

UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION

**COMMITTEE FOR THE REVIEW OF THE IMPLEMENTATION
OF THE CONVENTION - CRIC 5**

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THIRD REPORTING PROCESS ON UNCCD IMPLEMENTATION

Affected country Parties

NATIONAL REPORT OF ITALY

July, 2006

The National report has been prepared by the the Ministry of Environment and Territory (IMET)

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1. Summary

Italy ratified the UNCCD on June 4, 1997 becoming a country Party as both an affected and a donor country.

Italy has a large economy and a population of 57 million, concentrated on a relatively small territory, with strong regional disparities. High densities lead to strong environmental pressures which, together with the diversity and sensitivity of Italy's natural patrimony and its important cultural heritage, have made environmental protection a matter of serious public concern¹.

1.1 Focal Point

The Focal Point of the UNCCD is headquartered in the Ministry of Foreign Affairs, DG Cooperation for Development.

Name: Min. Plen. Guido Scalici
Address, including email: Ministry of Foreign Affairs
guido.scalici@esteri.it

Country specific websites relating to desertification:

<http://www.minambiente.it/st/Ministero.aspx?doc=ministero/comitaticesi/siccita/comitato.xml>

1.2 Status of the National Action Programme (NAP)

The NAP: On 21 December 1999, with Resolution 229/99, the Inter-Ministerial Committee for Economic Programming (CIPE)² approved the National Programme to Combat Drought and Desertification (NAP).

Future Review of the NAP: A process of reviewing CIPE Resolution 229/99 might be soon established.

1.3 Member of SRAP/RAP

Italy is member of the Group of Annex IV Countries. The other members are: Greece, Portugal, Spain and Turkey (original Annex IV Countries). In 2000, these Countries elaborated the Terms of Reference for their Regional Action Programmes. Those TOR are now to be considered relevant for the Sub-Regional Action Programmes.

¹ OECD: Environmental Performance Reviews: Italy (2002).

²Established within the Ministry of Economy and Finance, CIPE is organised into six Commissions, one of which is devoted to Sustainable Development.

1.4 Composition of the National Coordination Body + 1.5 NGOs accredited to the process

According to Annex IV, Art. 5 (a):

“In preparing and implementing national action programmes pursuant to art. 9 and 10 of the Convention, each affected country Party of the Region shall, as appropriate:

(a) designate appropriate bodies responsible for the preparation, coordination and implementation of its programme;....”

Consistently with this mandate, the National Committee to Combat Drought and Desertification – NCCD was established in 1997 (see also 3.2).

The NCCDD is headquartered at the Ministry of the Environment and Territory and, as to ensure multi-disciplinarity, includes one representative for each of the following Ministries:

- Environment and Territory
- Foreign Affairs
- Agricultural and Forestry Policies
- Infrastructure and Transport
- Foreign Trade
- Culture
- Economics
- Education, Universities and Scientific Research

as well as:

- two representatives of the Presidency of the Council of Ministers
- three representatives of the Conference for State-Region and Autonomous Province Relations
- one representatives appointed by environmental NGOs and by the NGOs Coordination Forum, respectively.

The NCCDD is supported by a multidisciplinary Commission made of experts appointed by various national scientific bodies and also open to the participation of other technical, scientific and academic institutions.

Commissione Tecnico-scientifica di cui all'art. 3 DPCM 08/03/2001:

- APAT (The Agency for Environmental Protection and Technical Services);
- ENEA (Italian National Agency for New Technologies, Energy and the Environment)
- INEA (National Institute for Agro Economy)
- CNR (National Center for Research)
- AISF (Italian Accademy for Forest Science)
- IAO (Isituto Agronomico d'Oltremare, the technical and scientific branch of the MFA)
- UCEA (Central Unit for Ecology and Agriculture)
- ECOMED (Agency for Sustainable Development in the Mediterranean)

1.6 Total number of acts and laws passed relating to the UNCCD

At national level:

- Act (DPCM) 26 September 1997 on the establishment of the National Committee to Combat Desertification and Drought (NCCDD);
- CIPE Resolution 22 December 1998 n. 154 “*First national communication for the implementation of the UNCCD*”;
- CIPE Resolution 21 December 1999, n.229 on the establishment of the National Action Programme;
- Act (DPCM) 8 March 2001 on the revision of members of the NCCDD;
- CIPE Resolution 3 May 2001, n.58 on the funding of the NCCDD activities;
- Act (DPCM) 19 agosto 2002 on the nomination of NCCDD Chair;
- Act (DM) 24 July 2003, on the nomination of NCCDD and its CTS members;
- National Budgetary Law (DPEF) 2007-2008, on the designation of environmental priorities for the National Budget Law, including desertification among the priority areas (under discussion at the Italian Parliament).

At national level, it is evident that the main acts pertain to the functioning of the NCCDD and to the implementation of the NAP.

At regional level, some administrative Regions of Italy approved the Italian **Region** Action Programme, IRAP, to Combat Desertification. Among those, some Italian Regions established Italian Region Committees, IRCCDD, as requested by the IRAP. Those administrative Regions are the following:

Calabria: the **IRCCDD** was established by the Calabria Regional Act (Del.G.R.) n. 659/2003 and the **IRAP** was approved by Calabria Region Act (DGR) n. 418/2002;

Basilicata: the **IRCCDD** was established by the Basilicata Regional Act (Del.G.R.) n. 742/2001 and the **IRAP** was approved by River Basin Authority Act 2000;

Sicily: the **IRCCDD** was established by the Sicily Regional Act (D.P.Reg.) n. 171/2000 and the **IRAP** was approved by the Environment and Territory Assessorate Act on 24/07/2003;

Sardinia: the **IRAP** was approved by the Sardinia Regional Act (Del.G.R.) n. 14/2/2000;

Marche: the **IRAP** was approved by the River Basin Authority Act n.3/2000;

Veneto: the **IRAP** was approved by the Veneto Regional Act (Del.G.R.) n. 388/2000.

1.7 National projects currently under implementation which are directly or indirectly related to the UNCCD in the framework of NAP/SRAP/RAP

In the years 2004 and 2005, a number of national projects have been funded in the framework of the Agreement between IMET, the NCCDD and the University of Calabria to improve national and local technical capacity in the establishment and implementation of local action plans and projects³.

³ 26 November 2004, “Accordo di Programma tra il Comitato Nazionale per la Lotta alla Siccità e alla Desertificazione, il Ministero dell’Ambiente e della Tutela del Territorio e l’Università della Calabria, con annesso Piano Operativo” on the conclusion of an agreement between the IMET, the

From April 2004 to March 2005 the following activities have been carried out:

- 1) *Guidelines on the identification of drought sensitive areas.* The activity is carried out by APAT and is funded with €55.000;
- 2) *Guidelines on the elaboration and monitoring of activities carried out by the Italian administrative Regions and the River Basin Authorities in the implementation of the NAP.* The activity is carried out by APAT together with the Sassari University (Department of Ecology) and is funded with €65.000;
- 3) *Management and updating of an Italian Clearing House Mechanism.* The activity is carried out by APAT and funded with €25.000;
- 4) *Assessment and deployment of a desertification risk model to be applied at national scale.* The activity is carried out by APAT together with UCEA and is funded with €65.000;
- 5) *Elaboration of operational standards for sustainable management and improvement of forestry patrimony in desertification prone areas.* The activity is carried out by Tuscia University and the Italian Academy on Forestry Science and is funded with €60.000;
- 6) *State and evolution of vegetation cover in Italy through teledetection techniques.* The activity is carried out by ENEA and is funded with €45.000.

In addition, others pilot activities at local level have also been funded:

- 7) *Soil erosion rate and lithological sublayer relation,* The activity is carried out by Arno River Basin Authority and is funded with €30.000;
- 8) *Forest coverage in Veneto, Adige River Basin. Evaluation of desertification processes.* The activity is carried out by the Adige River Basin Authority and is funded with €35.000.

In May 2006 the second financial period started. The activities are planned to be completed by July 2007.

- 1) *Education, training, public awareness.* The activity is carried out by ENEA and is funded with €65.000,00;
- 2) *Administrative Region's experts training to combat desertification.* The activity is carried out by the University of Sassari (Research Unit on desertification) together with Basilicata University and is funded with € 70.000,00;
- 3) *Diffusion of information and awareness on traditional knowledge to combat desertification.* The activity is carried out by IPOGEA and funded with € 15.000,00;
- 4) *Monitoring and functional evaluation of reforestation and olive trees cultivation in combating desertification in Italy.* The activity is carried out by Bar, University (IPLA), Piemonte Region, Tuscia University, ENEA, Calabria University and is funded with €120.000,00;
- 5) *Methodology on the assessment of environmental and economic damages drought-related.* The activity is carried out by Bari University and is funded with € 60.000,00;

- 6) *Local Action Plans: some implementation pilot experiences in Italian Regions: Abruzzo, Basilicata, Calabria, Piemonte, Apulia, Sardinia, Sicily.* The activity is funded with €255.000,00;
- 7) *National Mapping System on environmental vulnerability to desertification.*, The activity is carried out by CRA – UCEA and is funded with €80.000,00.

In the framework of financial programmes on scientific and technical development of SMEs, the Italian Ministry of Research in October 2002 funded a research and development project called RIADE. within the National Program of Research, Technological Development and High Level Training 2000-2006. The main contractor is Advanced Computer Systems SpA (Italy); scientific partners are ENEA and NRD – University of Sassari. The total cost of RIADE is. € 7.800.000,00.and €900.000,00 for the high level training activities. MIUR contribution was for the 70% of the total amount.

Furthermore, with the aim to support Annex IV countries in the implementation of their NAP's, in 2005, the European Space Agency promoted the “Desertwatch Project” carried out by an international Consortium. The Italian NCCDD is supporting the initiative with a contribution of € 15.000.

2. Strategies and priorities established within the framework of sustainable development plans and/or policies

2.1 National programmes and strategies available in other social and economic areas

In the context of the commitment to achieve sustainable development through the integration of its three pillars –environmental, social and economic- the Italian National Environmental Strategy for Sustainable Development (NESSD) was developed by the Ministry of the Environment and Territory, also in accordance with the 6th EU Environmental Action Plan and the guidelines of Barcelona 2002 European Council.

The NESSD was approved by CIPE on the 2nd August 2002 (CIPE deliberation n. 57 of 2nd August 2002). The planning process had been developed starting from a Communication submitted by the Ministry of Environment to the Parliament on October 2001. The drafting of the strategy has been negotiated with all relevant stakeholders including Ministries, environmental NGOs, Trade Unions, Enterprises, local authorities (Regions).

The Italian NESSD contains four broad priority themes, which reflects the ones stated in the EU's 6th Environmental Action Plan:

1. Climate and atmosphere

- cut on national Green House Gases' emissions in pursuance of Kyoto's Protocol;
- forests' expansion as to allow larger atmospheric-carbon sinks;
- the promotion and support of international co-operation programs to spread the Best Available Techniques and curb global emissions;
- stratospheric ozone depleting gases' emission cut.

2. Protection and sustainable valorisation of Nature and Biodiversity

- living natural resources - biotechnologies
- soil, subsoil and desertification
- marine and coastal habitats

3. Quality of the environment and quality of life in urban areas

- urban environment
- air quality
- indoor air quality and radon
- noise
- electromagnetic pollution
- genetically modified organisms
- food security
- reclamation of Contaminated Sites
- environmental Damages

4. Exploitation of resources and waste generation

- use of natural resources
- water resources
- production and consumption cycles
- waste

For a number of these themes, the Strategy foresees either quantified or qualified objectives and measures. Some of the most striking objectives are:

- Climate change: reduce greenhouse gas emissions by 6.5% compared to 1999, between 2008 and 2012;
- Biodiversity: reduction of 10% of endangered species by 2012, overall understanding of ecosystems and improvement in surveillance systems.
- Seismic risk prevention: protection of territory against hydro-geological, seismic and volcanic risks as well as against coastal erosion.
- Agriculture & Forestry Management: extension of cultivations, adoption of good agricultural practises, biological and eco-compatible practises and a sustainable management of forests.
- Health Hazards: reduction of exposure to electromagnetic fields, sustainable use and spread of knowledge on and awareness of GMO's and biotechnologies, promotion of organic farming and reduction of pesticides used.
- Eco-efficiency: at least 30% of the purchases shall match ecological requirements. 30-40% of durable goods with energy consumption.
- Water Management: achievement of a good state of surface water for all water basins by 2015.
- Waste Management: reduction of dangerous waste with regards to 2000 data:
 - 20 % by 2010
 - 50% by 2020
 - Recovery of 45%-65% of packaging materials and recycling 25-45% for 2003. 15% recycled of each single material
 - Increase by 50% the amount of fractions recovered
 - Doubling the amount sent out for energy recovering by 2006
- Energy
 - Transport: reduce energy consumption in the transport sector –18/21 Mt of CO2 by 2008-2012
 - Industry & Services: reduction of energy consumption within industrial, residential and service sectors. -24/29 Mt of CO2. by 2008/2012
 - Bio-fuels: increase use of renewable resources and use bio-fuels as part of traditional petrol and diesel.

The search for more policy coherence through integrated environmental policies is one of the explicit aims of the NESSD. Several measures are taken to enhance this, and are included in the NESSD chapters:

- Application of the legislation on environmental protection
- The integration of the environmental factor within sectoral policies
- Environmental Assessment of Plans and Programmes
- Integration of environmental factors into the services and product market:
- Ecological Taxation Reform
- Subsidies and environmental externalities
- Quality and environmental certification
- Awareness and decision making skills of citizens
- Local Agenda 21 processes
- Develop new environmental quality indicators and consolidate the draft of the Framework Act on Environmental Accounting
- Sustainable Developing Financing
- Technology and Scientific research

The Ministry of Environment is politically responsible, but other Ministries, Environmental NGOs, Trade Unions, Enterprises, local authorities (region) are all involved in the implementation of the Strategy.

Main activities included in the NESSD have been financed referring through two CIPE deliberation:

1. C.I.P.E. deliberation n. 57 of 02/08/2002 establishing the adoption of the National Environmental Action Strategy for Sustainable Development, as requested by the Goteborg European Council (15-16 June 2001)
2. C.I.P.E. deliberation n. 120/02, approving the National plan to reduce greenhouse gas emissions, which will allow Italy to comply with the commitments of the Kyoto protocol in a manner consistent with the aim of modernizing and increasing the efficiency of the Italian economy.

In particular, through Art. 109 of Law 388/2000 (modified by art. 62 of Law 448/2001) it has been introduced a fund to promote sustainable development whose resources have been destined, among others, to interventions for sustainable production and consumption (promotion of environmental management audit schemes for Small and Medium Enterprises, promotion of Local Agenda 21, sustainable use of water resources).

In drafting the Strategy, a new approach was adopted to allow a closer sharing of the document among the main actors involved in the implementation and to ensure at the same time a highly integrated vision of the issues considered as priorities.

Both central and regional administrations, local authorities, non-governmental environmental and consumers associations, industrial and trade union representatives reviewed the draft document. The consultation round was carried out during fourteen meetings, involving more than 140 authorities and organizations. During the process, the main problems were found in matching different demands resulting from such a heterogeneous range of stakeholders with the positions considered as a priority by the Ministry.

Besides presenting an innovative experience within the national political situation and a moment of growth for the Ministry for the Environment and Territory, the consultation round contributed to elaborate a shared document, with a high implementation potential⁴.

2.2 National programmes and strategies to combat desertification developed prior to the UNCCD

Italy has a large economy and a population of 57 million, concentrated on a relatively small territory, with strong regional disparities. High densities lead to strong environmental pressures which, together with the diversity and sensitivity of Italy's natural patrimony and its important cultural heritage, have made environmental protection a matter of serious public concern⁵.

The ratification of the UNCCD brought new governmental awareness on the need for a more specific approach to combat drought and desertification. In this context, the establishment of the National Committee to Combat Desertification and Drought, the approval of the NAP and its further implementation have to be considered fundamental steps. The laws and regulations in force are based mainly on a sectoral approach aimed at regulating agricultural activities, forestry, water

⁴ Links for further information:

http://www2.minambiente.it/SVS/svs/strategia_ambientale.htm

⁵ OECD: Environmental Performance Reviews: Italy (2002).

resource management as well as negative hydro-geological factor. All these acts includes general measures to prevent and mitigate soil degradation. This legislation has contributed positively to reducing desertification.

3. Institutional measures taken to implement the Convention, including legislative and institutional frameworks or arrangements, linkages and synergies with other environmental conventions and, as appropriate, with national development strategies

3.1 Linkages achieved with Sub-regional and Regional Action Programmes

In the framework of the technical and scientific regional co-operation among Northern Mediterranean countries on land degradation and land resources management, promoted and supported also by the Office for Europe of the CCD Secretariat, Italy promoted three meetings to promote the exchange of technologies and *savoir faire*.

The workshops are the following:

- September 2004, Alghero. *Workshop on Cooperation and Networking Among Local Authorities*. The Workshop, organized on the occasion of the finalization of the DESERTNET project and funded by the EC, proposed the adoption of a service platform for information sharing and data and methodologies harmonization for all NM Country parties. Workshop outcomes also included the establishment of the new DESERTNET project cycle allowing for the enlargement of the membership as to involve Portugal and Greece together with already active Italy and Spain. The new DESERTNET project cycle was recently funded in the framework of INTERREG.
- November 2004, Reggio Calabria. *International Conference on Forest Fire Prevention and Control* promoted by the Italian Ministry of Foreign Affairs. Numerous NFPs of NM Country parties actively participated.
- January 2005, in the context of the final meeting of the CLEMDES project, a meeting among NM country parties was held to discuss the technical opportunity to continue CLEMDES and enlarge the participation to it with other NM in addition to the Sub-Regional Group of Annex IV (originally including Greece, Italy, Portugal, Spain, Turkey). CLEMDES is a project that has been funded by the EC from 2001 to 2004. The Workshop was attended also by some Northern African country Parties. Italy proposed the continuation of CLEMDES and the enlargement of its membership and mandate, including the establishment of a Regional Reference Centres (RRC's) to provide a methodological guidance of accessing, exchanging, sharing and disseminating information and a database containing sources of information (metadatabase).

It is to be reported that, at sub-regional level, the Group of Annex IV Countries, in particular European countries, participates to a number of scientific projects funded by EC.

3.2 The National Committee to Combat Drought and Desertification

The Decree of the President of the Council of Ministers (DPCM) dated 26 September 1997 established the *National Committee to Combat Drought and Desertification* as the first

implementation step after the Ratification Act 170/97 through which Italy has become Member Party to the UNCCD.

The Committee objectives and mandate include:

- identify strategies and priorities, within existing plans and policies on sustainable development, to combat desertification and minimise the effects of drought;
- support Regions and Basin Authorities in the identification of areas at risk of desertification;
- put into effect and review the National Action Plan (NAP) to combat desertification;
- specify parameters and indicators for the evaluation of the phenomenon of desertification;
- data collection;
- make an inventory of technologies, knowledge and traditional and local practices which preserve natural resources and combat desertification;
- involve the public opinion;
- support the setting up of an *ad hoc* legislative framework;
- promote training and research activities;
- co-ordinate activities with the other Countries of the Mediterranean area, in particular with the Annex IV Countries.

Resources (human, financial, material) as indicators of capacity to act

Human resources directly involved in the NCCDD activities are the members of the CTS (the Technical and Scientific Committee) and experts from the NCCDD itself. For specific activities, external experts from the academia are also involved.

The Ministry of the Environment and Territory provided the following financial resources to the NCCDD in support of NAP implementation:

Financial Budgetary Law 2004	€1 Million
Financial Budgetary Law 2005	€1 Million
Financial Budgetary Law 2006	€2 Million (granted)

The NCCDD is headquartered in the Ministry of the Environment and Territory and disposes of all the necessary communication and networking technologies; furthermore, individual experts use innovative technologies at the disposal of the Italian Universities and research centres.

Databases, access to internet, etc..

The NCCDD has the following website:

<http://www.minambiente.it/st/Ministero.aspx?doc=ministero/comitaticsi/siccita/comitato.xml>

In addition, a complete database has been established. It contains all activities, already completed and/or still ongoing, promoted and realized by the NCCDD in the years 2003-2006. This database also provides information on the participation of NCCDD members in national and international conferences, workshops, etc. as well as to books and other published materials. The database uses an efficient key-words system allowing for information retrieval. The database will be put on line in the above mentioned website in the near future, following the approval by the Ministry of Environment and Territory.

With the financial support of the EU Commission – DG Research, in 2002 –2004, an international Clearing House Mechanism called CLEMDES have been established and put at the disposal of the Group of Annex IV Countries plus Israel. The work was coordinated by Italy. In the framework of the 2004 Agreement among IMET, NCCDD and the University of Calabria, the management and updating of the Italian site have been realized (www.clemdes.org).

Moreover, a number of research institution and Universities own web-sites related to desertification.

Among them:

- the University of Sassari – NRD, www.uniss.it/nrd, highlighting major outcomes from relevant projects;
- APAT promoted a web database called SIDES containing data and official maps at national and local level. The database can be found at the following weba address: <http://www.mais.sinanet.apat.it/cartanetms/>;
- the RIADE Project developed a portal showing the results of its activities. Information can be found at www.riade.net.

3.3 Coherent and functional legal regulatory framework

With a view to achieve sustainable development, clear and strategic linkages can be identified between the NAP and the NESSD (see para. 2.1). At more operational level, coherent mandates' elaboration, substantial inter-ministerial coordination, in particular through CIPE, and continuous dialogue with the relevant local authorities ensure coherence of policy development and implementation.

Specific legislation on combating drought and desertification is included in those legislative acts and laws that regulates on the sustainable management of soil, forests, water resources and waste as well as on hydro-geological risk mitigation (flooding, landslides and earthquake). Relevance should also be given to the territorial planning legislation, the integrated management of coastal areas as well as to the sustainable tourism initiatives and laws.

It should be also highlighted that, starting from 1939, Italy has been conscious of the necessity to value its natural heritage and has elaborated a coherent legislative framework. Relevant legislative acts are: Law 129/77 on *Ratification of the Convention on the protection of the cultural and natural global heritage* (Paris, 23 November 1972) and Law 42/2004 titled *The Code for cultural and landscape's goods*.

More information can be found in the 2002 Italian Report on the implementation of the UNCCD submitted at CRIC 2.

Relevant official Reports are:

- The Report on the State of the Environment, published every two years by the Ministry of the Environment and Territory;
- The Italian Environmental Handbook, published yearly by APAT;
- The Agriculture Handbook, published by INEA.

Numerous environmental NGOs also publish their Evaluation Reports on a regular basis.

Despite the difficulties to provide an integrated assessment of the impact of the implementation of environmental legislation on drought and desertification, it can be said that an integrated approach, linking environmental protection to social and economic legislative measures, made possible the

improvement of the conditions of the most affected but also economically depressed areas of Italy. However, notwithstanding the heavy investments made, the Regions of the South and the Islands still remain highly vulnerable to desertification and present a substantial deficit in development, if compared to the other Italian regions.

Legislative efforts are ongoing to include projects and activities to combat desertification in the broader category of “public works”. This would allow the grant of additional financial resources as well as the recognition of desertification as a theme of high priority.

It should also be recalled the mandate of the NCCDD that includes “support the setting up of an *ad hoc* legislative framework”. On the other hand, the NAP takes into account the complex Italian legislative framework and calls for a close coordination among the various parties who handle specific aspects of territorial management and are therefore responsible for matters related to drought and desertification.

4. The participatory process in support of preparation and implementation of the NAP

The NAP was elaborated by the National Committee to Combat Desertification with the involvement of Ministries represented in the Committee and in consultation with Regions, in particular with those most affected.

Consultation with the Regions proceeded as follows:

- prior to the start-up of the NAP, on 27 October 1999, a conference was held in Palermo with the intent to present the guidelines on which the future NAP would have been based and initiate a discussion and a consultation process. Regions, the agricultural and business sector, the scientific and academic communities and several non-governmental organizations were present.
- during the preparation phase, between December 1999 and March 2001, four meetings were organized with the participation of all above mentioned stakeholders. High relevance was recognized to inputs coming from the representatives of Regions and Basin Authorities.

After having received inputs, comments and suggestions by the Regions, the NCCDD amended the guidelines accordingly. The new draft was submitted for discussion, acceptance and approval to both the State-Region Conference and CIPE. CIPE approved the NAP on March 2001.

- On 22-24 July 2004, in Maratea, the NCCDD organised and *Inter-regional Conference on Drought and Desertification*, in cooperation with the Basilicata Region/Environmental Department, INTERREG and DESERTNET Project. This Conference was the first in which Italian Regions met to discuss on progresses on the NAP implementation. The UNCCD Secretariat and the Global Mechanism attended the event as well. During the three days programme, IMET/DG on Soil Protection and the NCCDD representatives had the opportunity to discuss with several Italian local Authorities as well as with experts in drought and desertification monitoring, mitigation and prevention as well as on innovative use of traditional knowledge.

5. Measures taken or planned within the framework of National Action Programmes.

5.1 Diagnosis of past experiences

With the view to prevent and mitigate soil degradation as well as to develop adaptation measures, the NAP identified the following areas of interventions:

- protection of the soil through the rehabilitation of degraded soil as a consequence of salinization;
- sustainable management of water resources;
- reduction of the impact of activities such as: industry, agriculture, rangelands;
- rehabilitation of the area.

In addition, it was recognised the crucial role of information, education and communication and research.

The NAP also included in particular the following areas of intervention:

- assessing the efficacy of existing regulations such as those on water resources management, land management, forests, etc.;
- promoting the coordination among relevant State actors (relevant Ministries, Regions, Authorities at basin level.), other bodies such as Universities and centres for research and scientific advice, non-State actors with the aim of elaborate inter-sectoral programmes;
- promoting an integrated management of water resources, soil, forests, landscape taking into account the negative impacts of human activities.

With the support of Regions and the Basin Authorities, also taking into account law 152/99, the first implementation step was the identification of those areas at risk of desertification. This work has been continuously adjourned and updated.

The NAP has given particular relevance to coordination activities with Annex IV Country Parties.

A process of reviewing CIPE Resolution 229/99 might be soon established. The necessity to initiate an assessment of the impact of the activities conducted in the context of NAP is mainly due to the cyclicity of the variations of environmental parameters and on the difficulties of measurement in the short term.

The NCCDD identified various gaps. Among those, the most important ones are:

- the substantial difficulties, at national as well as at regional and local level, to elaborate the data as requested by CIPE Resolution;
- the substantial difficulties of the NCCDD to pursue the harmonisation of the Regional and Local Plans to combat desertification;
- the need for better interaction between the science and research communities and the decision-makers. To this end, for example, an appropriate national geographic information system should be established in order to identifying the evolution of drought and desertification processes and to develop appropriate connections with the work conducted by other institutions responsible for monitoring activities and, consequently, with decision-makers;

- the lack of a systematization of the NCCDD relationship with Universities and other research bodies and institutions dealing with desertification;
- the increase in the EU and in international law in general of laws, conventions and agreements dealing with the protection of the environment. As for the participatory issue, for example, particular attention should be given to the Aarhus Convention and subsequent EU and Member States legislation;

Finally, it is advisable that the members of the NCCDD are nominated among those that have the capacity to influence the decisions of the institution they represent.

5.2 Established technical programmes and functional integrated projects to combat desertification and Action programmes implemented in compliance with priority fields set out in the Convention

NCCDD promoted a number of technical activities in order to provide support to regions.

In the framework of the activities funded by the Italian Government through the Ministry of the Environment and Territory and the NCCDD, a number of projects have been planned and implemented to support Local Authorities (mainly Regions).

All activities, programmes and projects promoted by the NCCDD takes into account the priorities set out in the Convention.

5.2.a) National resource conservation

With the aim to promote field and operational measures for national resource conservation and taking into account Italian peculiarities, the NCCDD gave great attention to the sustainable management of the forest patrimony.

The University of Tuscia, in cooperation with the Italian Forests Academy, elaborated and published a book on “*Forests Resources and Desertification Risk in Italy*”. The book was distributed to scientists and local authorities representatives and contributes to the identification of virtuous processes on forest management. It takes into account the existing traditional knowledge as well as the modern and innovative planning tools. It also provides an analysis of best practices, in particular those connected with the institutional and legislative framework on hydrogeological risk mitigation, soil protection and Kyoto Protocol.

Moreover, a pilot project at local scale have been promoted by the Arno River Basin Authority, funded by the NCCDD. The project will define the relationship between erosion rate of soil and the lithological sub-layer. The evaluation, made through GIS techniques allowing for the reduction of costs and time, can be also used to support soil biological capacity loss assessments.

5.2.b) Improve institutional organization

With the aim of supporting desertification awareness, the Desertification Research Group (NRD) of the University of Sassari in partnership with the University of Basilicata organised a training programme for local authorities professionals in order to enhance their technical, legislative and planning knowledge.

Also the University of Calabria have been deeply involved in the elaboration of an integrated education, training and information programme to diffuse the desertification awareness with the aim of developing an environmental consciousness on safeguarding the environmental heritage. Informative booklets, posters, etc. have been prepared and diffused.

5.2.c) Enhance knowledge on desertification and its control

In order to enhance knowledge on desertification impacts and its control, the NCCDD funded a number of projects aiming at supporting local authorities to make use of research findings in the identification of drought risks and desertification areas.

In one project, APAT elaborated the “*Guidelines to drought phenomena evaluation*”. The main objectives include the establishment of an integrated system for monitoring and a drought events forecasting for mitigation measures planning. In partnership with the Research Institute for Agriculture, UCEA-CRA, a survey of existing cartographies and related methodologies existing in Italy have been conducted with the production of a database.

A second project has seen the development of a “Report on scientific findings and operational activities” elaborated by APAT together with the Desertification Research Group (NRD) of the University of Sassari. The Report is intended to provide guidelines for the promotion and implementation of field activities to combat desertification and support Regions and River Basin Authorities. The report will be shortly published.

A third project has been the realization of a “Study on the evaluation of the state and the evolution of vegetative coverage” compiled by ENEA through the measurement of indexes such as NDVI, NDWI, etc which are based on data obtained by teledetection techniques.

A fourth project is a pilot activity conducted by Adige River Basin Authorities dealing with the analysis of the vegetative coverage (forests) and the evaluation of its fluctuation.

5.3 Identification of new actions and planned measures

New projects and activities are just starting and will be terminated on July 2007.

All the projects enhance the local capacities to promote and implement measures to combat desertification.

- The activities aiming to support the definition of Local Action Plans will be carried out in some Italian Regions (Abruzzo, Basilicata, Calabria, Piedmont, Apulia, Sardinia, Sicily) and the focus will be the implementation of pilot experiences in homogeneous areas. Starting from the analysis of desertification vulnerability, the LAPs will envisage operational measures in a priority framework also accompanied by a funding plan, accordingly with CCD prescriptions. The final result will be the elaboration of user-friendly diagnostic tools and planning methodologies for the elaboration and implementation of Local Action Plans by local Authorities.

Directly linked to the LAP's elaboration, two projects are focused on training and education:

- a project “*Education, training, public awareness*” is carried out by ENEA with the scientific and technical support of experts coming from other national and international organizations (such as APAT, INEA, IPOGEA, teachers of secondary schools; Desert Research Institute, Arizona, USA; CENESTA, Iran) also in coordination with the UNCCD Secretariat. In the context of current global environmental changes and challenges, the project aims at disseminate scientific knowledge and operational findings on desertification and related field among schools, primary and secondary level, local authorities, professionals and environmental associations.
- The second edition of “*Region's experts training on combating desertification*” is going to be organised by the Research Unit on desertification of Sassari University together with the Basilicata University. The training will include both technical knowledge and operational skills,

mainly focused on the utilisation of new technologies for spatial analysis. Furthermore, the social, economic and institutional dimension of desertification will be explored as well as sustainable land management policies.

In order to support these processes, following the consultation processes held on 1999, within the framework of the elaboration of the NAP when two consultations with the national scientific community were held, other consulting activities are undertaken in the context of Regions, according to their specific needs and requests. For each Region involved in the LAP formulation activities, a workshop for local institution representatives and scientific actors have be planned.

The other activities will be dealing with cross-cutting issues such as:

- Diffusion of information and sensibilization on traditional knowledge as a tool to combat desertification, realised IPOGEA;
- Assessment Methodology on environmental and economic drought-related damages, by the University of Bari
- National Mapping System on environmental vulnerability to desertification, CRA – UCEA
- Monitoring and functional evaluation of reforestation and olive trees cultivation in combating desertification in Italy, University of Bari, IPLA – Piedmont Region, University of Tuscia, ENEA, University of Calabria.
-

5.4 Effectiveness of measures in local capacity building

In implementing the NAP, the NCCDD favours the interrelations among Local Authorities that organize themselves with financial and human resources after the invitation to do so by the NCCDD itself.

6. Financial allocations from the national budget in support of implementation.

6.1. Financial mechanisms adopted

Activities to combat desertification at national level have been funded by the Italian Government in the framework of the ordinary budgetary law through IMET.

Moreover, in order to determine in more precise terms the potential availability of financial resources, it is fundamental to regard also at the Regional budgets supported by the European Structural Funds.

Structural Funds resources are also used to support Italian Regional activities on the areas identified by CIPE Resolution 229/99 and by the NAP. Indeed, the related European Sustainable Development Strategy comprehends different intervention areas among which is included combating desertification.

The above mentioned European fundings have to be considered the bankrolls assigned to the development of the most disadvantaged Region (defined as Target N. 1 Regions) such as Sardinia, Sicily, Calabria, Basilicata and Apulia which happens to be also the most affected.

The National fundings allocated to the Regions to combat drought and desertification can be found in Sectoral Programme Agreements, in the National Ordinary Budgetary Law (DPEF) and in the Regional (own) Budgetary Law.

The total amount for each sectorial area is:

Soil Protection Activities: study, planning, experimentation, monitoring and assessment activities to arrange and manage integrated policies of soil protection. Total Bankrolls : €1,322 billion.

Sustainable Management of Water Resources Activities: supporting hydrological system implementation to improve the water resources effectiveness, efficiency and saving, and ensuring a water resources quantity adequate to civil and productive assets. Total Bankrolls : €2,385 billion.

Reduction of the Impact of Productive Activities Actions : supporting energy production using 1) renewable sources ; 2) energetic networks ; 3) integrated urban waste management systems. Total Bankrolls: €1,322 billion.

Restoring Soil Equilibrium Activities: reclamation and recovery of contaminated sites and improvement of the monitoring and recovery actions. Not all the Regions have bankrolls for this section.

Cross - cutting Measures Activities: intervention supporting natural and environmental protection preventing pollution

Concerning individual Italian Regions:

CALABRIA

Soil Protection

- Calabria – Action: “Settlements Systems”: 1) study, planning, experimentation, monitoring and assessment actions to arrange and manage integrated policies of soil protection; 2) pilot actions to protect, secure and consolidate fields and habitats highly hydraulic and geomorphologic at risk; 3) actions binding soil use: bankrolls €94.156.000,00.
- Calabria – Action: “Natural Systems”: financing for woodlands to improve its ecological and social value. Bankrolls €84.658.000,00.

- Calabria – Action: “Civil Protection”: supporting the soil and civil population protection regarding lodestones. Bankrolls: €35.310.000,00.

Sustainable Management of Water Resources

- Calabria – Action: “Hydrological Systems”: ensuring water resources level suitable to civil and productive assets. Bankrolls: €105.928.000,00.
- Calabria – Action: “Optimal Management Areas Programmes”: supporting hydrological service implementation to improve the water resources effectiveness, efficiency and saving (preservation of human and environmental health). Bankrolls: €308.960.000,00.
- Calabria – Action: “Irrigated Systems”: financing water saving and rationalization of the irrigable networks. Bankrolls: €84.658.000,00.

Reduction of the impact of productive activities

- Calabria – Action: “Integrated Waste Management Systems”: supporting the integrated urban waste management systems. Bankrolls :€116.282.000,00.
- Calabria – Action: “Clean Energy and Energetic Nets”: 1) energy production using renewable sources and energetic networks; 2) improvement of the electric services management; 3) improvement and accomplishment of the methane adduction net. Bankrolls: €71.204.000,00.

Restoring Soil Equilibrium

- Calabria – Action: “Contaminated Sites and environmental hazardous areas”: reclamation and recovery of contaminated sites and improvement of the monitoring and recovery actions. Bankrolls: €70.616.000,00.

Cross - cutting Measures

- Calabria – Action: “Environmental Monitoring”: monitoring and assessment activities to prevent pollution. Bankrolls: €35.310.000,00.
- Calabria – Action: “Ecological Network”: intervention supporting natural and environmental protection (i.e. promoting local development initiatives resources). Bankrolls: €74.148.000,00.

BASILICATA

Soil Protection

- Basilicata – Action: “Protecting Forestry”: 1) forest, forestation and re-vegetation programmes; 2) forestation programme for hydrogeological protection; 3) woodland naturalization and reconstitution. Bankrolls: €60.600.000,00.
- Basilicata – Action: “Territorial and Environmental Monitoring and Prevention”: environmental continuous quality control and environmental monitoring system development. Bankrolls: €18.103.000,00.

Sustainable Management of Water Resources

- Basilicata – Action: “Integrated water cycle”: integrated hydrological resources system improvement and procurement, water-drainage, dispose and depuration net rationalization control. Bankrolls: €127.000.000,00.

Reduction of the Impact of Productive Activities

- Basilicata – Action: “Waste and Pollution”: environmental safeguard and protection from different types of pollution through an integrated waste management and reclamation of the existent situation. Bankrolls: €40.000.000,00.
- Basilicata – Action: “Energetic Resources”: strengthening, requalification, restraint of the regional energetic offer. Bankrolls: €24.552.00,00.

Cross-cutting Measures

- Basilicata – Action: “Ecological Network”: environmental safeguard and protection and environmental sustainable economic activities . Bankrolls: €26.773.000,00.

APULIA

Soil Protection

- Puglia – Action: “Soil Protection”: 1) mitigation and displacement of the inhabited settlements and productive assets risks; 2) regional coast defense; 3) seismic enhancement of the strategical public buildings, infrastructures and cultural heritage 4) soil, surface and groundwater water monitoring improvement. Bankrolls: €161.486.036,00.
- Puglia – Action: “Revaluation and Safeguard of the Natural and Cultural Assets”: biodiversity preservation. Bankrolls: €36.913.964,00.
- Puglia – Action: “Woods Increase and Management and Prevention of the Forester Biodiversity ” . improving natural and cultural patrimony quality, promoting forestation, afforestation and re-forestation. Bankrolls: €46.277.781,00.

Sustainable Management of Water Resources

- Puglia – Action: “Modulation and improvement of the Hydrological Systems”: rehabilitation of the internal and external nets, modulation of the treatment and depuration fixtures. Bankrolls €628.000.000,00.
- Puglia – Action: “Water Resources for the rural areas and agriculture”: water resource protection and management plans for a sustainable use of water resources in terms of quality, quantity, costs for the population an the productive activities. Bankrolls: €103.767.628,00.

Reduction of the Impact of Productive Activities

- Puglia – Action: “Improvement of the Waste Management Plans”: reduction of waste production, incentives for the different waste collection and the recycling. Bankrolls: € 132.000.000,00.
- Puglia – Action: “Incentives for a renewable energy production founts”: promote the use of renewable energy production sources. Bankrolls: €43.000.000,00.

Cross - cutting Measures

- Puglia – Action: “Environmental Informative System”: creation of the environmental informative system of the Region of Puglia and strengthening the public technical services of Arpa Puglia. Bankrolls: €20.000.000,00.

SICILY

Soil Protection

- Sicilia – Action: “Protection and stabilization of the inhabited settlements”: secure settlements with disarrangement problems, protection of the existing infrastructure, monitor of all the areas with cave risks. Bankrolls: €242.519.446,00.
- Sicilia – Action: “Preservation of the original soil use”: a) forest and forestation plans damaged by fire or natural events; b) fire prevention and fighting and strengthening of the structures, equipments and tools for the prevention. Bankrolls: €145.000.000,00.
- Sicilia – Action: “Integrated Territorial System”: achievement, restructuring, modulation of public germoplasm collection centres. Bankrolls: €15.863.157,00.

Sustainable Management of Water Resources

- Sicilia – Action: “Captation and Adduction Infrastructure”: correct use of captation infratructure, cumulation and adduction of regional water resources. Bankrolls: €

155.000.000,00.

- Sicilia – Action: “Local Programmes”: infrastructure retraining and rationalization, depurative and sewerage system improvement. Bankrolls €256.000.000,00.
- Sicilia – Action: “Local Programmes”: local public infrastructure investments to allow a correct use in terms of quantity and quality of water resources. Bankrolls: €90.000.000,00.

Reduction of the Impact of Productive Activities

- Sicilia – Action: “Integrated Waste Management Infrastructure and Structure”: waste collection emplacements and population informative actions. Bankrolls: €245.000.000,00.
- Sicilia – Action: “Diversification of the energetic production”: energy production from renewable sources with low polluting emissions. Bankrolls: €127.221.666,0

Restoring Soil Equilibrium

- Sicilia – Action: “Coastal Areas Management Plans” recovery and monitoring of soils degraded by processes such as erosion and salinization. Bankrolls: €108.000.000,00.

Cross-cutting Measures

- Sicilia – Action: “Monitoring Networks Realization, Accomplishment and improvement”: realization of a cartographical system of the environmental data. Bankrolls: € 20.800.000,00.
- Sicilia – Action: “Reduction of the waste environmental endangerment”: reclamation, assurance, environmental restoration of the polluted areas. Bankrolls: €160.000.000,00.

SARDINIA

Soil Protection

- Sardegna – Action: “Soil Protection”: avoiding economic damages consequential to disarrangement phenomena: 1) soil protection; 2) reclamation, protection and safeguard coastal ponds and lagoons; 3) fire prevention and fighting. Bankrolls: €275.606.000,00.
- Sardegna – Action: “Fire Prevention and Fighting”: protection, recovery and strengthening of the forest patrimony . Bankrolls: €11.000.000,00.

Sustainable Management of Water Resources

- Sardegna – Action: “Integrated Water Cycle”: ensuring sufficient water resources (conventional and non-conventional) with the rationalization and revaluation of the existing infrastructure; Bankrolls: €510.653.000,00.
- Sardegna – Action: “Integrated Water Cycle: irrigable systems of rural areas”: improvement of water resources management avoiding wastefulnesses. Bankrolls: €49.254.000,00.

Reduction of the Impact of Productive Activities

- Sardegna – Action: “Integrated Waste Management, Polluted Areas Reclamation and protection from pollution”: 1) improvement of the integrated waste management; 2) protection and reclamation of the polluted areas. Bankrolls: €74.388.000,00.
- Sardegna – Action: “Energy”: use of renewable energy sources, promoting energetic saving. Bankrolls: €21.883.000,00.

Cross - cutting Measures

- Sardegna – Action: “Regional Ecological Network”: supporting the creation of a Regional Ecological Network through planning initiatives, protection and management of the natural environmental resources. Bankrolls: €49.327.000,00.
- Sardegna – Action: “Environmental Monitoring”: creation of a regional environmental informative system and a monitoring network. Bankrolls: €28.511.000,00

6.2. NAP funding

Regarding financial allocation, as stated before (§ 3.2), IMET attributed to the NCCDD €1 million for the year 2004 and €1 million for the year 2005 for programs and project supporting NAP implementation. Funds for field activities have to be made available at local level.

7. Scientific and technical activities to control desertification and drought

Prior to the Convention in Italy, the topic of desertification already represented a subject for scientific and technology research. These activities were carried on under the voluntary initiative of Universities and other scientific institutions giving a major contribution to the understanding of desertification and its impacts in the national territory.

The NAP assigned the identification of scientific activities on desertification to a National Research Programme launched by the Ministry for Universities and Scientific Research. This programme should implemented the recommendation mainly in regard to assessment of the effects of climate change on ecosystems and on human activities.

Under the request of Regions and Authorities at basin level, major scientific and technical activities in the fight against desertification and drought to be implemented are

- establishing monitoring networks,
- updating thematic maps,
- conducting training activities.

At present, numerous scientific and technological activities referring, directly or indirectly, to desertification are carried out in the contexts of agriculture, water and forests management.

The screening of the environmental effects of new programmes that may have a negative impact is conducted according to national and European standards on the Environmental Impact Assessment and the Strategic Environmental Assessment.

Among the most relevant national funded research projects, there is the Integrated Research for Applying New Technologies and Processes for Combating Desertification, RIADE. The project funded mainly by Ministry of Research within the National Program of Research, Technological Development and High Level Training 2000-2006. The project objective is the development of an integrated and technologically innovative system for monitoring desertification processes localized in the southern areas of Italy, able to contribute at determining the cause - effect relationship in the observed phenomena, and to promote interventions towards the territory safeguard.

The partnership composition is based on a private company (Advanced Computer Systems A.C.S. S.p.A.), a national research institution (ENEA) and an university (NRD of the University of Sassari).

Pilot areas are in Basilicata, Puglia, Sardinia and Sicily. The research lasts 36 months, starting from October 2002.

To promote greater awareness of the problems and to disseminate information that allows constructive consultations, Italy is participating in many different international programmes through the experience of the members of Italian scientific community, many of them funded by EC.

Moreover, Italy, and in particular the NCCDD is involved in the DesertWatch project. DesertWatch started on 2004, promoted by European Space Agency, ESA. DesertWatch aims to develop a user-tailored, standardised, commonly accepted and operational information system based on Earth Observation technology to support national and regional authorities of Annex IV countries in reporting commonly to the UNCCD and assessing and monitoring desertification and its trends over time.

DesertWatch will contribute to:

- The creation of standard and comparable geo-information products from country to country about the status and trends in desertification;
- The creation of a common framework for reporting to the UNCCD for Annex IV countries;

- The creation a common basic infrastructure as a base for further developments where EO plays a key role;
- The development a common methodological approach for all countries in Annex IV to assess and monitoring the desertification problems and identify trends and potential scenarios.

The project is under implementation on four of the largest countries in the Annex IV of the UNCCD (i.e., Greece, Italy, Portugal and Turkey).

The Consortium is constituted by Italian and international partners: ACS : Advanced Computer Systems SpA, Italy is the prime contractor; the scientific support is ensured by some italian partners (ENEA and Desertification Research Group, NRD of University of Sassari) and by National Research Council, CSIC - Arid Zones Research Station, EEZA, Spain; Research Institute for Knowledge Systems, RIKS, Netherlands; and University of Trier - Geography/Geosciences - Remote Sensing Department, UTRIER-RSD, Germany.

As far as the integration of the scientific community into the NAP process is concerned, it must be noticed that while the scientific community is fairly involved in the NCCDD deliberation process, more efforts should be carried out in bringing those findings from the NCCDD context to the level of national decision-making.

8. Implementation of the recommendations of the Committee on Science and Technology

Indicators and benchmarks

Closely linked with the work on the Country profile and in the context of the activities carried out by the National Committee to Combat Desertification and Drought, APAT and ENEA completed a study on the exposure of the Italian territory to desertification in the years 2004-2005. The study focused on Basilicata, Apulia, Sicily, Sardinia and Calabria which are the areas identified as at risk of desertification since 1999.

The indicators applied are:

- Climate (dryness and drought index);
- Soil use and vegetative coverage (Corine Land Use Coverage and Normalized Difference Vegetation Index);
- Water resources availability, use and management;
- Soil degradation;
- Rehabilitation of degraded areas (reforestation);
- Energy consumption also in relation with GDP (disaggregated data for energy consumption in agriculture, fishing, industry and household);
- Economics;
- Human development.

Traditional knowledge

Italy has carried out various initiatives on the topic of traditional knowledge.

In 1998 and in 1999, two international conferences have been held in Matera (Basilicata), in order to share experiences among Mediterranean countries.

With decision 12/COP5, Italy was invited to continue its work on traditional knowledge. In this context the decision also requested Parties, international organizations and institutions dealing with traditional knowledge, and the Global Mechanism, to explore a partnership agreement to establish a network on traditional knowledge as proposed by the Government of Italy in documents ICCD/COP(3)/CST/3 and ICCD/COP(4)/CST/2.

In 2005, the Italian Committee to Combat Drought and Desertification and the University of Tuscia promoted a Conference titled: "Toward an integration of traditional knowledge and new technologies for combating drought and desertification", aiming at illustrate experiences at national and international level. The Conference outcome including a demonstrative CD on a "World Bank on Traditional Knowledge" were elaborated, in cooperation with IPOGEA, and made available at COP 7.

The main issues dealt with by the Conference were:

- Traditional methods and techniques
- Innovative methods and techniques
- Best Practices and Case studies: comparison of experiences for a better integration
- Technology Assessment for an integrated evaluation
- Technologies and climate, social and economic scenarios
- Financing: the institutional answers.

At COP 7, on October 2005 in Nairobi, Italy presented An Iconographic System of Traditional and Innovative Techniques, SITTI.

This iconographic system is based on traditional techniques and their innovative use for recording and identifying the traditional techniques is a further elaboration of *The Water Atlas. Traditional Knowledge to Combat Desertification* by Pietro Laureano, whose English and Spanish versions were published by UNESCO.

SITTI is a technical operating system which enables to manage and systematize all information available on traditional knowledge. The idea of an iconographic system to classify traditional knowledge heritage, divided by functional and typological categories arises from the need to provide a visual synthesis of such a wide and complex subject. The structure of SITTI was not conceived as a mere unstructured container of data and proofs but rather as an innovative tool able to adapt itself to diversified thematic analyses and increasingly diverse operating contexts, to be a grid of reference and to encourage identification and notification of existing knowledge.

Early-warning systems

The Italian regions most vulnerable to desertification are developing a system for monitoring the climate and its variations, with particular reference to drought. To this end Sicily has over 300 telemetry stations to measure atmospheric parameters and 40 underground water meters that make possible to evaluate drought indexes as the *Drought Palmer Index*, the *Standardised Precipitation Index* and others. The Sardinia regional meteorological service directly manages 50 stations to monitor the state of drought and other affected regions manage their own monitoring network.

At the national level, the Office of Agrarian Ecology (UCEA) of the Ministry of Agricultural and Forestry Policies (MIPAF) is publishing a National Agrometeorological Bulletin, based on data of the databank of the National Agricultural Information System (SIAN). For the last three years the National Institute of Agrarian Economics has been conducting permanent monitoring on the status of artificial reservoirs and on the consequent repercussions for irrigated agriculture in order to provide prompt warning of any crisis situations.

At present there is no specific programme for monitoring soil conditions in Italy; in some regions, soil characteristics have been sampled and classified so as to assess their aptitude for irrigation. Italy is working with its European Union partners to develop a monitoring network in implementation of a new policy to protect and monitor soils.

Training and studies

Many Italian universities and research centres have included the topic of desertification in their activities, in the environmental and socio-economic sciences as well as in agroforestry. In particular, some universities have promoted specialization courses:

The Master Ghea – "Re-qualification and management of the territory, combat desertification and sustainable development", an high educational courses, has been activated at the University of the Basilicata since 2002. The integrated and multidisciplinary approach has represented the distinctive aspect of the Master that has involved 24 students, with different (from the scientific to social and human ones) background. The ambitious project to create a common and shared language among the participants beside the exchange of methodologies and actions to combat desertification, shared by the local institutions, has been strengthened by the relationships with all the Southern Italy regions and with European Countries of the Mediterranean Basin, Spain and Greece in particular. The master students have been included in a specific network of institutional actors. The second edition of the master is actually ongoing.

A master degree (F-RIADE) on desertification is foreseen within the RIADE project activities (see above), from October 2003, structured in three parts: one containing the scientific background, one in which students will be involved into the projects activities, and a last one on the management aspects.

The training project aims to support the necessity of methodological and technological qualification of the researchers involved in problems regarding the sustainable management of the environment in areas vulnerable to the desertification. The training offering have been structured so as to involve 20 graduated already active on the field, with multidisciplinary competences in territorial studies, who need to acquire new methodological and technical abilities to face the complexity of the current problems.

Using experts on the UNCCD roster

To implement the Convention, the National Committee to Combat Drought and Desertification is supported by a technical-scientific Commission comprised of members from the Roster of Independent Experts of the UNCCD. This Committee collaborates also with Italian Universities. The members of the Committee participate to the activities to the National Committee to Combat Drought and Desertification.

9. Country profile of ITALY

Data and information contained have been provided by: ENEA and APAT⁶

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Biophysical indicators relating to desertification and drought

1. Climate

1.1. Index of aridity¹⁷: Percentages of national territory in different aridity classes

Arid **0%**

Semi arid **3,81%**

Dry sub humid **10,2**

Humid **86 %**

Sub-national areas: Aridity index. percentage of regional territory in different aridity classes (1961-1990)

	Semi arid	Dry sub humid	Humid and hyper-humid
Sardinia	7,3%	49,4%	43,3%
Sicily	41,5%	46 %	12,5%
Apulia	0,4%	35,3%	64,3%
Basilicata	0	7,3%	92,7%
Calabria	0,5 %	5,2%	94,3%

⁶ ENEA: Italian National Agency for the New Technologies, Energy and Environment; APAT: Agency for Environmental Protection and Technical Services

⁷ The index of aridity is the ratio P/PET; P=precipitation, PET=potential evapotranspiration estimate based on the application of the monthly Penman-Montheit (FAO56).

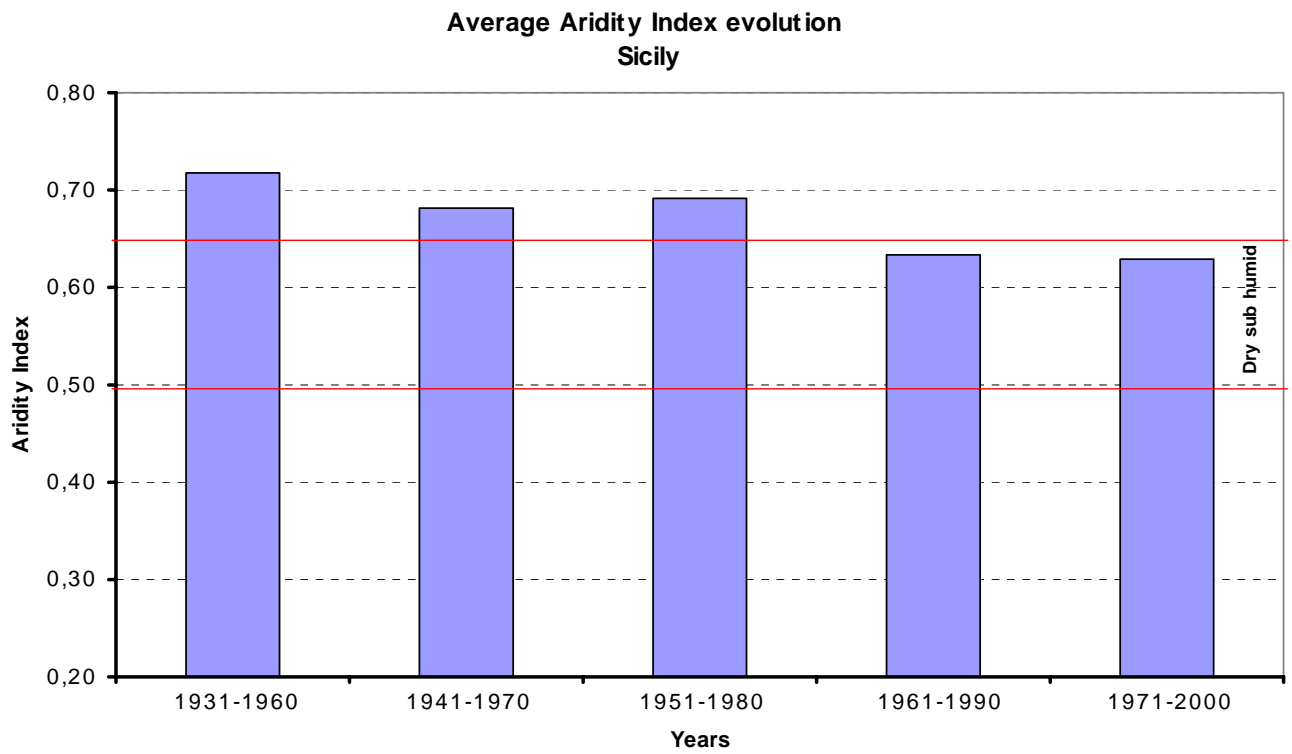


Fig. 1 Evolution of the aridity index for the Sicilian region based on 46 climatic stations.

1.2. Normal rainfall

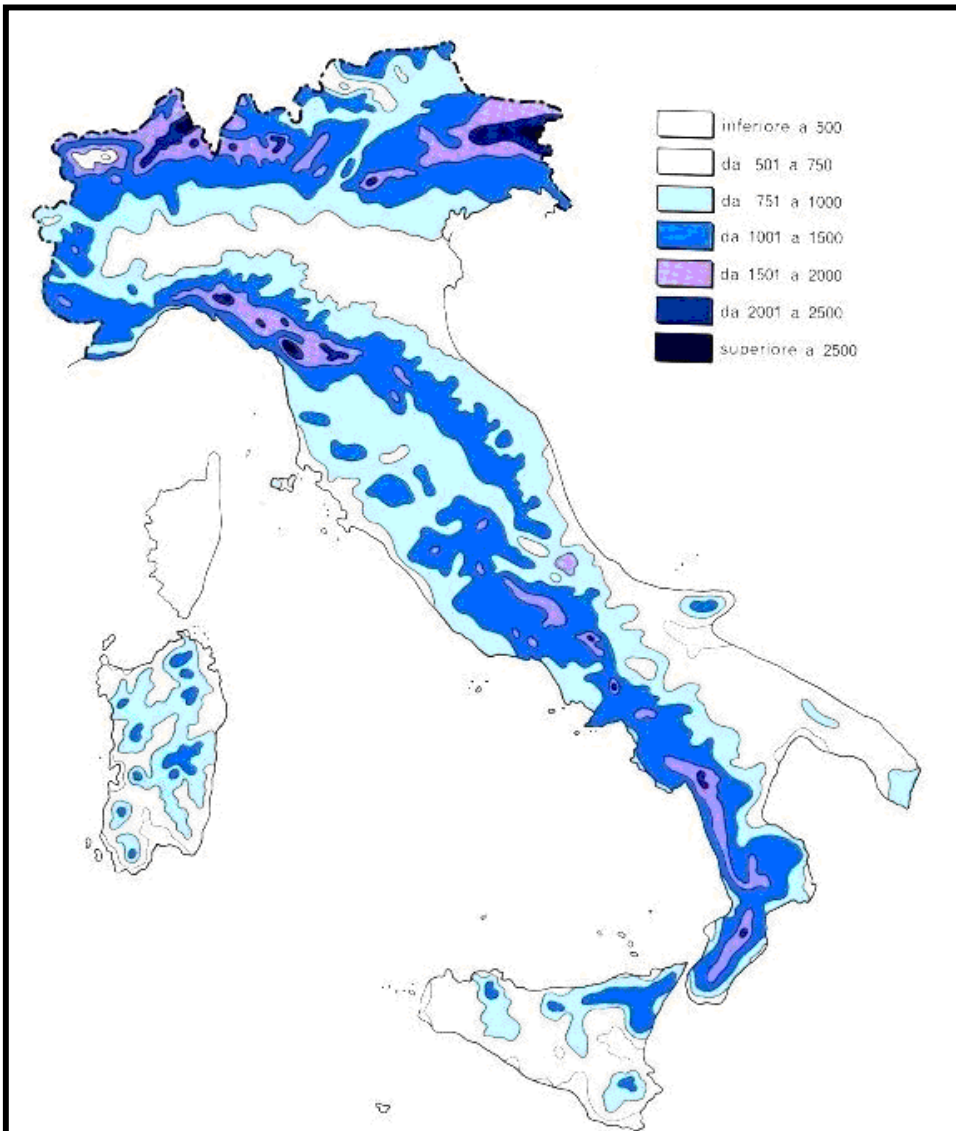


Fig. 2 Average yearly rainfall (mm)

2. Vegetation and land use

2.1. NDVI (Normalized Difference Vegetation Index)

The calculation of the NDVI on 150 NOAA AVHRR⁸ remote sensing images from 1985 to 2005 over the natural vegetation areas of Italy (fig. 3) allowed the preliminary evaluation of the combined impact on natural vegetation of climate variability and land use change.

⁸ NOAA AVHRR: National Oceanic and Atmospheric Administration (US Department of Commerce) -The Advanced Very High Resolution Radiometer.

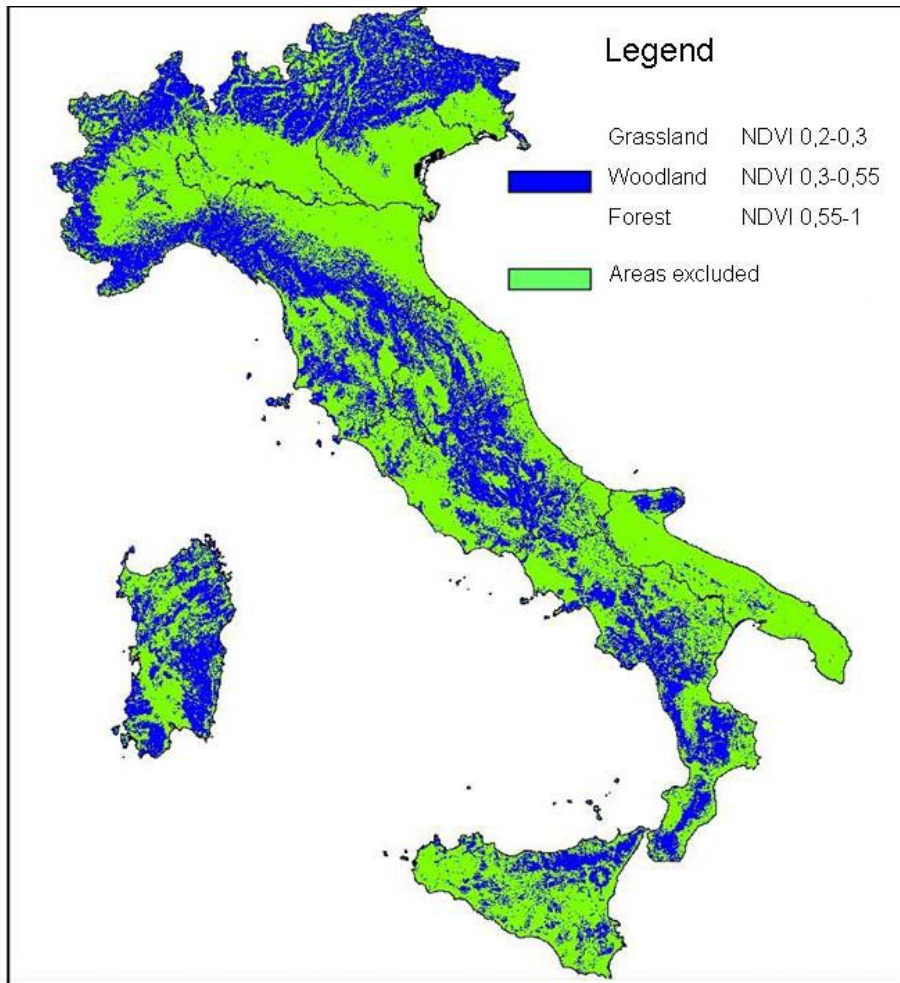


Fig 3. Map of the areas with natural vegetation used for the calculation of NDVI (source: CORINE 2000)

The identification of the areas covered by natural vegetation is based on the CORINE land cover 2000. In the calculation of the NDVI, we excluded urban , agricultural and other areas where the influence of human activity is predominant in order to focus specifically on the detection of the evolution of the index over naturally vegetated areas.

Region	Km²	Region	Km²
Piemonte	10.929	Lazio	5.823
Valley of Aosta	1.697	Abruzzo	5.264
Lombardia	7.548	Molise	1.487
Trentino Alto Adige	8.927	Campania	5.129
Veneto	4.864	Apulia	2.034
Friuli Venezia Giulia	3.886	Basilicata	3.842
Liguria	4.388	Calabria	6.890
Emilia Romagna	5.431	Sicily	7.553
Tuscany	11.515	Sardinia	12.430
Umbria	3.658		
Marche	2.807	Italy	116.102

The analysis of the evolution of the NDVI has been done both at national and regional scale with the intent to analyze also the different climatic and socio economic context. The results presented in fig. 4 show the evolution of maximum values of NDVI. There is a significant increase of the surface with values of NDVI in the range 0,3-1 . The increasing trend indicate that in the areas with natural vegetation, at national and regional scale, the extension of woodlands and forests, has increased.

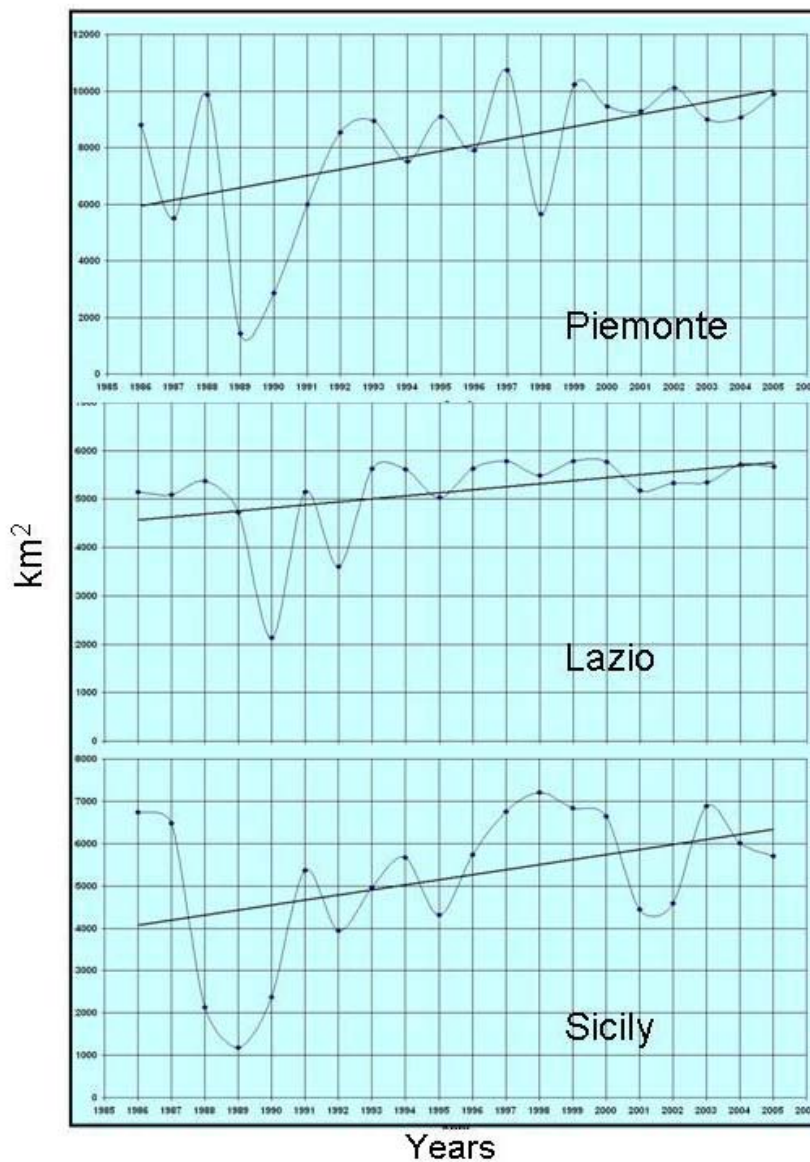


Fig. 4 Regional evolution of the surface classified as forest and woodland according to the NDVI

The increase of natural vegetation cover reflects a trend generally attributed to the increase of temperature and to the pressure reduction of productive activities on natural vegetation in the last decades.

2.2. Vegetation cover (% of total land area)

The percentage of natural vegetation cover including the following categories

- . Broadleaf woods
- . Conifer woods
- . Mixed woods
- . Sclerophil vegetation
- . Areas with shrub and woodlands in evolution

In the Italian dryland regions, the percentage of the vegetation cover with reference to the above categories is:

Sicily	16,6%
Apulia	8,6%
Sardinia	44,3%
Calabria	42,0%
Basilicata	33,6%

(Source CORINE 2000)

2.3. Land use (percent of total land)

		Calabria	Sicily	Sardinia	Apulia	Basilicata	Italy
Agriculture	Irrigated	7,15%	12,27%	13,52%	8,88%	11,02%	53,52%
	Rainfed	42,29%	51,23%	32,11%	64,77%	47,25%	
Pasture		4,07%	10,65%	8,3%	2,21%	4,72%	6,37%
Forests and woodland		37,5%	7,44%	16,01%	5,7%	29,24%	24,16%
Urban areas		2,64%	4,74%	2,27%	4,32%	1,24%	4,22%
Others		6,35%	13,67%	27,79%	4,14%	6,53%	11,73%

Table 2. Land Use (% of regional surface) Source: INEA 2000 (Istituto Nazionale di Economia Agraria)

3. Water resources

3.1. Fresh water availability (million m ³)	41 970*
3.2. Fresh water resources per capita (m ³)	736
3.3. Agricultural water use (million m ³)	20 140
3.4. Industrial water use (million m ³)	13 900

Sub-national areas: Water collected by its end-use sector in M m³			
	Civil**	Industrial	Irrigation***
Sardinia	306,8	N.A.	656
Sicily	647,4	“	979,0
Apulia	121,0	“	789,0
Basilicata	150,0	“	232,5
Calabria	377,0	“	316,0

Source: *IRSA CNR 1999

**ISTAT, 1999 potable water managed by public networks

***INEA, 2000 water managed by irrigation consortia

4. Energy

Consumption

- 4.1. Energy use per capita (kg oil equivalent) **3.300**
- 4.2. Agricultural energy use per hectare (millions of BTU) **9,9**
(249,7 kg oil equivalent /ha)

Production

- 4.3. Energy from renewables excluding combustible renewables and waste (% of total supply) **6,3%**

Renewables - Consumption by sector

- 4.4. Industry (% of total renewable consumption) N.A.
- 4.5. Residential (% of total renewable consumption) N.A.
- 4.6. Agriculture (% of total renewable consumption) N.A.

5. Types of land degradation

Type of Degradation	1990 – 1999		2000 – 2005	
	<i>million ha</i>	<i>Percent of total area</i>	<i>million ha</i>	<i>Percent of total area</i>
Erosion	N.A	N.A	N.A	N.A
Salinization	N.A	N.A	N.A	N.A

Existing assessments of soil erosion in Italy produced by research projects give different indications about the intensity and extensions of areas affected. Therefore, modelling studies available can be considered only as preliminary results. One of the recent study produced by the PESERA project confirms that most relevant erosion process may affect agricultural areas more than areas on the mountain ranges. Although the results of research projects have not been validated they represent a warning and the need of further investigations. The European Thematic Strategy on Soil Protection, currently under review, addresses the issue of soil erosion.

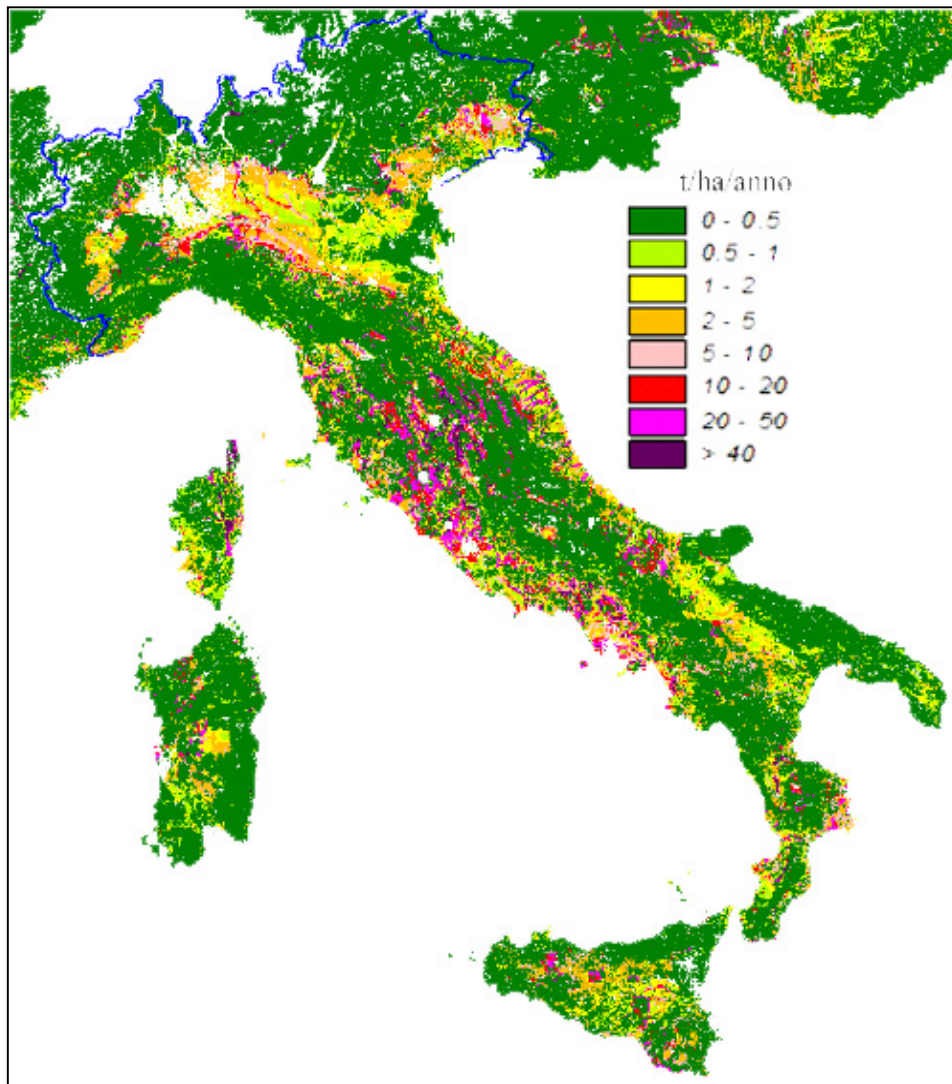


Fig 5 : Soil erosion risk according to the PESERA model (source: European Soil Bureau)

Salinization is affecting lands all along the coast of Italy due to intrusion of saline waters caused by over exploitation of costal aquifers. The salinization process has been studied in some pilot areas but the extension and the intensity of the phenomena has not been assessed at national scale. Only indicative information is available.

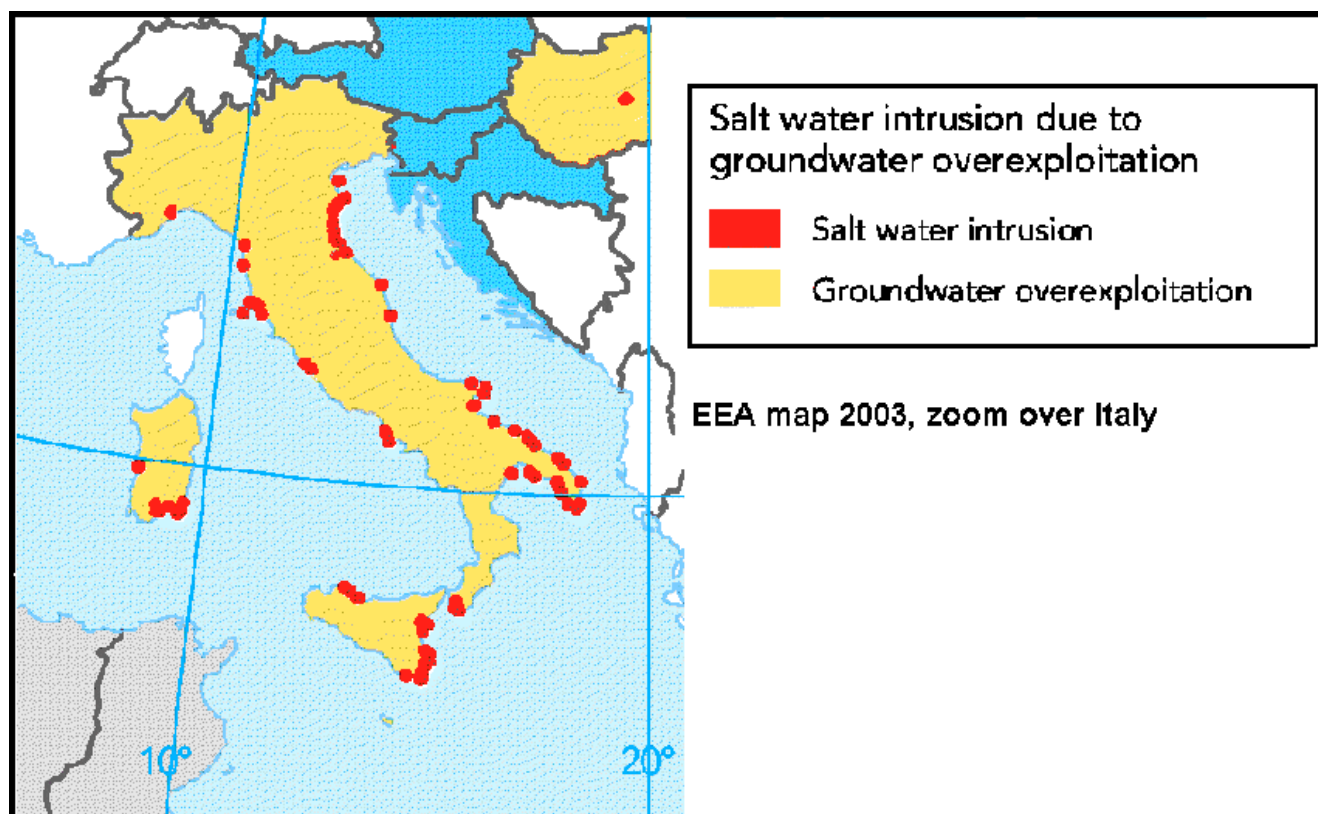


Fig 6. Ground water salinization

6. Rehabilitation

Lands under rehabilitation	1990 - 1999	2000 - 2005
Rehabilitation of degraded crop land (km ²)	N.A.	N.A.
Rehabilitation of degraded rangeland (km ²)	N.A.	N.A.
Rehabilitation of degraded forest (km ²)	N.A.	N.A.

Reforestation represents the main rehabilitation activity in Italy. Forested areas increased from 5.616.913 ha in 1948-49 to 6.855.844 ha in 2002. with an increase of 22%

In dryland region the increase of forested areas is especially positive given the fact the land is more vulnerable here than in humid regions.

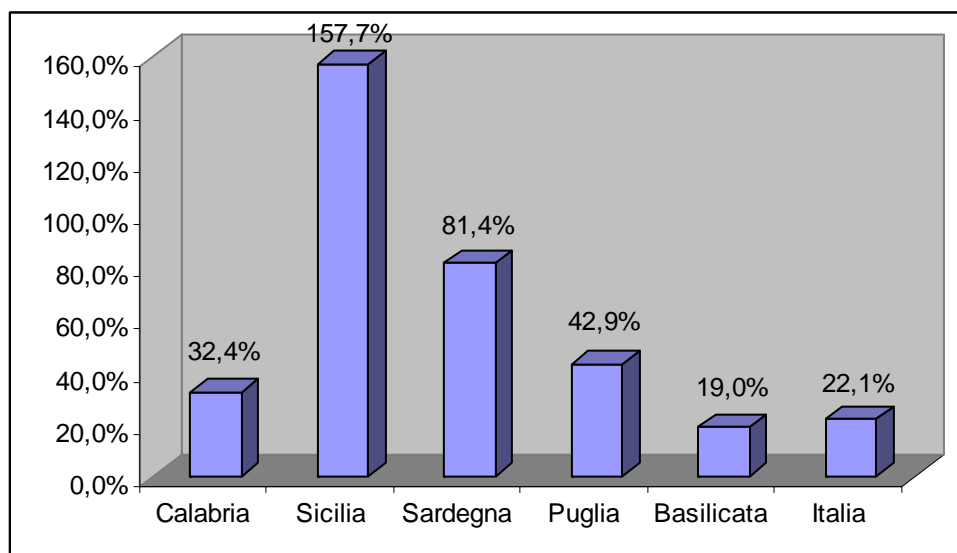


Fig 7. Increase of forest cover in southern Italian regions in the period 1948-2001.

Socio-economic indicators related to desertification and drought

7. People and economy

7.1. Population (total)	56 995 000 (2001)
Population: urban (percent of total)	23.3 %
	(population in municipalities above 100 000 inhabitants).
Population: rural (percent of total)	76,7 %
	(population in municipalities below 100 000 inhabitants).
7.2. Population growth (%)	0,038 (1991-2001)
7.3. Life expectancy (years)	76,8 (Male) ; 82,9 (Female)
7.4. Infant mortality rate (per 1,000 live births)	4,5 (2000)
7.5. GDP (current US\$)	1,1 trillion
7.6. GNI per capita (current US\$)	23 937
7.7. National poverty rate (% of population)	11 (2002)
Poverty rate in Italian dryland regions:	
Apulia	21,4%
Basilicata	26,9%
Calabria	29,8%
Sicily	21,3%
Sardinia	17,1%
7.8. Crop production (metric tons)	75 465 000 (souce: INEA 2002)
7.9. Livestock production (metric tons)	5 308 000 (souce: INEA 2002)

8. Human development

8.1. Primary education completion rate (% age group):	64% (Census 2001)
8.2. Number of women in rural development (total number):	363.000 (Census 2001)
8.3. Unemployment (% of total):	11,5% (Census 2001)
8.4. Youth unemployment rate (age 15-24):	33,28% (Census 2001)
8.5. Illiteracy total (% age 6 and above):	1,45% (Census 2001)
8.6. Illiteracy male (% age 6 and above):	1,08% (Census 2001)
8.7. Illiteracy female (% age 6 and above):	1,80% (Census 2001)

9. Science and technology

9.1. Number of scientific institutions engaged in desertification-related work	: Over 10
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10. Data sources

National Institute of Statistics

National Institute of Agriculture Economics

Italian National Agency for the New Technologies, Energy and Environment

Agency for Environmental Protection and Technical Services

Ministry of Environment and Territory