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**Gender, climate, and the environment**

## **Citizens' attitudes and behaviours in environmental matters: a gender-based approach**

Note by Italian national Institute of Statistics\*

### *Abstract*

The Italian National Institute of Statistics annually carries out the Multipurpose Survey “Aspects of daily life” which collects information about the habits of citizens and the quality of their life, both at individual and household level. A set of questions focuses on the citizens’ opinions about environmental problems and eco-friendly behaviours. The paper aims to combine the environment-related main results of the survey with a gender-based approach. The main findings show the cross-cutting nature of environmental concerns but also the differences between men and women in adopting sustainable and responsible behaviours. Women, of any age and educational level, are more inclined to adopt eco-responsible behaviours. The data analysed already provide a helpful informative framework for policymakers. However, for supporting more effective awareness-raising policies, further investments are needed both in the analysis of available data and in the production of more gender-based and gender-sensitive indicators. In this regard, the results represent a starting point for a renewed reflection on the contribution that official statistics can give in order to enrich environmental statistics according to a gender perspective.

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## I. Introduction

1. Collective awareness of gender inequality and its importance in public policy has grown, both at national and international level. There is a similar (maybe greater) increase in awareness of environmental emergencies such as pollution, climate change, shrinking biodiversity and the increasing damage to the oceans and seas. But the link between gender and environmental statistics has yet to be explored and the integration of the gender dimension in environmental statistics programmes has yet to be constructed to become a key component of official statistics work plans. A basic challenge for addressing and leveraging the gender-environment nexus is gathering the necessary evidence for informed policy decisions<sup>1</sup>.
2. There are a number of international initiatives to further develop gender-disaggregation of environmental data. Many of them focus on developing countries where data availability is more limited. But the lack of data is a key challenge to overcome even in developed countries. If policy makers have to leverage and address the gender-environment nexus, further efforts are also needed in advanced economies, and official statistics can play an important role.
3. The Italian National Institute of Statistics (Istat) has long been committed to this topics, being aware of the importance of measuring the citizens' sensitivity to environmental issues and identifying the related factors. The lifestyles and consumption patterns, the opinions and attitudes that guide both choices and behaviours determine an impact on the environment of great importance for sustainability. The aim of the paper is to present the main Istat sources of information about attitudes and behaviours environment related and to focus on some first evidences resulting from a gender-based analysis. The first part emphasises the citizens' views on the environmental issues that most concern them. In the second part, the focus is on some of eco-friendly behaviours and habits (purchasing behaviours, means of transport for commuting, etc.). Reading the data by gender and in their evolution over time provides interesting food for thought. It is an ongoing work in its early stages. However, the results confirm the need for official statistics to invest more both in the analysis of available data, exploring features not yet or little investigated, and in data collection systems more oriented to the production of gender statistics, in order to provide a clearer and more detailed information framework to policymakers even on this topic.

## II. The relationships between population and environment: the Istat main sources

4. The Istat sample surveys on households represent the most suitable information context for deepening the relationship between population and environment. Main sources on this topic are the “Household energy consumption” survey and the Multipurpose survey “Aspects of daily life”.
5. The purpose of the Household energy consumption survey is to obtain information and to produce statistical data on household energy endowments, that is on plants and equipment that consume energy in homes and how they are used in daily life. The survey results provide a comprehensive picture of the energy consumption and energy characteristics of the residential sector, useful to the community and to the institutions to prepare interventions

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<sup>1</sup> See Oecd (2021).

aimed at protecting the quality of the environment and meeting the national and European climate change mitigation goals<sup>2</sup>. The survey is carried out through a household interview, so the results are not suitable for a gender analysis<sup>3</sup>.

6. The Multipurpose survey “Aspects of daily life” has been annually carried out since 1993, on a household sample. It consists both in an individual interview of each household member and in a household interview. The collected information allows to know the habits of citizens, the problems they face every day and their satisfaction with the functioning of public utilities that should contribute to improve the quality of life. School, work, family life and relationships, housing and the neighbourhood, leisure, political and social participation, health, lifestyles are the main topics covered. So, it is a very important source to monitor the changes in everyday life, also with regard to environmental issues. Because of the growing importance of environmental issues and the need to highlight the point of view of citizens, for the first time in 1998, and with continuity since 2012, data and indicators include also several relevant environmental issues. More in detail, at the individual level (persons aged 14 years or more) the topics related to environment are: Satisfaction with the environmental situation (air, water, noise, etc.) of the area in which citizens live and opinions on the degradation of the landscape; Concerns about environmental issues; Transport/mobility; Eco-friendly behaviours. At the household level: Electricity and gas (quality of supply services); Water (quality of supply services, mineral water consumption, etc.); Waste (separate collection/composting)<sup>4</sup>.
7. This source, thanks to the many other data collected at the individual and household level, gives a very helpful picture for policy makers in order to address awareness-raising policies on such emerging issues.

### III. Concerns for environmental issues

8. In the survey on Aspects of daily life, a set of questions addressed to individuals aged 14 and over focus on the environmental problems causing worries (from climate change, to various forms of pollution, to the consequences of unsustainable exploitation of natural resources, etc.). In line with the results in previous years, in 2021 climate change and air pollution remain at the top of environmental concerns. These topics are respectively reported by 52.3% and 51.5% of the population (Graph 1). Slightly detached, in third place there is the concern for the disposal and production of waste (44.1% of over14). Additional global environmental risk factors are perceived in water pollution (40.1%) and the greenhouse effect and ozone hole (34.9%). The other environmental problems concern less than three out of 10 people.

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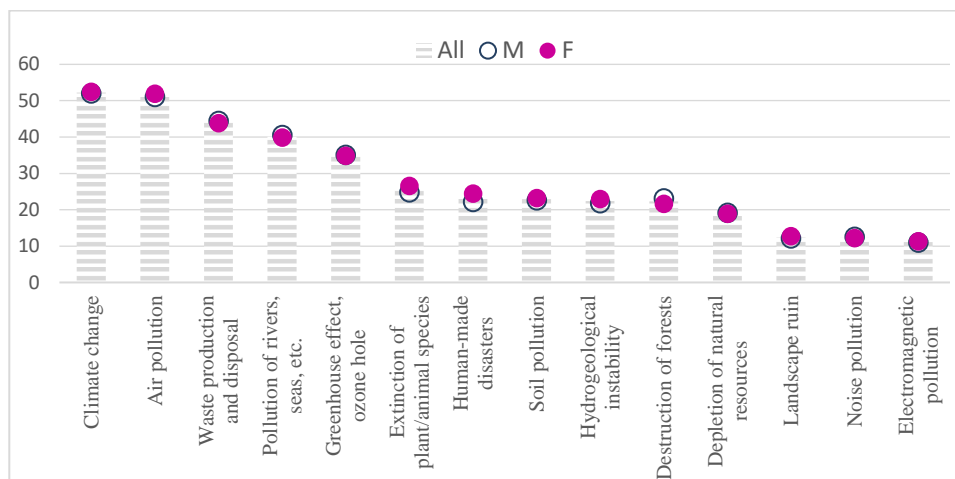
<sup>2</sup> The main topics investigated are: the characteristics of the dwelling, the plants available to households as home heating, water heating, air conditioning (number, type of fuel, uses by households, etc.), the consumption of firewood, pellets and other types of biomass, lighting systems and household appliances (number, type, characteristics and use), the expenses for energy use (electricity, natural gas, LPG, etc.). There is therefore a specific focus on energy issues, increasingly relevant for the sustainable development of contemporary societies, both with regard to the availability of natural sources, and in terms of environmental impact. For more information, see <https://www.istat.it/it/archivio/58343>.

<sup>3</sup> The last edition was conducted in 2020.

<sup>4</sup> For more details see: <https://www.istat.it/it/archivio/91926>

9. Overall, citizens do not merely point to a single problem, but express concern about various environmental problems: the majority of men and women (59.9%, 60.4%) indicate 5 problems (the maximum they could indicate in the questionnaire).

Graph 1. Population aged 14 and over by environmental issues of concern and gender. Year 2021. Percentages.

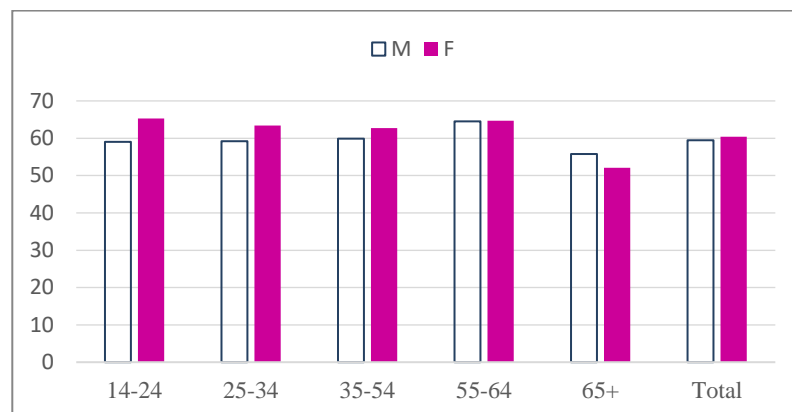


Source: Istat, Aspects of everyday life

10. There are no significant gender differences in the perception of environmental problems. There is only a slightly more widespread concern among women for Human-made disasters (+2.3 percentage points) and Extinction of some plant/animal species (+1.7) and, at the same time, a greater concern of men for the destruction of forests (+1.5).
11. More differences emerge considering other socio-demographic variables: age, education, territory. Although the ranking of the first five problems is the same in the various age groups, age is a key factor in the variability of environmental concerns. Young people up to 34 years are more worried than other age groups about biodiversity loss (32.1% between 14 and 34 years against 20.9% of over55), forest destruction (26.2% against 20.1%) and depletion of natural resources (24.7% against 15.9%). On the other hand, compared to young people, the citizens aged over 50 years report to be more concerned about hydrogeological instability (26.3% against 17.0% of under 35) and soil pollution (23.7% against 20.8%). The slight gender differences emerged in the whole population increase among youngest people (14-24 years): 27.5% of girls express concern for Human-made disaster, compared to 23.4% of their peers. The difference rises to almost 10 percentage points for extinction of some plant/animal species (38.6% compared to 29.3% of boys).
12. Analysing the total number of issues by age, some gender differences emerge. Women under 55 more often than men in the same age class indicate 5 issues of concerns (Graph 2). The young women are again the most worried group: 65.3% of women aged 14-24 years indicate 5 environmental problems (compared to 59% of peers).
13. For many issues the share of citizens expressing concerns grows with increasing educational qualifications. Differences are particularly high in the case of climate change (61.2% among graduates compared to 46.8% among people with at most a lower secondary school diploma), the production and disposal of waste (54.1% compared to 38.3%) and water pollution (46.8% against 36.5%). More generally, only 1.5% of graduates do not express any concern, compared to 2.2% of people with upper secondary educational level and 4.5% of those with at most a lower secondary level of education. Conversely, only 50.6% of the less

educated people indicate five problems, compared to a much higher share among graduates (74%). The differences in educational qualifications concern women and men to a similar extent.

Graph 2. Population aged 14 and over who indicated 5 environmental issues of concerns by gender and class of age. Year 2021. Percentages.



Source: Istat, Aspects of everyday life

14. Even the territorial analysis brings out difference. People living in the cities are more concerned about air and noise pollution and waste disposal systems, while people living in small municipalities are more sensitive to soil pollution and hydrogeological instability. The perception of environmental issues also varies between North and South of Italy: climate change worries 54.3% of the inhabitants of the North-East compared to 46.5% of Southern citizens. Water pollution is particularly felt by the inhabitants of the North, much less in the South, especially in the Islands. Instead, residents of Central and Southern Italy are more concerned about the production and disposal of waste (47.7% in the Centre, 46.6% in the South and 40.0% in the North-East) and soil pollution (25.5% in the South and 20.1% in the North-West).
15. The trend over time suggests that there is a strong link between the most climate-related concerns, public debate and media influence. The concern about the greenhouse effect, which involved almost six people out of 10 (aged 14 and over) in 1998, has fallen by more than 20 percentage points in 2021, affecting only 34.9% of population (Table 1).
16. Conversely, the fear of climate change, reported in 1998 by 36.0% of people, rises to 52.2% (+16 percentage points). Assessing together the two problems - the greenhouse effect and climate change - it emerges that the attention increased decisively from 2019, when the protest movements globally started. In 2021, more than 60% of the population expressed at least one of these concerns (20.7% both).
17. On the contrary, air pollution has been a constant concern of more than half of citizens for more than twenty years. About hydrogeological instability, which was among the most worrisome issues in 1998 (34.3%), the attention to this topic dropped a lot: in 2021 it is indicated only by 22.0% of the population. The decrease was slightly more noticeable for women - 12.6 percentage points compared with 10.5 percentage points among men. This trend is even more difficult to explain in the light of the geomorphological features of the Italian territory where landslides, floods, coastal erosions etc., are very frequent phenomena, intensified in recent years, also because of global warming.

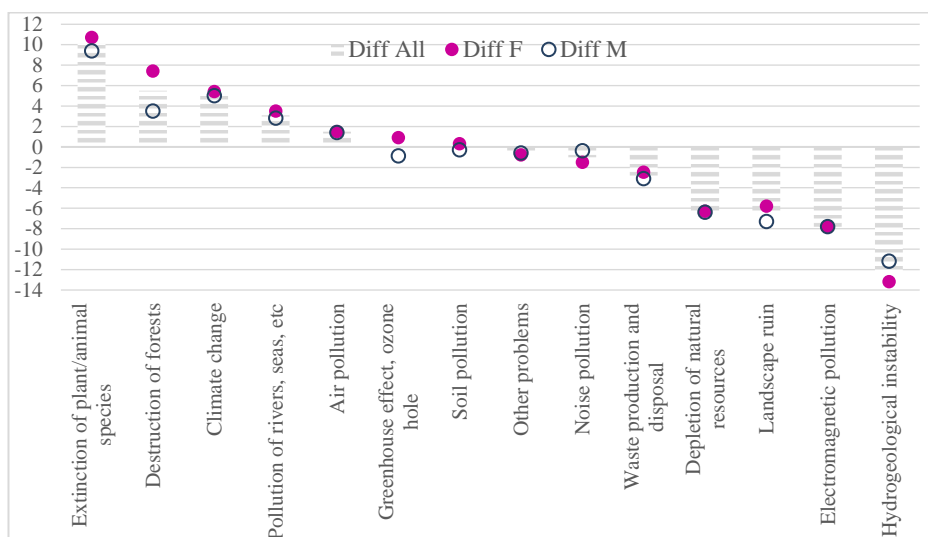
Table 1. Population aged 14 and over by top 5 environmental issues of concern. Years 1998, 2012, 2021. Percentages

Issue of concern	1998	Issue of concern	2012	Issue of concern	2021
Greenhouse effect, ozone hole	57.9	Air pollution	50.0	Climate change	52.2
Air pollution	50.8	Climate change	47.0	Air pollution	51.5
Pollution of rivers, seas, etc.	40.1	Waste production and disposal	46.9	Waste production and disposal	44.1
Waste production and disposal	39.4	Pollution of rivers, seas, etc.	37.0	Pollution of rivers, seas, etc.	40.1
Climate change	36.0	Greenhouse effect, ozone hole	34.9	Greenhouse effect, ozone hole	34.9

Source: Istat, Aspects of everyday life

18. With regard to the problems related to soil pollution, water pollution and the destruction of forests, in the years considered the problem most felt by the population was water pollution which continue to affect about 40% of the population. The destruction of forests, which worried 25.2% of the population in 1998, fell to 22.3% in 2021. However, this decrease is observed only among men (- 4.4 points), while the figure remains stable for women. The percentage of those who consider soil pollution as one of the five environmental main priorities slightly increases (from 20.3% to 22.9%). The concern for waste production and disposal, increasing from 1998 to 2012, drops slightly in 2021, probably thanks to the improvements in the separate collection (44.1%).
19. As evident in the Graph 3, which shows the difference in percentage points between 2021 and 2012, these dynamics over time relate both men and women. The intensity of change is also very similar, except for the before mentioned worries about hydrogeological instability and deforestation.

Graph 3. Changes in concerns for environmental issues by gender. Years 2012 and 2021. Difference (2021-2012) in percentage points.



Source: Istat, Aspects of everyday life

20. Although there is a widespread awareness of environmental problems, the majority of the population is satisfied with the environmental situation (air, water, noise) of the area they live in. The figure remains stable over the years (72.4% in 2021, 71.2 in 2012) and there are no significant gender differences. 72.1 of men and 72.7% of women declare themselves very or quite satisfied. Even the analysis by age classes and educational level shows no significant differences. It would seem that environmental problems, although worrying most of the population, are still deemed as general problems with little impact on the perceived quality of the environment in which they live.
21. In short, women and men share environmental concerns without significant differences. However young and adult women indicate more concerns than men. Girls aged between 14 and 24 appear to be particularly sensitive to environmental issues. The widespread of the concerns changes according to territory and, mainly, educational level.

#### **IV. Eco-friendly behaviours**

22. In addition to opinions and attitudes, it is also important to monitor the resulting behaviours. Most studies claim that women are more likely to be environmentally conscious since they engage more in pro-environmental behaviour, for example because they are more inclined to recycle and buy greener products, to use alternative modes of transport to private cars<sup>5</sup>.

##### **A. Pro-environmental behaviours**

23. The spread of environmentally friendly behaviours, aimed at respecting the environment and safeguarding natural resources, was surveyed in the individual questionnaire. The results provide very interesting insights. In 2021, the most part of respondents said they routinely take care not to waste energy (67.6%) or water (65.9%). 49.6% never adopt noisy driving behaviour, in order to reduce noise pollution. In addition, 37.1% of the population reads the labels of food products and 24.4% buys zero km products (Graph 4).
24. Women show more often eco-sustainable behaviours: 18.4% adopt at least 5 of them compared to 13.7% of men. On the contrary, among men, the percentage of those who do not take any (16.6 against 12.6% of women) is higher.
25. By going into the specifics of behaviours, the most evident differences are found above all in purchasing behaviours: 43.0% of women usually read ingredient labels compared to 30.7% of men; 17.2% of women (vs 12.3% of men) usually buys food or organic products. Women are also on average more careful not to waste water (68.5% compared to 63.2% of men) and energy (69.8% compared to 65.2%).

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<sup>5</sup> See for example: Aaron R. Brough et alii (2016), Zelezny L. et alii (2000), Zhao Z. et alii (2021).

Graph 4. Persons aged 14 and over by environment-friendly behaviours usually adopted and gender. Year 2021. Percentage

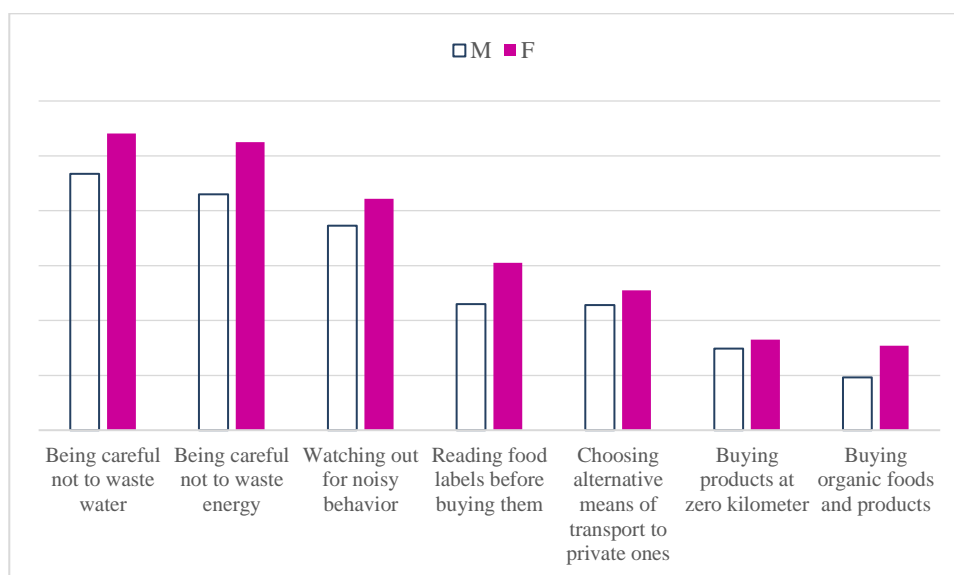


Source: Istat, Aspects of everyday life

26. Both among men and women, the percentages of environmentally friendly behaviours are higher among those aged 35 and over. 52.3% of people between 14 and 34 years does not waste water, compared to 71.2% of people aged over 55; 50.5% of people under 34 compared to 73.8% of over 55 is careful not to waste energy. On the contrary, regarding the choice of alternative means of transport to private motor vehicles, the highest percentages are recorded instead among young people under 34: 22.4% “usually” chooses them against 16.3% of over55.
27. Gender differences are evident in all age groups: however, by focusing attention on the younger(14-24 years) some differences increase, highlighting a behaviour of girls much more respectful of environmental resources (Graph 5), especially in terms of containing water (+8.5 percentage points compared to boys) and energy wastage (+9.5 percentage points). A greater sensitivity of girls compared to their male peers is also noted in spending behaviours, such as reading product labels before buying them (+7.5 points) or buying organic food and products (+5.8 points).
28. The educational level has a strong impact on environmentally friendly behaviours. As the level of education increases, the percentage of citizens who usually adopt them increases. Among the highest and lowest educational level there are more than 20 percentage points of difference in the habit of reading product labels, almost 15 points in buying organic products and about 10 in expressing their preferences for zero km products. Among people with higher educational level, the propensity of people in being careful not to waste water and energy is also higher, even if the gap is smaller. In particular, women with high educational qualifications represent a population sub-group characterized by responsible behaviours and great attention to the environment. Among women graduates about one out of three adopts at least 5 pro-environmental behaviours. The ratio drops to 1 out of 5 among men with the same educational level.



Graph 5. Persons aged 14-24 by environment-friendly behaviours usually adopted and gender. Year 2021. Percentages



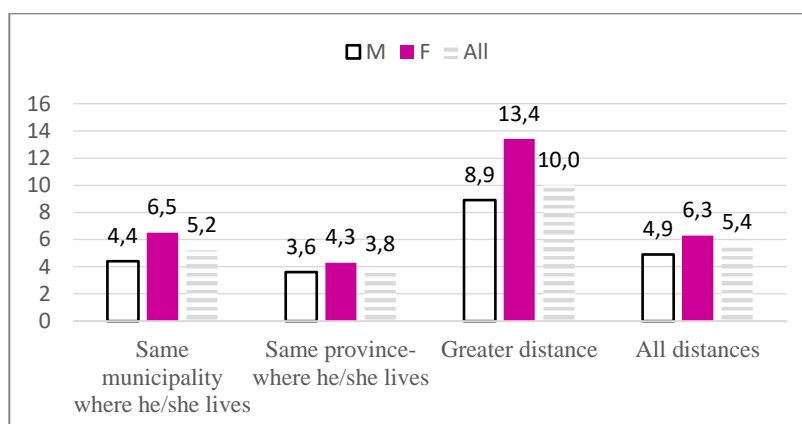
Source: Istat, Aspects of everyday life

29. The greater spread of eco-sustainable behaviour among women could also result from different gender roles, for example because women do the shopping more frequently than men or because they are concerned with the household management and, consequently, they are more brought to monitor household budget by making a more careful use of resources (water, energy, etc.). By controlling the distribution of behaviours also for the role in the household, the greater propensity of women to adopt eco-sustainable behaviours does not concern only those who have a household responsibility (head of the household or his partner) and, consequently, are often responsible for consumption choices and household spending behaviours, but also women who live (as daughters) with their parents. It would be interesting to deepen the determinants of these behaviours through an intra-household analysis, in order to study the relationships between attitudes and parental behaviours with attitudes and behaviours of sons and daughters.
30. Some differences also emerge at the territorial level. In the Northern regions there is a higher percentage of people who have virtuous habits related to mobility: 52.4% is careful not to adopt noisy driving behaviour (45.0% in the regions of Southern Italy) and 19.9% chooses alternative means of transport to private cars or other private motor vehicles (13.9% in the South and Islands). In the Central regions, a greater attention is paid to read product labels (39.3% against 35.4% in the South and Islands) and to purchase of organic products (15.7% compared to 14.4% in the North). Among the residents of the South and Islands, on the other hand, the frequency of buying food and local products is higher (29.6% compared with 21.1% in the North). The attention not to waste water and energy shows no variability across the territory.
31. The results confirm evidences from other studies about the gender differences in pro-environmental behaviours and green consumption attitudes. Women are more respectful on environmental resources and gender differences arise among young and highly educated people.

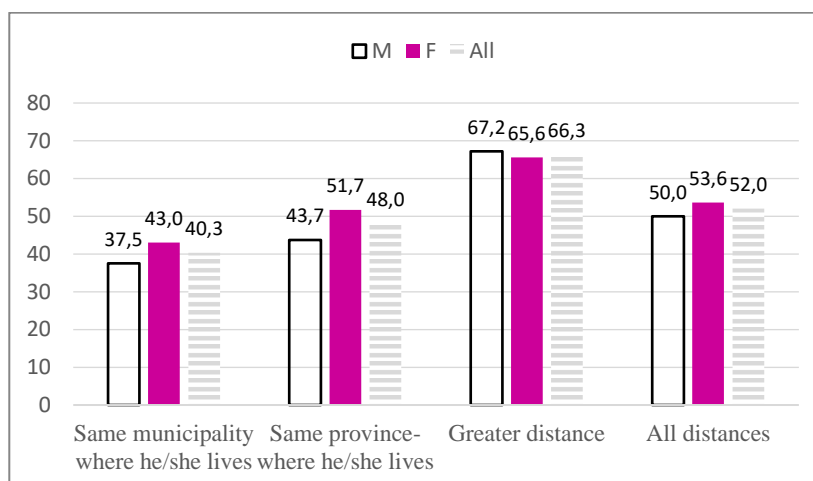
## B. Sustainable mobility: still much to do

32. The adoption of a mobility system with low environmental impact, especially in urban areas, is considered a priority to improve the quality of life of citizens and to protect the planet. The sustainable mobility is one of the biggest challenges to significantly reduce traffic, improve air quality, prevent urban degradation and cut energy consumption. Walking, cycling, using public transport, car sharing, are just a few examples of what is now called sustainable mobility, that is, the set of virtuous practices suitable for reconciling both the need to move and to reduce air pollution and noise.
33. The survey Aspects of daily life collects data also on commuting, giving further food for thought. In 2021, about 30 millions of people moved every day to reach the place of study or work: over two thirds of the population moved for work, the remaining third for study purposes. The percentage of people who reach the workplace by private means remains very high, with a consequent strong environmental impact: 84.6% of the employed people with not significant gender differences (84.2 among men and 85.3% among women). The percentages are very high even when the workplace is in the same municipality where they live (82.8%): in this case, however, there are two percentage points of difference between men and women (81.5% of women against 83.6% of men).
34. Looking at other means of transport, the data show female behaviours more environmental friendly. Employed women who work within their municipality of residence go to work on foot more often than employed men: 27.6% against 17.4%. Moreover, the use of public transport is more widespread among women, regardless of the distance of the place to be reached (Graph 6): 6.3% of employed women compared with 4.9% of employed men. The differences concern both travel within the municipality (6.5% against 4.4% of men) and, in particular, travel over longer distances (13.4% of employed women vs 8.9% of employed men).
35. Among adult students the use of private mean of transport is less widespread and gender differences are wider. 28.5% reaches the school/University by private means (32.1% of men compared to 25.2% of women). The differences remain even when the place of study is in the municipality where they live: in this case, however, the number of those who use a private mean increases both among women and men (42.9% of men and 35% of women).
36. There are less gender differences in terms of sustainable mobility among the students. 18.8% of women walk to school/University against 20.2 of male students. Some differences emerge in using the public transport to go to school (53.6% of student women compared to 50% of student men) (Graph 7). However, considering commuting over short distances, the differences between men and women in the use of public means are wider: for commuting within the municipality where they live, 43% of female students use public means compared to 37.5% of male students.
37. The sharing both simultaneously (carpooling) and at different times (such as bike and car sharing) of private vehicles reduces the number of vehicles in circulation and represents a more sustainable form of transport. Carpooling, that is the sharing of the car with colleagues of work or study who have to travel the same route, is chosen by 6% of adults who travel for work or study. This form of mobility, halfway between the use of the collective vehicle and that of the private vehicle, is more used by men (9.1% against 6% of women). However, it is interesting to note that among the employed people, men make more use of carpooling (8.9% compared to 5.2% of women employed), while among the adult students more women organize themselves with friends to share the cars.

Graph 6. Employed people aged 18 and over who use public means of transport by distance from the workplace and gender. Year 2021. Percentages.



Graph 7. Adult students who use public means of transport by distance from the school and gender. Year 2021. Percentages.



38. The use of shared mobility is not yet widespread, although growing in recent years. In 2021, over 600 thousand people aged 18 and over (1.3% of the population) used bike sharing, the service that allows to rent a bike for a short time. The use of bike sharing is more widespread among men (1.6% compared to 1% of women), especially if employed (2.2% vs 1.4 of women). Bike sharing is more widespread in large urban areas, where shares of users double the average, and in the metropolitan areas where the share of users even exceeds 4 times the national average.
39. A similar amount of people aged 18 and over (more than 600,000) used the car sharing (the service that allows to pick up and use a car without the need for personal assistance), at least once a year, as drivers or passengers. Users account for 1.2% of the adult population: 1.6% of men compared to 0.8% of women. Car sharing, even more evidently than bike sharing, is limited to big cities.

40. In short, the results show that commuting, especially for work reasons, is still very largely based on the use of private cars or motorcycles, resulting in a high environmental impact. Alternative forms of mobility are still little widespread. Differences in male and female commuting reveal different mobility patterns, both for work and study, and the need for public transport policies to take these aspects into account. For this purpose, it is necessary to further investigate the transport needs of men and women, producing more detailed information for policies supporting active and sustainable mobility.

## V. Conclusions

41. Environment statistics, a relatively new field compared to economic, demographic and social statistics, has somewhat been gender neutral to date. The data analysed show how important is to study the relationships between population and environment and the interaction between gender and environmental sustainability.
42. Citizens and households are one of the major source of environmental pressure in modern societies. Studying citizens' sensitivity to environmental issues, the factors related to it, and how this sensitivity is translated into behaviour is very important for environmental sustainability policies.
43. There is still a long way to go. Although most of the population is concerned about many of the environmental problems, there are still groups of population where this sensitivity must be built also through awareness-raising policies.
44. Although the perception of the problems and the satisfaction for the quality of the environment does not vary significantly between men and women, indicating a strong cross-cutting nature of these dimensions, gender differences arise, instead, in behaviours. Women are more likely to have more responsible lifestyles and consumption and to choose sustainable forms of mobility. Within the households women can play an important role in raising awareness of the other household members and, in particular, the youngest people. As next step it will be interesting to study, through an intra-household analysis, the sensitivity to the environmental issues of the different household members and the relationships between the perceptions and behaviours of parents and the perceptions and behaviours of their children.
45. The issues investigated give an overview useful for awareness-raising policies, but further insights are needed, both in terms of analysis of available data and for improving data collection. Hence, it is important e.g. to explore individual behaviour on waste production and disposal (hitherto surveyed only at household level), to investigate the needs of citizens in terms of mobility, etc. Just in the light of the different patterns of commuting, it is possible to design sustainable mobility policies, aimed to be more attentive to the users need and more effective.
46. Even official statistics have to invest more in studying the nexus between environment and individual behaviours, identifying the informative lacks and exploring better the different impact on the environment of men and women, and their specific needs and priorities.

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