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Eleventh Meeting of the Expert Group on Environment and Climate Change Statistics (EG-ECCS)
(Virtual) New York, 14-17 October 2024
Session 2: Climate Change Statistics and Indicators
National experiences on climate change statistics

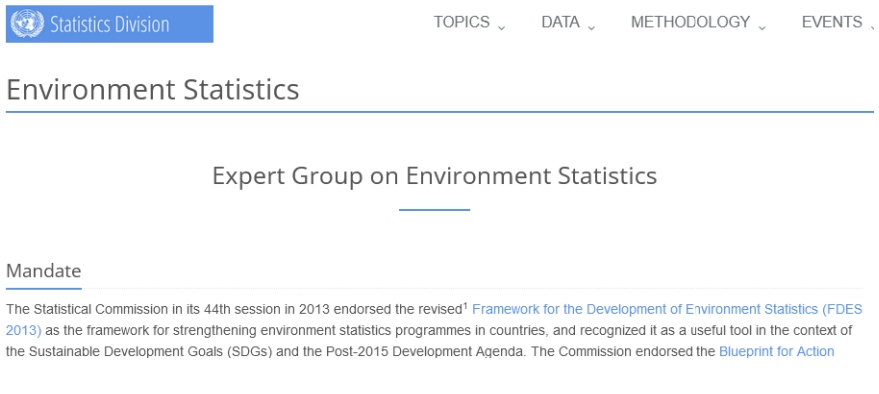
Producing, collecting and disseminating statistical information related to Climate Change and Environment in Italy

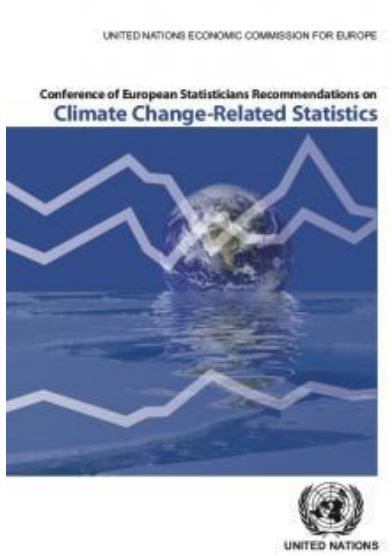
Giovanna Tagliacozzo
Istat | Central Directorate for Environmental and Territorial Statistics

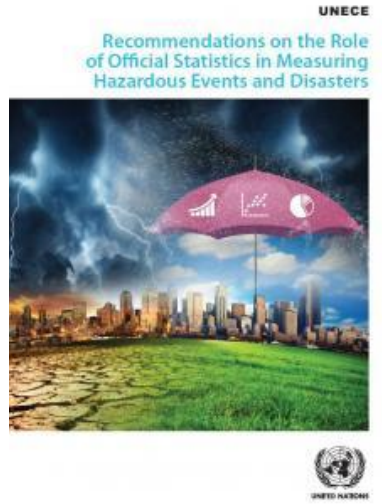
ISTAT role in producing, collecting and disseminating data related to Climate Change and Environment

ISTAT plays an important role in producing, collecting and disseminating data related to Climate Change and Environment in Italy.

Beyond a long tradition on Environmental data and Accounts, **since many years Istat's representatives have been actively involved in international Experts Groups, EGES and Task Forces on CCRS and Disaster Related Statistics,** aimed to defining the scope and role of NSOs in this area and identify sets of relevant indicators.







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ISTAT *tagged* thematic reports under Climate Change

Several relevant indicators for environmental and climate change were already regularly produced since several years and disseminated in thematic statistical reports; for example of in occasion World Water Day every March 22nd, Urban Environmental data, Agriculture, etc.

- Istat. 2024. L'andamento dell'economia agricola Il clima continua a penalizzare l'agricoltura - **Agricultural Economic Trends - Climate continues to penalize agriculture** Year 2013 https://www.istat.it/it/archivio/298236
- Istat. 2024. Previsioni di semina per le coltivazioni cerealicole – **Planting forecast for cereal crops.** Year 2023/2024 https://www.istat.it/it/archivio/297586
- Istat. 2024. Temperatura e precipitazione anni 1971-2022 - Profili climatici delle città capoluogo **Temperature and precipitation years 1971-2022 - Climate profiles of capital cities** https://www.istat.it/it/archivio/297940
- Istat. 2024. Temperatura e precipitazione nei Comuni capoluogo di Provincia - Anno 2022 - Serie storica 2006-2022. Tavole di dati **Temperature and precipitation in provincial capital municipalities -Year 2022 - Historical series 2006-2022. Data tables.** https://www.istat.it/tavole-di-dati/temperatura-e-precipitazione-nei-comuni-capoluogo-di-provincia-anno-2022-serie-storica-2006-2022/
- Istat. 2024. Ambiente Urbano. Nelle città peggiora la qualità dell'aria, progressi limitati su mobilità, verde e rifiuti urbani. **Urban Environment. Air quality worsens in cities, limited progress on mobility, greenery and urban waste**. https://www.istat.it/it/archivio/297395
- Istat. 2024. Preoccupazioni ambientali e comportamenti ecocompatibili. **Environmental concerns and environmentally friendly behavior.** https://www.istat.it/comunicato-stampa/preoccupazioni-ambientali-e-comportamenti-ecocompatibili/
- Istat. 2024. Le statistiche dell'Istat sull'acqua. **Istat's statistics on water** https://www.istat.it/it/archivio/295148
- Istat. 2022. I cambiamenti climatici: misure statistiche Anno 2020. - **Climate change: statistical measures** https://www.istat.it/it/archivio/268615
- Istat. 2022. Consumi energetici delle famiglie - **Household energy consumption** Anno 2021. https://www.istat.it/it/archivio/272110
- Istat. 2022. Attività antropiche e salute delle coste. Indicatori territoriali di rischio e sostenibilità per aree costiere e insulari in Italia e nell'unione europea. **Human activities and coastal health. Spatial indicators of exsustainability risk for coastal and island areas in Italy and the European Union** https://www.istat.it/it/archivio/274891
- Istat. 2021. Indicatori sui cambiamenti climatici derivati dai conti ambientali. Economia e ambiente. Una lettura integrata. **Climate change indicators derived from environmental accounts. Economics and the environment. An integrated reading** https://www.istat.it/it/archivio/258752
- ….

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Climate Change and Environment statistical info in Annual Reports

Relevant indicators for Environmental and Climate change also included in annual reports, Yearbook and Istat flagship, such as:

Yearbook: Chapter "Environment, Climate and Energy"
follows the **CC** concept areas related to emissions, drivers, mitigation, impact, adaptation.
https://www.istat.it/storage/ASI/2023/ASI_2023.pdf

Wellbeing Report (since 2010) Chapter "**Environment"**
https://www.istat.it/produzione-editoriale/rapporto-bes-2023-il-benessere-equo-e-sostenibile-in-italia/

SDG Report (since 2016), (Database since 2016)
Relevant information scattered across Goals 13, 6, 7 2,14, 15, etc.
https://www.istat.it/en/publication/2022-sdgs-report-statistical-information-for-2030-agenda-in-italy-2/

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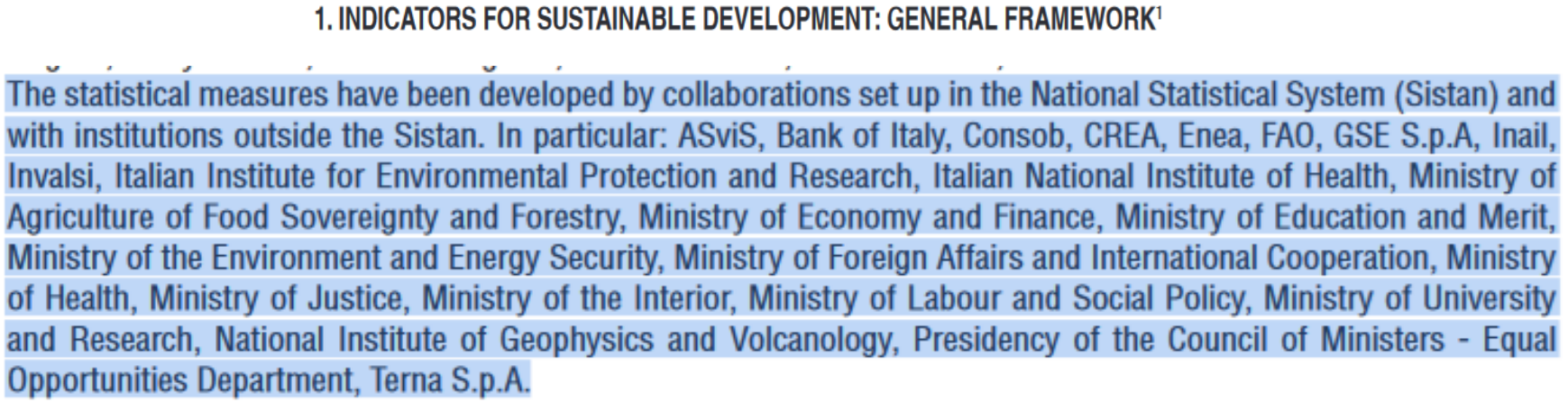
Production and dissemination contribution

- National Strategy for Sustainable Development in Italy
- Report on the National Energy Situation (by Ministry of Environment and Energy Security)
- Energy and Climate Plan
- National Plans for Ecological Transition
- Recovery and Resilience Plans
- Adaptation Plans also at municipal level, because of the availability of data for cities
- Etc...

Sources of data in the NSS: collaboration and cooperation

Besides Istat's sources of data, **other several institutes belonging to NSS** are involved as data producers, including the Environmental Agency in Italy (Ispra), the Ministry of Environment, other institutions and line mynisteries.

It is **important the <u>cooperation</u> and <u>collaboration</u> in the NSS ,** and also inside the institute itself, to streamline the data availability, the dissemination,
gradually involving additional statistical domains, improving year by year.



1. INDICATORS FOR SUSTAINABLE DEVELOPMENT: GENERAL FRAMEWORK[1]

The statistical measures have been developed by collaborations set up in the National Statistical System (Sistan) and with institutions outside the Sistan. In particular: ASviS, Bank of Italy, Consob, CREA, Enea, FAO, GSE S.p.A, Inail, Invalsi, Italian Institute for Environmental Protection and Research, Italian National Institute of Health, Ministry of Agriculture of Food Sovereignty and Forestry, Ministry of Economy and Finance, Ministry of Education and Merit, Ministry of the Environment and Energy Security, Ministry of Foreign Affairs and International Cooperation, Ministry of Health, Ministry of Justice, Ministry of the Interior, Ministry of Labour and Social Policy, Ministry of University and Research, National Institute of Geophysics and Volcanology, Presidency of the Council of Ministers - Equal Opportunities Department, Terna S.p.A.

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OTHER PRODUCTS RELATED TO CC

In 2020 Istat implemented for the first time the UNECE CCRS set of core indicators at national level, including proxy and partial indicators (same strategy adopted for SDGs)

Chapter 13. INDICATORS ON CLIMATE CHANGE DERIVED FROM ENVIRONMENTAL ACCOUNTS

Sotto-area	N.	Indicatore	Tier
		DETERMINANTI	
Totale economia	1a	Consumo totale di energia delle unità residenti	II
	1b	Disponibilità totale di energia primaria (TPES)	I
	2a	Quota dei combustibili fossili sul consumo totale di energia delle unità residenti	III
	2b	Quota dei combustibili fossili sulla disponibilità totale di energia primaria	I
	3	Perdite di terreni ricoperti da vegetazione (semi-naturale)	III
	4	Misure di sostegno ai combustibili fossili in rapporto al PIl	III
Produzione	5a	Intensità energetica delle attività produttive residenti	II
	6a	Intensità di CO_2 del consumo energetico delle unità residenti	II
Consumo	8a	Consumo energetico delle famiglie *pro capite*	I
		EMISSIONI	
Totale economia	9a	Emissioni totali di gas serra delle unità residenti	I
	9b	Emissioni totali di gas serra riferite al territorio nazionale	I
	10a	Emissioni di CO_2 da combustione delle unità residenti	III
	10b	Emissioni di CO_2 da combustione riferite al territorio nazionale	I
	11	Emissioni di gas serra da uso del suolo, cambiamenti nell'uso del suolo e silvicoltura	I
Produzione	12	Emissioni totali di gas serra delle attività produttive	I
	13	Intensità dell'emissione di gas serra delle attività produttive	I
Consumo	14	Emissioni dirette di gas serra delle famiglie	I
	15	Impronta di carbonio	II
		IMPATTI	
Totale economia	24	Perdite economiche dirette attribuibili a disastri idro meteorologici in rapporto al PIl	II
Condizioni fisiche	16	Anomalia della temperatura media (rispetto al periodo climatologico normale 1961 - 1990)	I
	17	Percentuale di suolo interessata da condizioni umide o secche inusuali (Standard Precipitation Index)	I
	23	Frequenza degli estremi di temperatura e precipitazioni	I
Risorse idriche	18	Livello di stress idrico: prelievo di acqua dolce in proporzione alle risorse idriche disponibili	I
Suolo, uso del suolo, ecosistemi, biodiversità	20	Stock di carbonio nel suolo	III
	21	Quota di territorio degradato	I
	86	(segnaposto per un indicatore sull'impatto dei cambiamenti climatici sulla biodiversità)	
Insediamenti umani e salute	22	Numero di decessi e di persone scomparse attribuiti a catastrofi idrometeorologiche	II
	25	Numero di persone la cui abitazione è stata distrutta a causa di disastri idro meteorologici	II
	26	Incidenza di malattie legate al clima trasmesse da vettori	II
	27	Eccesso di mortalità causato da ondate di calore	III
Agricoltura, foreste, pesca	28	Perdite agricole dirette attribuibili a disastri idro meteorologici	II

Sotto-area	N.	Indicatore	Tier
		MITIGAZIONE	
Risorse energetiche	29a	Quota delle fonti rinnovabili sul consumo di energia delle unità residenti	III
	29b	Quota delle fonti rinnovabili sul consumo finale di energia riferito al territorio nazionale	I
Spese	30	Quota della spesa per la mitigazione dei cambiamenti climatici sul PIl	III
Gestione e regolamentazione ambientale	31	Quota delle imposte sull'energia e sui trasporti sul totale delle imposte e contributi sociali	I
	32	Sussidi e altri trasferimenti connessi ai cambiamenti climatici in rapporto al PIl	III
	33	Quotazione media dei permessi di emissione di CO_2	I
	34	Somme annuali erogate e mobilizzate (in $USA) in relazione all' obiettivo continuativo esistente di mobilitazione collettiva pari a 100 miliardi di dollari fino al 2025	II
Agricoltura e foreste	81	Emissioni nette/assorbimento di CO_2 da parte del terreno forestale	I
		ADATTAMENTO	
Spese	35	Quota della spesa pubblica per l'adattamento in rapporto al PIl	III
Risorse idriche	36	Variazione dell'efficienza nell'uso della risorsa idrica	I
Insediamenti umani e salute	82	Quota di aree verdi urbane sulla superficie totale delle città	III
Agricoltura, foreste, pesca	87	(segnaposto per un indicatore sull'adattamento ai cambiamenti climatici nel settore forestale)	
	39	Quota di superficie agricola destinata all'agricoltura sostenibile e produttiva	II

Legenda: Tier I - metodologia identificata e dati regolarmente prodotti dai Paesi; Tier II metodologia identificata ma i dati non sono regolarmente prodotti dai Paesi; Tier III - metodologia internazionale da definire.
Legenda dei colori:

	Indicatore calcolabile per l'Italia con dati dei conti ambientali
	Indicatore calcolabile per l'Italia con dati di fonti statistiche diverse dai conti ambientali
	Indicatore calcolabile a livello europeo
	Indicatore non calcolabile per l'Italia

Fonte: Nostre elaborazioni da Unece, 2020c, Table 3

Legenda: Tier I - metodologia identificata e dati regolarmente prodotti dai Paesi; Tier II metodologia identificata ma i dati non sono regolarmente prodotti dai Paesi; Tier III - metodologia internazionale da definire.
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	Indicatore calcolabile a livello europeo
	Indicatore non calcolabile per l'Italia

Fonte: Nostre elaborazioni da Unece, 2020c, Table 3

https://www.istat.it/wp-content/uploads/2021/06/Economia-Ambiente.pdf

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CLIMATE CHANGE ADAPTATION – Case studies

Istat contributed to the collection of case studies on CLIMATE CHANGE ADAPTATION in the context of **UNECE - Expert Forum on Climate change-related statistics**

CES Steering Group on Climate Change-Related Statistics
Case studies on measuring climate change adaptation: Italy

1 April 2022

RESILIENCE, RISK AND VULNERABILITY OF COASTAL AREAS IN ITALY

Giovanna Tagliacozzo, Silvana Garozzo, Antonino Laganà, Simona Ramberti, Norina Salamone, Maria Teresa Santoro, ISTAT, Italy, tagliaco@istat.it

Country	Italy
Short description	Coastal areas suffer from specific pressures, due to the characteristics of the territories and seasonal factors that increase their vulnerability and related risks. Resident population and the intense tourist and commercial flows determine a strong anthropization of the territory associated to the intense seasonal flows, that call for a highly flexible systems planning.

CES Steering Group on Climate Change-Related Statistics
Case studies on measuring climate change adaptation: Italy

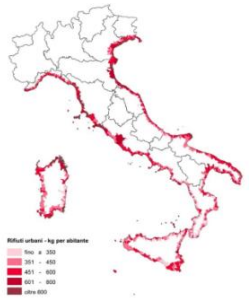
16 March 2022

METEOCLIMATIC PHENOMENA, AIR QUALITY TRENDS AND PRESSURE FACTORS IN THREE MAJOR CITIES IN ITALY (2011-2020)

Angela Ferruzza, Domenico Adamo, Luigi Costanzo, Giovanna Tagliacozzo and Donatella Vignani, Directorate of Environmental and Territorial Statistics Production, ISTAT, Italy
tagliaco@istat.it, vignani@istat.it

Country	Italy
Short description	Focusing on the three major Italian Cities (Milan, Rome and Naples), meteoclimatic indicators (temperature, precipitations and their extremes) are linked with indicators on pressure at local scale, calculated for each urban context: data on atmospheric pollution, on the final consumption of natural gas and electricity, rate of motorisation and characteristics of the vehicle fleet and data on the coverage of green areas. Analysed in an integrated perspective.

FIGURE 3. Municipal waste production in coastal municipalities - Year 2019 (kilograms per inhabitant)



Source: Italian Environmetal Agency, Ispra

FIGURE 5. Natura 2000 areas (Sites of Community Importance and Special Protection Areas) in coastal municipalities. Year 2019 (square kilometres)

https://unece.org/statistics/case-studies-measuring-climate-change-adaptation

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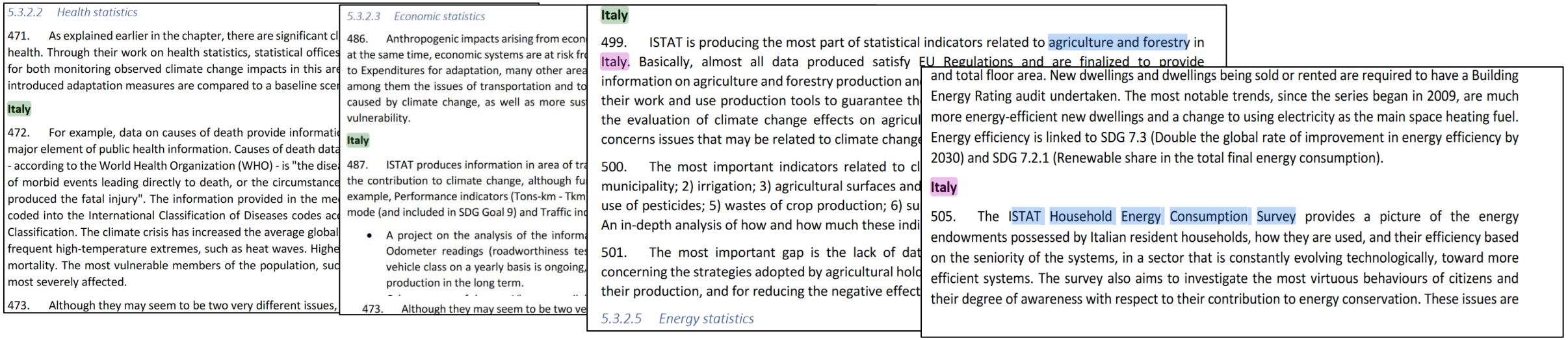
ROLE OF NATIONAL STATISTICAL OFFICES IN ACHIEVING NATIONAL CLIMATE OBJECTIVES

Istat recently contributed to the UNECE GUIDANCE ON THE ROLE OF NATIONAL STATISTICAL OFFICES IN ACHIEVING NATIONAL CLIMATE OBJECTIVES prepared by UNECE TF

In the part **on "How NSOs can contribute", with practical experiences from Environment, Demographic, Social, Health, Economic, Agricultural; Disaster, Environmental accounting..**



5.3.2.2 *Health statistics*

471. As explained earlier in the chapter, there are significant cl
health. Through their work on health statistics, statistical offices
for both monitoring observed climate change impacts in this are
introduced adaptation measures are compared to a baseline scer

Italy

472. For example, data on causes of death provide informatic
major element of public health information. Causes of death data
- according to the World Health Organization (WHO) - is "the disea
of morbid events leading directly to death, or the circumstance
produced the fatal injury". The information provided in the me
coded into the International Classification of Diseases codes ac
Classification. The climate crisis has increased the average global
frequent high-temperature extremes, such as heat waves. Highe
mortality. The most vulnerable members of the population, suc
most severely affected.

473. Although they may seem to be two very different issues,

5.3.2.3 *Economic statistics*

486. Anthropogenic impacts arising from econ
at the same time, economic systems are at risk fr
to Expenditures for adaptation, many other area
among them the issues of transportation and to
caused by climate change, as well as more sus
vulnerability.

Italy

487. ISTAT produces information in area of tra
the contribution to climate change, although fu
example, Performance indicators (Tons-km - Tkm
mode (and included in SDG Goal 9) and Traffic ind

- A project on the analysis of the informa
  Odometer readings (roadworthiness tes
  vehicle class on a yearly basis is ongoing,
  production in the long term.

473. Although they may seem to be two ve

Italy

499. ISTAT is producing the most part of statistical indicators related to agriculture and forestry in Italy. Basically, almost all data produced satisfy EU Regulations and are finalized to provide information on agriculture and forestry production an
their work and use production tools to guarantee th
the evaluation of climate change effects on agricul
concerns issues that may be related to climate change

500. The most important indicators related to cl
municipality; 2) irrigation; 3) agricultural surfaces and
use of pesticides; 5) wastes of crop production; 6) su
An in-depth analysis of how and how much these indi

501. The most important gap is the lack of dat
concerning the strategies adopted by agricultural hold
their production, and for reducing the negative effect

5.3.2.5 *Energy statistics*

and total floor area. New dwellings and dwellings being sold or rented are required to have a Building Energy Rating audit undertaken. The most notable trends, since the series began in 2009, are much more energy-efficient new dwellings and a change to using electricity as the main space heating fuel. Energy efficiency is linked to SDG 7.3 (Double the global rate of improvement in energy efficiency by 2030) and SDG 7.2.1 (Renewable share in the total final energy consumption).

Italy

505. The ISTAT Household Energy Consumption Survey provides a picture of the energy endowments possessed by Italian resident households, how they are used, and their efficiency based on the seniority of the systems, in a sector that is constantly evolving technologically, toward more efficient systems. The survey also aims to investigate the most virtuous behaviours of citizens and their degree of awareness with respect to their contribution to energy conservation. These issues are

Etc….

https://unece.org/statistics/documents/2023/12/informal-documents/guidance-role-national-statistical-offices

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ISTAT CLIMATE CHANGE REPORTS

In 2022 Istat published a **Report dedicated to CC**, with Istat sourcing data from **Meteoclimatic and hydrological data, Urban Environmental data, Urban Water census** where interlinkages between drivers, impacts, adaptation in cities have been highlighted.

A second **Report on Climate Change have been** published October 2024, including also additional indicators from **Agriculture Census** georeferenced on new geographies based on the '**ecoregions'** instead of administrative boundaries; indicators from Istat Household Energy consumption Survey. and from **Aspect of daily life Household survey** (concerns and ecobehaviours by population), as fruit of the work in the context of EGES Subgroups aimed to streamline the use of data from Household surveys and Censuses.

statistiche focus

22 ottobre 2024

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Istat

MISURE STATISTICHE PER L'ADATTAMENTO AI CAMBIAMENTI CLIMATICI:
REALTÀ IN AMBITO URBANO
E NUOVE GEOGRAFIE PER L'AGRICOLTURA

Le conseguenze dei Cambiamenti Climatici sono sempre più tangibili: tutti i Paesi vi sono esposti e la gravità degli impatti varia nei territori a seconda delle condizioni meteoclimatiche, geografiche, socioeconomiche e dei relativi parametri di rischio (pericoli, esposizione, vulnerabilità). Alle strategie di mitigazione finalizzate alla riduzione delle cause delle emissioni di gas climalteranti, vanno integrate misure di adattamento di diversa matrice, volte a ridurre gli impatti diretti e associati, attraverso la protezione e il rafforzamento dei sistemi naturali, economici e sociali, nel rispetto del principio della *Giusta Transizione*, vale a dire processi tesi allo sviluppo di un sistema rispettoso del principio di sostenibilità ambientale ed economica, ma anche giusto e inclusivo.

Le misure di adattamento sono necessarie a tutti i livelli, in coerenza con le strategie di riduzione del rischio da

In general, more work on contextualization of the topics within CC is still needed, innovative means for communication, regulary dissemination, English translation, …

https://www.istat.it/comunicato-stampa/misure-statistiche-per-ladattamento-ai-cambiamenti-climatici-realta-in-ambito-urbano-e-nuove-geografie-per-lagricoltura-anno-2022/

Giovanna Tagliacozzo
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Challenges and Conclusions

- Other ongoing activities refer to exploring collaborations with colleagues from **Health statistics**, sourced by causes of death and/or demographic data. Where the main challenge is to clearly measure correlations with CC.
- A new multipurpose **Survey on Agriculture and Climate Change** have been designed, with questions on the effects of CC on farms activities and production.
  (see: *Environmental Statistics and Climate Change Related Statistics in Italy* on https://unstats.un.org/unsd/envstats/Newsletter/Issue55.pdf)
- Strengthen the use of **Register of Places** to assess risk parameters (exposure, hazards, vulnerability) on the territory at a granular scale. https://www.istat.it/wp-content/uploads/2024/07/Nota-metodologica-RSBL-2021.pdf
- In conclusion, it is a gradually work to be implemented, and continuously improved, in a interconnected **ecosystem of data**, where the engaging with the international statistical community is fundamental, to be informed, also on new challenging areas, sharing experiences and best practices.

Thank you!

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Istat | Istituto Nazionale di Statistica