311
IE	3	45	261	309
IS			117	117
IT	35	5	836	876
LI			44	44
LT	4	2	473	479
LU			134	134
LV	7	2	671	680
ME			54	54
MK			74	74
MT	19		250	269
NL	7	5	182	194
NO	8	870	2309	3187
PL		14	2043	2057
PT	48	16	170	234
RO	1		943	944
RS			377	377
SE	1	808	15254	16063
SI	2	12	1893	1907
SK			1191	1191
TR	7	332	3747	4086
UK	152	284	9032	9468
XK			208	208
Total	**470**	**3540**	**114788**	**118798**

7.4 Information on IUCN categories

The IUCN management category of the protected sites further describes the extent of protection http://dd.eionet.europa.eu/dataelements/93950.
The following table shows the count of sites classified by their IUCN category.

Table 7-6 Distribution of sites by IUCN category and country

	IUCN category										
Country	Ia	Ib	II	III	IV	V	VI	not applicable	not assigned	not reported	Total
AL	2		15	748	26	5	4				800
AT	5	2	26	149	665	371	4				1222
BA	2		4	20	2	6	3			3	40
BE					1074		60	377			1511
BG	55		3	347	35	11	570	28			1049
CH	553				6231				3639		10423
CY	11		11	6	24	2	5				59
CZ	26	2	3	674	1973	34					2712
DE			16	4	8324	8774			628		17746
DK	5	7	4	19	340	111	1	100		9	596
EE	29	1382		1052	1103	933	875	12802			18176
EL	10		26	29	623	5	73	37			803
ES	14	89	117	449	447	397	55		248		1816
FI	22	333	46	18	11049	710			2090		14268
FR	92	2	11	14	3703	74				9	3905
HR										409	409
HU			5	90	158	57		1			311
IE	73		6		230						309
IS	2	2	3	41	22	32	15				117
IT	116		25	55	495	185					876
LI	11	8			22	3					44
LT	6		5		404	32	32				479
LU		64	3		67						134
LV		4	45	328	293	10					680
ME	1		5	40		8					54
MK	2		3	55	12	1	1				74
MT	3		1	7	222	13	1	22			269
NL			21		161				12		194
NO	2435	6	47	110	282	133				174	3187
PL			16		1431	119			491		2057
PT	13	25	1	24	69	48	54				234
RO	45		13	203	667	16					944
RS	9	1	3	188	38	25	1			112	377
SE	3832	175	24	307	1414	291		7529	2491		16063
SI	6	52	1	1161		44		643			1907

SK	336	23	2	331	403	21		75			1191
TR	1643	91	43	111	81	366	1751				4086
UK			21	343	8660	94		47	14	289	9468
XK	18	1	2	180		7					208
Total	9377	2269	577	7103	50750	12938	3505	21661	9613	1005	118798

Box 7-1 IUCN categories

INFO: IUCN categories

- Category Ia – Strict Nature Reserve
- Category Ib – Wilderness Area
- Category II – National Park
- Category III – Natural Monument or Feature
- Category IV – Habitat/Species Management Area
- Category V – Protected Landscape/Seascape
- Category VI – Protected Area with sustainable use of natural resources
- notApplicable - The IUCN management categories are not applicable to a specific designation type
- notAssigned - A protected area whereby the data provider has chosen not to use the IUCN management categories.
- notReported - The IUCN management category has not been reported.

Around 75% of all sites have been assigned an IUCN category. The share of sites with no assigned actual IUCN category (notApplicable/notAssigned/notReported) has not changed significantly towards the previous reporting.

7.5 Details on type of designated area

While most designated areas are sites protected by major legislation like laws, regulations or obligations other areas under specific protection like management restrictions or maintenance and care of public or private institutions are reported as designated boundaries too. These areas represent a second type of protected areas which can account for a significant part of the nationally protected areas within a country - http://dd.eionet.europa.eu/dataelements/92554.
The table below shows the number of sites and areas reported by the countries both for designated sites and boundaries.

		Designated Area Type		
Country		**Designated boundary**	**Designated site**	**Total**
AL	Site Area [ha]		503,645	503,645
	Number designated areas		800	800
AT	Site Area [ha]		2,782,083	2,782,083
	Number designated areas		1,222	1,222
BA	Site Area [ha]		192,232	192,232
	Number designated areas		40	40

BE	Site Area [ha]		268,973	268,973
	Number designated areas		1,511	1,511
BG	Site Area [ha]	1,165,743	645,459	1,811,202
	Number designated areas	28	1,021	1,049
CH	Site Area [ha]		498,149	498,149
	Number designated areas		10,423	10,423
CY	Site Area [ha]		515,642	515,642
	Number designated areas		59	59
CZ	Site Area [ha]		1,419,333	1,419,333
	Number designated areas		2,712	2,712
DE	Site Area [ha]		13,469,596	13,469,596
	Number designated areas		17,746	17,746
DK	Site Area [ha]		99,474,892	99,474,892
	Number designated areas		596	596
EE	Site Area [ha]		2,565,570	2,565,570
	Number designated areas		18,176	18,176
EL	Site Area [ha]		3,810,275	3,810,275
	Number designated areas		803	803
ES	Site Area [ha]	111,145	14,947,082	15,058,227
	Number designated areas	11	1,805	1,816
FI	Site Area [ha]		3,854,355	3,854,355
	Number designated areas		14,268	14,268
FR	Site Area [ha]	43,240	202,933,725	202,976,965
	Number designated areas	1,448	2,457	3,905
HR	Site Area [ha]		817,929	817,929
	Number designated areas		409	409
HU	Site Area [ha]		848,481	848,481
	Number designated areas		311	311
IE	Site Area [ha]		200,580	200,580
	Number designated areas		309	309
IS	Site Area [ha]		2,432,469	2,432,469
	Number designated areas		117	117
IT	Site Area [ha]		6,037,661	6,037,661
	Number designated areas		876	876
LI	Site Area [ha]		7,280	7,280
	Number designated areas		44	44
LT	Site Area [ha]		1,150,852	1,150,852
	Number designated areas		479	479
LU	Site Area [ha]		196,350	196,350
	Number designated areas		134	134
LV	Site Area [ha]		1,683,943	1,683,943
	Number designated areas		680	680
ME	Site Area [ha]		184,849	184,849
	Number designated areas		54	54
MK	Site Area [ha]		229,717	229,717

	Number designated areas		74	74
MT	Site Area [ha]		571,962	571,962
	Number designated areas		269	269
NL	Site Area [ha]	1,188,170	2,230,906	3,419,076
	Number designated areas	12	182	194
NO	Site Area [ha]		18,699,370	18,699,370
	Number designated areas		3,187	3,187
PL	Site Area [ha]		10,353,669	10,353,669
	Number designated areas		2,057	2,057
PT	Site Area [ha]		25,755,044	25,755,044
	Number designated areas		234	234
RO	Site Area [ha]		1,405,340	1,405,340
	Number designated areas		944	944
RS	Site Area [ha]		649,020	649,020
	Number designated areas		377	377
SE	Site Area [ha]		5,903,202	5,903,202
	Number designated areas		16,063	16,063
SI	Site Area [ha]		16,939,052	16,939,052
	Number designated areas		1,907	1,907
SK	Site Area [ha]		1,233,321	1,233,321
	Number designated areas		1,191	1,191
TR	Site Area [ha]		11,332,100	11,332,100
	Number designated areas		4,086	4,086
UK	Site Area [ha]		18,719,372	18,719,372
	Number designated areas		9,468	9,468
XK	Site Area [ha]		141,089	141,089
	Number designated areas		208	208
EEA39	Site Area [ha]	2,508,298	475,604,569	478,112,867
	Number designated areas	1,499	117,299	118,798

Although only 4 countries have reported information on the designation boundaries which account for only 0.5% of the European protected areas, within the single countries the share of designated boundaries can sum up to an important part of the protected area in the country (64% in Bulgaria, 34% in the Netherlands).