



ISPRA

Istituto Superiore per la Protezione
e la Ricerca Ambientale

KEY TOPICS

Environmental Data Yearbook

2011

**ENVIRONMENTAL PROTECTION AGENCIES OF THE
REGIONS AND AUTONOMOUS PROVINCES**

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Law 133/2008, which converted, following modification, Legislative Decree no. 112 of 25 June 2008, established the ISPRA – Institute for Environmental Protection and Research . The ISPRA carries out the functions that were the responsibility of the Environmental Protection and Technical Services Agency (the former APAT), of the National Institute for Wildlife(former INFS) and of the Central Institute for Scientific and Technological Research Applied to the Sea (the former ICRAM). The present publication refers to activities carried out during a period preceding the merger of the three institutions, meaning that it still contains references and titles the three institutes no longer in existence.

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*verum animo satis haec vestigia parva sagaci
sunt, per quae possis conoscere cetera tute.*¹

*Titi Lucretii Cari – De rerum natura
(Liber I, 402-403)*

¹ To a shrewd mind these small footprints are sufficient: with them you can know the rest

Foreword

I am pleased to present the 10th edition of the Environmental Data Yearbook produced by ISPRA and ARPA/APPAs with the collaboration of numerous technical-scientific bodies, such as the institutions Main Reference (IPR).

The Environmental Yearbook 2011, the result of a consolidated process of production and management of statistical data on the environment, confirming a publication institutional extremely rigorous and thorough with regard to the scientific content and methodologies that they receive.

In order to ensure the integration of data sources and information as well as a more comprehensive application, starting from this edition was initiated a process intended to engage operationally in addition to the Environmental Agency System also other public institutions/organizations technical and scientific, both in the phase of consolidation methodological and population of the indicators, both in the phase of refereed total.

The document, directed not only to experts but to all citizens, promotes the analysis and understanding environmental phenomena taking place in our country and is a valuable support for the policies of resource conservation and sustainable development.

The air and water quality, the biodiversity, the generation and disposal of waste are environmental aspects of the current situation which, of course, require a monitoring and control always careful and relentless action and public dissemination information leading to an urgent reflection on the common good.

The themes of the sea and the forest, at the center of a collective mark today are some of the environmental priorities of the Italian and international environmental agenda.

The Framework Directive 2008/56/EC on the Strategy for the Marine Environment - Marine Strategy Framework Directive - has sanctioned the implementation by the Member States by 2020, with the objectives and programs of measures in defense of the sea, based on a knowledge of the ecological status of the different marine regions and their ecosystems.

The Community strategy Italy also requires the identification of causal factors at the origin of maritime pollution and impacts from human activities on the waters of the Mediterranean, and the definition of a set of environmental targets to be achieved.

The marine ecosystem, which plays an essential role in human life, it offers as well as other important resources, such as woodland and forest, huge growth potential and social and economic progress.

The year 2011 was declared by the General Assembly of the United Nations "International Year of Forests", in order to spread the purpose of the management, conservation and sustainability of all types of forests and in continuity with 2010 dedicated itself to Biodiversity.

The Forest play a key role to limit global emissions of carbon dioxide, the effects of climate changes and to protect the biodiversity.

The national conference on forest resources and ecosystem services, organized by ISPRA, showed the link between biodiversity conservation and sustainable management of forest areas, which contribute to the wealth of Italian species and habitats. The Environmental must be considered an integral part of the development process.

The savings and the improvement of resources, the recycling, the use of renewable

energy sources and new production models, compatible with the carrying capacity of natural systems can be safe investments for current and future generations.

Sustainability needs to interventions involving the different sectors of society. In fact, only with the cooperation between government, business, scientific research and the citizens will be able to achieve significant efficiency and innovation targets.

It is decisive to generate these changes, the work of ISPRA to collect and disseminate environmental data and information, through the reporting activities and comply with the guidelines provided by the General Directive - 2012 - the Minister of Environment and Protection of Land and Sea on the functions and duties of the Institute.

In particular, with the regular production of the environmental data Yearbook, the Institute promotes the dialogue between the state and citizens useful to combine the economic development with the protection of the environment.

The creation of an editorial product is so diverse, complex and at the same time complete is the result of the efforts of many professional and competent in ISPRA and in the Agency System, to whom I extend my most sincere thanks for this edition.

Prof. Bernardo DE BERNARDINIS
The President ISPRA

Introduction to the Environmental Data Yearbook

The Environmental Data Yearbook, now in its 10th edition, is still the most complete and authoritative collection of the environmental data and information, published in Italy with continuity and methodological rigor. The work of selection and dissemination of scientific information is carried out by ISPRA in compliance with its institutional functions and targets, as confirmed and reinforced by General Directive of the Minister of Environment and Protection of Land and Sea Corrado Clini, relative to 2012, on the performance of the functions and tasks of the Institute.

The Data Yearbook comes from ten years experience, in the field of environmental reporting in APAT first and then ISPRA and from the commitment synergistic and with the environmental protection agencies of the Italian regions and of the autonomous provinces. Important and qualified contributions to the development and the improvement of the information in the document have been provided by institutions ex ICRAM and ex INFS, merged into ISPRA. Several technical and scientific organizations have contributed actively to the realization of this document providing, for this edition, a contribution with regard to the validation and processing of data.

Within the activities of the Agencies System Area C - Development - Management - dissemination of environmental information as defined by the three-year program 2010-2012 and approved by the Federal Council, activities finalized to insurance an organic and harmonized production and diffusion of the environmental information were conducted. In particular, a line of action is addressed to define a methodological standards of the System's reporting, related to the techniques and methodologies for processing of data and information.

The revision of the core set of indicators and the creation of a glossary, objectives introduced as early as the previous editions, have been followed, this year, by a special Working Group. The main objective of this group has been the study of indicators and related data, available on the Regional environmental Data Yearbook, to compare and homogenize them with the contents of the National environmental Data Yearbook in order to assess their possible integration.

In particular, the review and consolidation of the core set of indicators have included: the validation of each indicator, based on the objectives set by national, European and international laws and regulations and by the corresponding reporting obligations and/or guidelines; the assessment of the indicator's ability to represent the phenomenon being investigated; the verification of the availability of the data needed to populate the indicator; the evaluation of the scientific relevance and solidity of the indicator; the inclusion of new types of indicators (e.g. indicators of decoupling, performance indicators, efficiency indicators, sustainability indicators, composite indices, etc.); the relocation of some indicators between the different topics.

In addition, to ensure the integration of the data sources and of the information of the priority areas identified for this edition, have been involved in addition to the Agencies System other public institutions/organizations technical and scientific, both in the phase of consolidation methodological, populating environmental indicators and during the refereed total.

The environmental information base 2011 of the Yearbook (10th edition) is returned through seven products, in order to ensure a more timely dissemination of information. The usual versions (Full version, Key Topics, Yearbook Indicators Database, Multimedia Version) are also added three new publications: Key Topics light (instead of the Vademecum), Environmental Data Yearbook in figures (a

statistical brochure) and Newspaper (cartoon version of an issue of the Yearbook). The Environmental Data Yearbook full version presents the factsheet indicator populated in 2011, organized by Production Sectors, Environmental Conditions and Responses.

The overview, an introduction to the chapter, contains some information about the indicators and their representation by tables and figures, and the updating frequency. The structure of the board (section metadata), it was simpler than that used in the database directory, through the selection of essential information relating to the indicator: Description, Quality of Information, Target fixed by law, State and trends, Comments on tables and figures.

The general structure of the document is divided into four sections with indicators structured according to the DPSIR model (Section A - General Elements; Section B - Production sectors; Section C - Environmental Conditions, Section D - Protection and Prevention). Compared to the previous editions, the introductions of topic and of SINAnet theme have been simplified and reduced, in order to allow content reading easier and more immediate: the first track briefly an overview of the issue, outlining the main features, both in terms of physical phenomena or both of the main issues of environmental concern, and the second briefly describes the themes that make up the topics.

It has been introduced a new chapter focused on the household, designed to outline the relationship between consumption patterns adopted and the environment. In particular, the chapter that supports and integrates environmental aspects of family life, introduce the last year, shows the role and responsibilities of families with respect to the environmental situation of today, indicating the types of consumption that generate the greatest environmental pressures .

The full version of the 2011 edition is produced in both paper and electronic formats (PDF available on CD-ROM and at the sites www.isprambiente.it and <http://annuario.isprambiente.it/>), is available through following products:

- *Key Topics* – A version (available in Italian and English language) containing supplementary information on priority environmental issues, subject to specific prevention and reclamation. It is available in both paper and electronic formats;
- *Key Topics light* (instead of the Vademecum) – A short version of the Key topics (available in Italian and English language). It is available in both paper and electronic formats (PDF);
- *Environmental Data Yearbook in figures* - Statistical brochure (in Italian and English language) containing the graphics more representative of environmental issues and statistical information and brief notes of depth. It is available in paper and electronic format (PDF);
- *Database* – A tool for on-line consultation of the indicator fact-sheets and the production of reports;
- *Multimedia* – A tool for communicating the Yearbook data and information in a quick and easily understandable way through film sequences and web applications. The movie Environmental Data Yearbook 2011 edition (in Italian) is available on CD-ROM and at the site www.isprambiente.it;
- *Newspaper* - cartoon version of a specific environmental Yearbook. It is available in paper and electronic format (PDF).

The volume Key Topics contains an integration of data elements of the Data Yearbook related to environmental issues that now has need of priority actions by the

environmental protection policies.

For each issue are examined: the existing condition (state/impact), the causes that have contributed to generate it (Driving/Pressure) and solutions undertaken or planned (Answers).

New performance and impact indicators were introduced, basing on the availability of data, and as a result of comparisons made at European and regional level.

Most of the subjects considered coincide with the topics covered in the sixth Environmental Action Plan of the EU.

In this edition, the thematic *The sea and coastal environment* and *Nuclear activities and Environmental radioactivity* were introduced.

Particular emphasis was given to the aspects related to the *Environmental hazard and Biodiversity and activities on ecosystems*, especially with regard to the state of forests and deforestation. In 2011, in fact, was declared by the General Assembly of the United Nations International Year of Forests. The event provided an opportunity to discuss ideas and propose methods to be pursued in view of a multiannual program for the management of forests that can coexist with sustainable development and climate change. For each issue was included a glossary of terms.

In *Key Topics "light"* in order to provide the public a comprehensive and immediate environmental information, the environmental issues analyzed in Key Topics were described according to the elements of the DPSIR (Driving forces, Pressures, State, Impacts, Responses), using some indicators that represent them. These indicators has been selected according to the following criteria: key indicators required by the regulations or reporting requirements; completeness of the time series (the national average); representativeness and maximum communicability, innovations/evolution/changes.

In the *Environmental Data Yearbook in figures*, preferring an immediately communication and effective at the same time, were selected for each thematic area charts accompanied by short notes and additional statistical data, particularly significant and self-explanatory, and meeting the criteria of completeness of the time series, reference to national data and communication.

The *Database of the Yearbook*, created in order to facilitate the elaboration process of the data and metadata, is an important communication tool made available to inside and outside users. The database, through the factsheet indicator, allows to search available indicators, for all editions of the Yearbook (from 2003 to present). The data processing system allows to create customized summary versions, organized according to the needs of individual users. From this edition, it is also possible to produce other types of reports, for example, the monitoring of Environmental Action Strategy for Sustainable Development in Italy (CIPE Resolution 57/2002), the European Strategy Development sustainable (Monitoring Report 2011) and other issues of primary interest, such as Climate Change and Sustainable Production and Consumption.

The movie version of the *Multimedia*, with the help of images, graphics, sound and spoken commentary, presents a summary of the significant main content of the Yearbook, representing the priority and the greatest interest issues to the general public. It was adopted methodology based on the DPSIR framework in order to encode and transmit statistical data and environmental indicators.

The *Newspaper* entitled "The investigation of the Inspector SPRA" – work in progress – deals, annually, with one environmental issue, using the language of comics in order to disseminate information and data of the Yearbook to a young audience of non-experts. For the 2011 edition was chosen the issue "Climate Change". The narrative structure also based on the DPSIR model, is to conduct a survey investigation by the Inspector SPRA and five officers: Mr. D. (the agent who investigates determinants), Mr. P. (the agent who investigates Pressure), Mr. S. (the agent who investigates the State), Mr. I. (the agent who investigates Impacts), Mrs. R. (the agent who investigates Replies).

The *Database of the Yearbook*, and *Environmental Data Yearbook Full Version*, allow a deeper examination of the topics.

The information base of ISPRA's Environmental Data Yearbook also constitutes the backbone for other important publications. These include the document: "Piano nazionale integrato dei controlli per la sicurezza alimentare" (National Plan of Integrated controls for food safety) issued by the Ministry of the Health, "Strategia di azione ambientale per lo sviluppo sostenibile in Italia" (Environmental action strategy for sustainable development in Italy) (CIPE Resolution 57/2002), for updating the indicators for the monitoring, National Strategy of Biodiversity (SNB), for the identification and monitoring of indicators.

The Environmental Data Yearbook 2011, through such a wide range of publishing, demonstrates the high level of usability obtained in the process of dissemination of statistics to a wider audience, including policy makers, experts, and citizens. With this work, in fact, ISPRA answers to the growing demand for information on environmental conditions by the community, and direct it in the direction of that assumption of responsibility and awareness civil that affects the effectiveness of policies sustainable development.

It is hoped that the Institute will continue the dissemination of environmental knowledge and culture with continuity and consistency according to the targets achieved up to its tenth edition.

Stefano LAPORTA
ISPRA General Director

Contributors and Thanks

General considerations

In carrying out one of its most important institutional functions, namely the coordination, collection and distribution of environmental information and reporting, ISPRA constantly procures and maintains a significant supply of top-quality knowledge, translating it into thematic and inter-thematic reports, such as the Environmental Data Yearbook, which, now in its eighth edition, is drawn on by a vast range of users.

Compared to the other publications, the Yearbook, give the thoroughness of the treatment of the environmental topics, stands as the best example of the final outcome of the complex synergies involving almost all the Institute's structures in the different disciplines.

To an even greater extent than in years past, the mass of information generated, together with the complexity of the analyses required to prepare this edition of the Yearbook, called for the efforts of a noteworthy number of experts on the different topics, together with analysts responsible for the reporting.

In citing the main contributions to the publication, special mention must go to the following departments:

- State of the Environment and Environmental Metrology; Marine and Inland Waters Protection; Land Resources and Soil Protection; Nature Protection; Nuclear, Technological and Industrial Risk; Library, Documentation and Information; as well as to the Inter-Departmental Services: Environmental Emergencies, Environmental Information; Guidance, Coordination and Control of Inspection Activities and Environmental Certification;
- Monitoring of Environmental Quality, Prevention and Mitigation of Impact, Defence of Habitats and Biodiversity, Sustainable use of resource;
- former INFS.

Equally important were the contributions of the ARPA/APPA agencies, plus the numerous technical-scientific bodies.

The planning and coordination of the overall production of the work are handled by the State of the Environment and Environmental Metrology Department, through the Environmental Statistics and Yearbook Project Service.

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The phases of the editing of the Yearbook products were handled by a workgroup coordinated by Mariaconcetta GIUNTA with the contribution of Silvia IACCARINO and Paola SESTILI and consisting of: Giovanni FINOCCHIARO (processing and statistical validation of the data), Cristina FRIZZA (processing and statistical validation of the data), Alessandra GALOSI (processing and statistical validation of the data), Elisabetta GIOVANNINI (texts editing) Silvia IACCARINO (coordinator of technical revision and data validation), Alessandra MUCCI (texts editing), Matteo SALOMONE (processing and statistical validation of the data and multimedia elaboration), Luca SEGAZZI (technical revision), Paola SESTILI (processing and statistical validation of the data), Valeria STRADAIOLI (texts editing and acronyms revision), Patrizia VALENTINI (processing and statistical validation of the data and multimedia elaboration). The Databank of the Yearbook Indicators was managed by Raffaele MORELLI. The Group has also handled the preparation of specific techniques, together with the related guidelines, for

compilation of the indicator fact-sheet and the Yearbook Indicators Database, as well as the integration of the contents of the work, the processing and statistical control of the data published and the overall technical review of both the information contents and the methodological/editing techniques used on those contents.

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The work involved in the preparation of the information contents of the “Environmental Data Yearbook” was carried out by a Task Force coordinated by Mariaconcetta GIUNTA.

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A detailed listing of specific contributors (authors and collaborators for the specific topics) is included at the start of each chapter of the full version.

Contributions of the Environmental Agency System

Initially, the contribution of the System involved the formulation of methodologies and the collection of data; later, it took the form of invaluable refereeing activities that made it possible to detect and, when necessary, resolve discrepancies inevitably produced by such an elaborately structured, complex process of information management.

The interface role between ISPRA and each ARPA/APPA was carried out by referees network established by Agency System Program 2010-2012 Activity Area C "Processing - Management - dissemination of environmental information":

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Other contributions from the ISPRA technical units

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Other contributions by units

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- procedural and administrative considerations: Vincenzo PEZZILLO, Elisabetta GIOVANNINI, Valeria STRADAIOLI;
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Contributions by subjects outside of the Agency System

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Referee

As was done with previous editions, in addition to the numerous contributions received from subjects (individual experts and organizations) outside of the Agency System during the phases involving the formulation and production of the Yearbook, it was held best to request an additional and independent assessment of the final product from experts on the individual topics addressed in the publication. It was not always possible to utilize all or a part of these contributions. In certain cases, the key factor was a lack of time. Other contributions that could not immediately be put to use regard proposed additions to the Indicators Database. In such cases, the proposals were not enacted because the data needed to populate the indicators were lacking.

We shall be sure, however, to return to these proposals in subsequent editions of the Yearbook. The following individuals were consulted and offered observations and proposals for additions:

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The listing of those who have contributed in one way or another, an exercise that may prove tedious but is definitely deserved, further demonstrates, were there any need for such evidence, the complexity of the work behind this volume, which constitutes an indispensable reference for those who use environmental data and information in the course of their own activities or in order to keep themselves up-to-date on our country's environmental status. There is also no mistaking the fact that, in pursuing these objectives, ongoing efforts must be made to enlarge the network of cooperation with other organizations and institutions, without which it would prove impossible to provide a body of knowledge adequate to current demands.

These thanks go to everyone, including those who, though they contributed, are not explicitly mentioned. A few names may have been left out by mistake. We ask these people to accept our most sincere apology.

As was done for the previous editions, we again ask that readers send us any observations or suggestions for modifications they might have, so that, on the strength of such contributions, we can continue our ongoing improvements in the development of the Yearbook.

Dott. Roberto CARACCILO
Director of ISPRA's State of the
Environment and Metrology
Department

INDICE

Foreword.....	V
Introduction to the Environmental Data Yearbook.....	VII
Contributions and Thanks.....	XI
Index.....	XX
I Purposes and Structure of the Document.....	1
II Socio-economic background	3
III The environmental aspects of the daily family life.....	22
IV Household consumption patterns and environment.....	39
1. Climate changes and energy	66
<i>Case study: The impacts of climate change on the Ancona cultural heritage.....</i>	<i>132</i>
2. Biodiversity and activities on ecosystems	142
3. Air quality.....	183
<i>Case study: Erosion of the architectural heritage of Rome</i>	<i>225</i>
4. Inland water quality	235
<i>Special focus box: River contracts.....</i>	<i>256</i>
5. The sea and coastal environment	258
<i>Special focus box :</i>	
<i>Box 1: The Venice Lagoon.....</i>	<i>310</i>
<i>Box 2: Marine Strategy Framework Directive (Directive 2008/56/CE).....</i>	<i>318</i>
6. Exposure to physical agents.....	322
<i>Noise.....</i>	<i>323</i>
<i>Elettromagnetic pollution.....</i>	<i>332</i>
7. Nuclear activities and Environmental radioactivity	340
<i>Special focus box: The Fukushima Daiichi nuclear incident</i>	<i>356</i>
8. Environment and health	362
<i>Indoor air quality in schools and children's health.....</i>	<i>367</i>
<i>Possible indicators for indoor air quality in schools (DPSIR model).....</i>	<i>382</i>
9. Environmental Hazard	392
<i>Natural Hazard.....</i>	<i>392</i>
<i>Seismic Hazard.....</i>	<i>393</i>
<i>Hydrogeological Hazard.....</i>	<i>401</i>
<i>Anthropogenic Hazard.....</i>	<i>422</i>
10. Soil and Land.....	431
<i>Special focus box :</i>	
<i>Box 1: Land Use.....</i>	<i>471</i>
<i>Box 2: Desertification.....</i>	<i>477</i>

11.	Use of resources and material flows481
12.	Waste cycle492
13.	Tools for environmental knowledge and awareness and market Interface506
	<i>Dissemination of Environmental Information</i>509
	<i>Environmental Education and Instruction Programs</i>517
	<i>Environmental Performance Improvement Tools</i>524
	Acronyms531