



Croatian Environment Information System Conceptual Model - CEIS -

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1. INTRODUCTION

Country fact

- Independent country: from 1991
- Location: Middle-European, Mediterranean Country
- Population: 4,4 mil. inhabitants
- Capital: Zagreb, (800.000 inhabitants)
- Surface: 56 600 km²
- Coastline: 6 000 km / 1 200 islands (50 inhabited)
- Highest peak: Dinara - 1 831 m above sea level
- GDP per capita in 2007: 8 452 EUR

A well preserved environment

reasons:

- war (1991-1995)
- not burdened with heavy industry in former state
- high level of awareness on “clean” environment as our main benefit in future development





MAIN FACTS ABOUT ENVIRONMENTAL LEGISLATION

respectable history of environmental legislation, monitoring & measuring in some environmental sectors/ fields, i.e. Water Acts, and Environment Impact Studies from the mid 70's; Waste Acts - from the 80's;
150 years history of Hydrological and Meteorological data

LEGISLATION TODAY

- FIVE MAIN STRATEGIES ADOPTED
- EIGHT MAJOR ACTS IN FORCE
- NUMEROUS REGULATIONS, ORDINANCE etc.

CONCLUSION REGARDING LEGISLATION:

Even now, with unfinished process of legislative transposition in accordance to “EU acquis comunitaire” Croatia has good and modern legislation, although some parts are still missing (i. e. soil protection legislation)



Croatian Environmental Information System – CEIS

- **Environmental Protection Act**
(OG No. 82/94, 128/99, 110/07)
- **By - law on Environmental Information System** (OG No. 68/08)
- **Croatian Environment Information System Development Program** for
the period 2009-2012



With this systematic approach, the Republic of Croatia has defined a path for creating a unique EIS which connects all existing data and information about the environment, acknowledging the principles:

- of editing information closest to the primary data source,
- acquiring the information once and distributing it among other participants of the system for various purposes,
- ensuring an easier approach to the information to the end user, primarily the bodies of the government of the Republic of Croatia for the needs of the direction of the environment protection policy and monitoring of its implementation, as well as for scientific, expert and general public needs.



2. CONCEPTUAL MODEL

2.1. Conceptual Model of System

Structure and content of the information systems used in the country follow the latest practice in EU with indicator approach and SEIS principles.

CEIS is structured as:

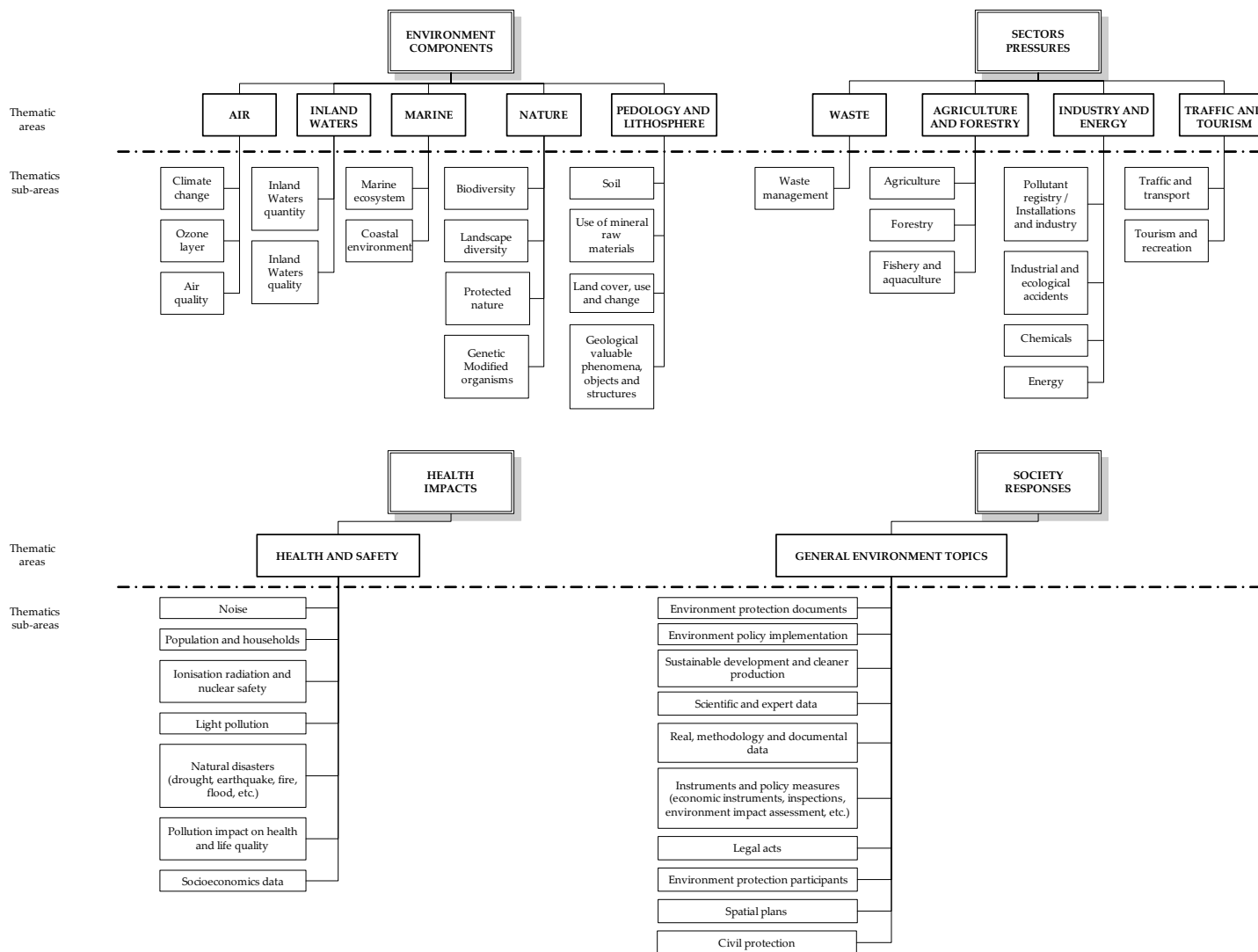
- decentralised but an integrated information system
- available via an Internet portal
- based on information and the data provider's network
- defined by the National list of indicators (NLI)

CEIS content is divided into four main groups:

- Environmental components
- Sector pressures
- Health impact
- Society responses



Four main groups - content





Base for content of the information system is:

The National List of Indicators (NLI) – taking into account:

- Regulation
- Reporting obligations
- International contracts
- Specific national needs

The National List of Indicators defines basic data groups within the 42 topics. Each of the basic data group indicators consists of multiple attributes.

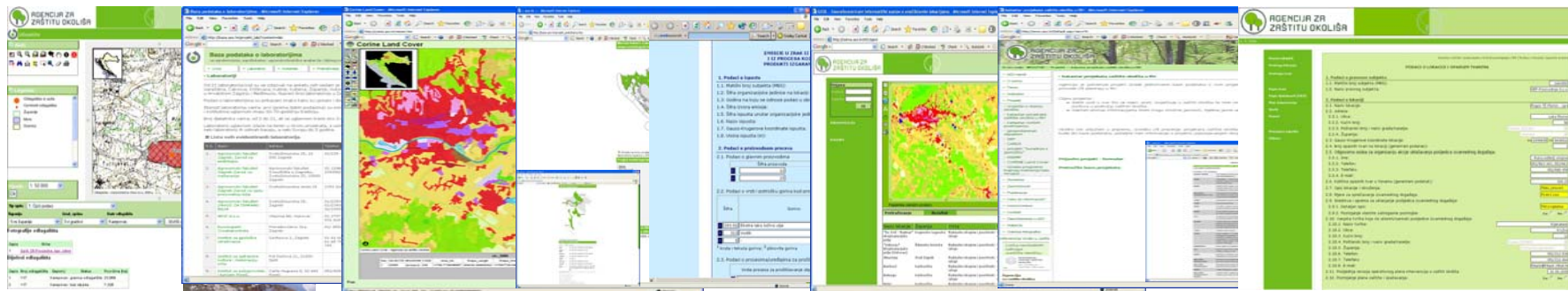
Individual attributes are needed for:

- quality insurance and quality control,
- data flow recognition,
- to determine responsible institution,
- frequency of measurements or other criteria.

Up to now the Croatian Environmental Agency (CEA)
– has completed list of indicators (NLI) for:

- 18 topics
- Data sheets for 266 indicators

Completed data base for 44 out of 105,
of which 27 are within the CEA and they are indicator based





In the case of all attributes in individual data groups these are the responsibility of a single institution, such data should be easily accessible, fulfilling prescribed measures of security and quality control of data.

For Physical Characteristics of station and Water Quantities following set of data is necessary:

Physical Characteristics of station: 14 attributes:

Country Code
National Station ID
River Basin District
Water Quantity Reference Station
Precipitation Station
Water Quantity Flux Station
River Name
Catchment Name
Region
Longitude
Latitude
Altitude
Catchment Area
Remarks

Water Quantity: 7 attributes:

National Station ID
Codelist
Year
Month of Maximum Value
Day of Maximum Value
Value
Remarks

Data source: Meteorological and Hydrological Service

Results: Data has been successfully delivered



Availability and control of quality of the data with a greater number of attributes, which are the responsibility of different institutions, is becoming more difficult.

- EEA request -> Dataset tables for Eionet-Water: Groundwater -> Content of these tables is:
 - Aggregated Data on Ammonium
 - Aggregated Data on Dissolved Oxygen
 - Aggregated Data on Nitrate
 - Aggregated Data on Nitrite
 - Disaggregated Groundwater Data
 - **Groundwater Body Characteristics and Pre ... ->43 parameters measured (and still counting) by 5 institutions**
 - Groundwater Body GIS Boundaries
 - List of Sampling Sites with Disaggregate ...
 - Saltwater Intrusion
 - Saltwater Intrusion GIS Boundaries

- **Result – no delivery**

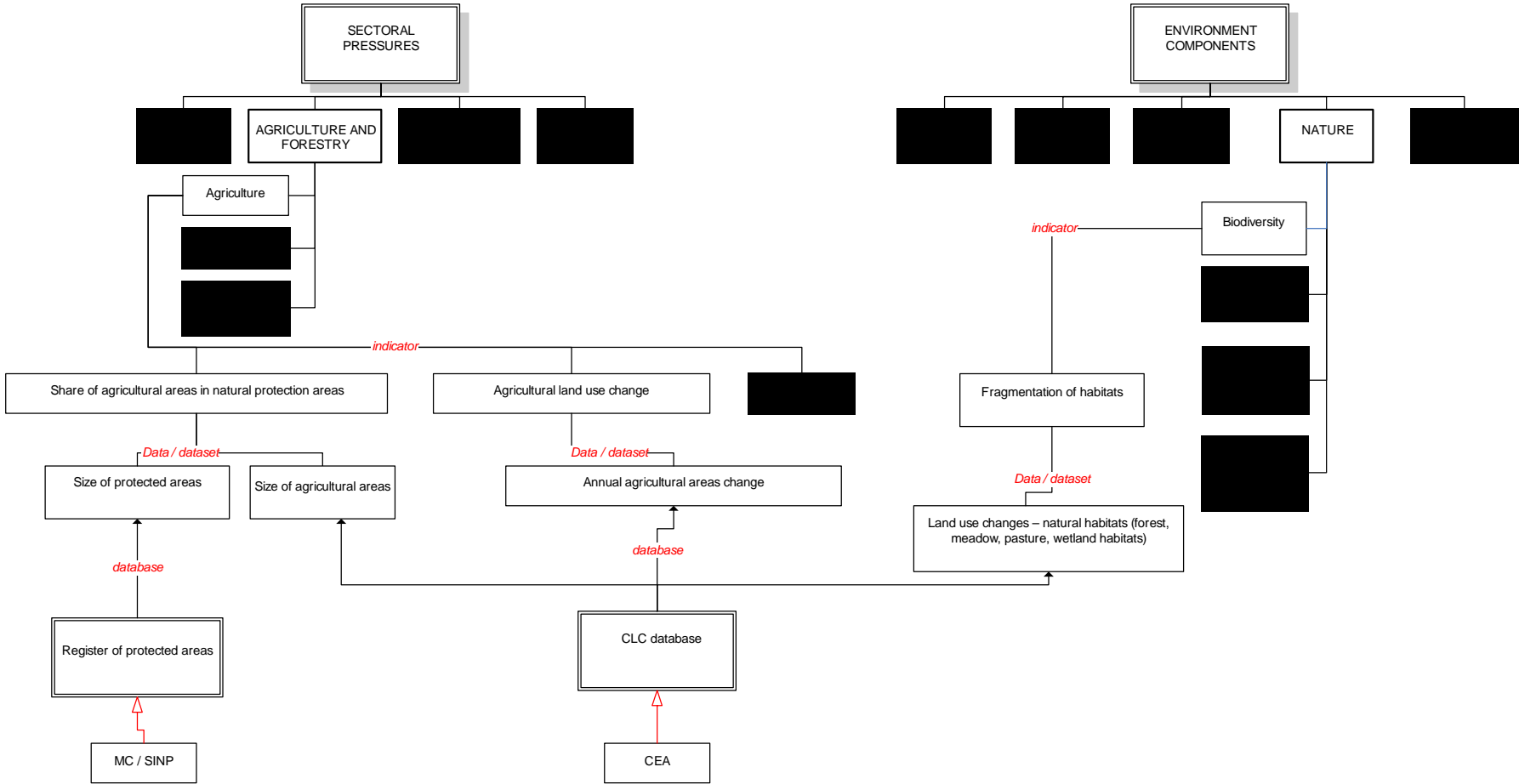


On the level of the group of attributes, containing certain data required for the indicator calculation, different “memberships” of attributes in individual data groups is recognised.

These “memberships” are recognized on the level of the data itself and three principles of data flow can be defined as follows:

- Data for calculating a single indicator is used for the needs of calculating another indicator in the same thematic area and/or sub area
- **Data for the calculation of a single indicator is used for the needs of calculating another indicator in a different area and/or sub area**
- Data for calculating one indicator is used only for that purpose.

The principle of data flow used for the calculation of two indicators from different areas





2.3. Conceptual Model of the Conduction

- *Croatian Environment Agency* is responsible for:
 - establishment
 - development
 - conduction
 - coordination
 - maintenance of **Croatian Environment Information System**

- *Committees* for the purposes of creating and compiling of the NLI

- *obliged entities for CEIS (over 100 institutions and over 1000 legal and physical entities!)*
 - to ensure Operational plan drafting and conduction
 - to nominate the representative(s) to the NLI committee
 - to nominate responsible persons for information system establishment under their system/sub system jurisdiction
 - to produce the protocols and measures for data quality control assurance

- *For the construction of particular parts of the system and for their maintenance by performers assigned to the task*



Conduction through four phases:

PHASE I. Setting up the technical background for system establishment

PHASE II. Development and/or connection of information systems and databases of certain thematic areas and sub-areas in to CEIS

PHASE III. Technical and security maintenance and reporting

PHASE IV. Implementation and education

For each phase the Program defines specific goals and measurements together with activities needed to reach those goals. There are 10 goals in total with 21 measurements (74 activities)

Example: Implementation of the SEIS is in goal C5, measurements M11, these activities will start from June 2010 until April 2011!



Basic request for the Programme implementation requires:

- harmonised work on project preparation
- defining priorities for the project's implementation by using synergy effects in the project's performance
- defining individual information systems
- defining the bearer and the obligators
- recognition of the primary data groups availability
- possibility of long term planning for the monitoring of certain environment components and/or pressure sources, as well as assurance of the precondition for predicted activities implementation
- possibility of time and finance planning for individual information system projects
- possibility to estimate the expenses needed for gathering the environment monitoring data

KEY MESSAGE: COOPERATION!!!!



Special demands for the Programme implementation are:

- assurance of the structure applicable to assure growth and upgrade of the existing system for sub-areas not included in this four year Programme
- assurance of complementary interconnections (taking over parts of projects/solutions from one project to another)
- optimal and rational use of overall resources (financial funds, experts etc.)
- assurance of project's implementation synchronisation

KEY MESSAGE: LESS IS MORE!!!!



- The fact that the **Republic of Croatia**, because of historical reasons, did not participate in the production of vertical business solutions - which were already active for three decades in the computer industry. And also since the legal obligations, evident in other countries, were not in place to define information systems. This has given us a certain **advantage**.
- *The Conceptual Model* implements the necessity of **upgrading and integrating of already developed** and implemented systems, the **development** of nonexistent systems, and by all means the **establishing of new legal regulations** where needed.
- This *Conceptual Model* follows the needs to **simplify the process of reporting** and **ensure the execution of requested obligations**. Furthermore, the CEIS constructed, according to the principles of this *Conceptual Model*, will in future **decrease administrative pressure, ensure on time, easy to reach, reliable and relevant information on the state of the environment**.



Thank you

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