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Report on societal perceptions and demands towards UFBS in China and Europe

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Summary

Forests and greenspaces provide essential goods and services, economic activity, and ecological diversity to millions of people in Europe and China. Understanding public perceptions of ecosystem services (ES) provided by forests and greenspaces is vital in a time when ecosystems globally are affected by climate change, biodiversity loss and in the midst of a human health crisis. This report aims to provide a comprehensive picture of public perceptions and demands towards forests and greenspaces as nature-based solutions (NBS). For NBS to be successfully implemented and managed, it is essential that they are accepted by the public and their users. This study was commissioned in the context of the European Commission HORIZON 2020 research project ?Collaborative Learning in Research, Information-sharing and Governance on How Urban forest-based solutions support Sino-European urban future? (CLEARING HOUSE). The survey questionnaire used to quantify public perceptions and demands towards forest and greenspace ES in 33 countries in Europe and China was designed in collaborative process between several external and project partners. Chapter 3.1 addresses public perceptions of ES as well as ecosystem disservices (EDS), preferences towards landscape aesthetics and frequency of forest and greenspace visits in 33 countries in Europe. The following chapter 3.2 conveys the same information in the context of 18 provinces in China. The outcomes from China and Europe are summarised and compared in chapter 4. The public frequently viewed regulating ES (e.g., air quality, carbon storage, biodiversity protection) and cultural ES (e.g., employment, recreation, spiritual services) as more important than provisioning ES (e.g., timber production, wild foods, hunting game). The most important ES were air quality, habitat, and aesthetics in Europe, while it was air quality, human health, and aesthetics in China. All EDS (e.g., air pollution, infrastructure issues, health issues) perceived to be of little importance compared to ES. In China, the most important EDS was perceived to be human health meaning the issue that forests and greenspaces can be a source of health risks (e.g., wildlife/insect bites, allergies). The most important EDS in Europe was security issues meaning forests and greenspaces being unsafe because of uncontrolled pet dogs, risk of crime, falling branches. In European countries, the preferred image of a woodland in terms of aesthetics in the city is clos...

Approval

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2023-04-14 16:39:15	Dr. Rik DE VREESE (EFI)
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CLEARINGHOUSE
中欧城市森林应对方案

Public perceptions and demands towards forests and greenspaces in Europe and China

CLEARING HOUSE Report 1.3

Bonn and Beijing, September 2022

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 821242. The Chinese Ministry of Science and Technology's (MOST) National Key R&D Program of China (No 2021YFE0193200), the Chinese Academy of Forestry (CAF-RIF) (No ZDRIF201904). The content of this milestone document does not reflect the official opinion of the European Union. Responsibility for the information and views expressed lies entirely with the author(s).

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KEYWORDS

Forest ecosystem services, Perceptions studies, China and Europe, Landscape aesthetics, Forest policy

EXECUTIVE SUMMARY

Forests and greenspaces provide essential goods and services, economic activity, and ecological diversity to millions of people in Europe and China. Understanding public perceptions of ecosystem services (ES) provided by forests and greenspaces is vital in a time when ecosystems globally are affected by climate change, biodiversity loss and in the midst of a human health crisis. This report aims to provide a comprehensive picture of public perceptions and demands towards forests and greenspaces as nature-based solutions (NBS). For NBS to be successfully implemented and managed, it is essential that they are accepted by the public and their users. This study was commissioned in the context of the European Commission HORIZON 2020 research project "Collaborative Learning in Research, Information-sharing and Governance on How Urban forest-based solutions support Sino-European urban future" (CLEARING HOUSE). The survey questionnaire used to quantify public perceptions and demands towards forest and greenspace ES in 33 countries in Europe and China was designed in collaborative process between several external and project partners.

Chapter 3.1 addresses public perceptions of ES as well as ecosystem disservices (EDS), preferences towards landscape aesthetics and frequency of forest and greenspace visits in 33 countries in Europe. The following chapter 3.2 conveys the same information in the context of 18 provinces in China. The outcomes from China and Europe are summarised and compared in chapter 4.

The public frequently viewed regulating ES (e.g., air quality, carbon storage, biodiversity protection) and cultural ES (e.g., employment, recreation, spiritual services) as more important than provisioning ES (e.g., timber production, wild foods, hunting game). The most important ES were air quality, habitat, and aesthetics in Europe, while it was air quality, human health, and aesthetics in China.

All EDS (e.g., air pollution, infrastructure issues, health issues) perceived to be of little importance compared to ES. In China, the most important EDS was perceived to be human health meaning the issue that forests and greenspaces can be a source of health risks (e.g., wildlife/insect bites, allergies). The most important EDS in Europe was security issues meaning forests and greenspaces being unsafe because of uncontrolled pet dogs, risk of crime, falling branches.

In European countries, the preferred image of a woodland in terms of aesthetics in the city is closer to a forest than it is to a park. In contrast, in China the preferred image of a woodland was reminiscent of a park rather than a forest. The Chinese and European respondents perceived that a park-like woodland would provide most natural benefits to society.

About 1 in 10 respondents indicated to not visit a forest or park at all. The main reason for Europeans and Chinese to not visit a forest or park was limited time. The majority of respondents take up to 15 minutes, mostly by walking in Europe and driving a car in China, to get to their preferred forest or greenspace, indicating that closeness to these areas is important.

Public perceptions can be linked to geographical location, age groups, gender, and different levels of education. In general, public perceptions of ES and EDS vary significantly across these predictors.

In view of the identified public perceptions of forests and greenspaces, it is possible to gain a clearer image of what forests could look like in the future and where the forest sector could explore new developments to meet citizens demands.

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ACRONYMS AND ABBREVIATIONS

EU: European Union

ES: Ecosystem services

EDS: Ecosystem disservices

NBS: Nature-based solutions

KEY DEFINITIONS

Urban forests: tree-based urban ecosystems that address societal challenges, simultaneously providing ecosystem services for human well-being and biodiversity benefits. Urban forests include peri-urban and urban forests, forested parks, small woods in urban areas, and trees in public and private spaces.

Urban forestry: the practice of planning and management of urban forests to ensure their health, longevity and ability to provide ecosystem services now and in the future.

Nature-based Solutions (NbS): Nature-based Solutions (NbS) are defined as *"actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits"*. (IUCN, 2018)

Urban tree(s): usually long living woody organism including woody shrubs, usually single stemmed, with the potential to grow at a site in a urban or peri-urban area. This includes roadside trees, trees in squares, parking areas, or in parks and private gardens. Urban trees appear as individual trees, or as groups of trees.

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DISCLAIMER

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HISTORY OF CHANGES

Version	Date	Responsible author(s)	Description
V1.0	15/Nov/22	De Vreese R. (EFI), Roitsch D. (EFI), Jiali Jin (CAF-RIF)	Submitted version for project review
V1.1	6/Mar/23	Rik De Vreese (EFI), Dennis Roitsch (EFI), Jiali Jin (CAF-RIF)	Changes include - Correcting typos and incorrect or missing references to appendices, tables and figures throughout the document. - Section 2.1. Survey design – paragraphs on Survey Section C (Perceived Beauty and Perceived Naturalness) have been rewritten to make the approach more clearly described. - Section 2.4.1. Data collection in Europe – explained that due to legal reasons, no data collection was done for minors (- 18 years old). - Section 2.4.1. Data collection in Europe – corrected that the representativeness of the panel used by Bilendi is based on geographical, gender, and age distribution (removing "social" and replacing with "gender"). - Section 2.4.2. Data collection in China – explained that the target population of the survey was 16 to 59 years old, as this age group accounts for 2/3rd of the Chinese population. - Section 2.4.2. Data collection in China – clarified the approach for setting the sample size. - Section 3.2.1. Characteristics on the sample population in China: corrected that 39,60% of the sample is in the age group of 31 – 50 years old (original text mentioned 39,60% in the age group 18 – 30). - Section 3.2.1. Characteristics on the sample population in China: clarifying that the income referred to is not the individual income, but the family income. Replacing Figure 52 and correcting caption for Figure 52. - Appendix XVI has been populated (tables were not completed in v1.0) - Appendix XVII has been updated with information on the socio-demographic statistics for China (in the footnotes) - Expanded the summary and recommendations (4.3), including with the comparison of the average scores for individual ES and EDS in Europe versus China.
V1.2	13/Apr/23	Rik De Vreese (EFI)	- Added disclaimer on underrepresentation of age groups -18 (EU and China) and +60 (China) in the sample, versus the importance of urban green space for this group who is regularly using the urban forest. Added in descriptions of samples (sections 3.1.1, 3.2.1, 4.3).

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1. INTRODUCTION

The world's forests are the most important terrestrial ecosystem covering 35% of the land area in Europe (FOREST EUROPE, 2020) and 23% in China (Chinese Academy of Forestry, 2019). Across all biogeographic regions, forest ecosystems fulfil a variety of ecological, economic, and social functions and provide ecosystem services (ES) that are central to human physical and mental health and well-being in rural and urban areas (Millennium Ecosystem Assessment, 2005). By supplying timber as raw material and other renewable products, forests contribute to economic production and support around four million jobs along extended forest-based value chains in the European Union (EU) (European Commission, 2021b). Other important ES provided by forests are oxygen production, carbon storage and habitat provision for plant and animal species, moreover, forests are essential places for recreation and relaxation where humans can pursue multiple activities (e.g., mountain biking, walking, and enjoying nature). Multiple global challenges such as climate change, biodiversity loss and urbanisation are negatively impacting the potential of forests to provide and sustain ES in the future. The consequences of climate change are expected to be amplified in urban areas where heat islands and extreme precipitation put additional pressure on people as well as forest ES (IPCC, 2022).

In response to challenges such as climate change and urbanisation, the European Commission (EC) has adopted the programme on nature-based solutions (NBS). NBS are defined as "Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions." (European Commission, 2021). In this study, we investigate NBS in the context of forests, urban forests, and parks as well as trees. These forest- and tree-based ecosystems can be considered a subset of NBS which also address societal challenges and simultaneously provide ecosystem services for human well-being and biodiversity benefits. Consequently, this study chose to investigate public perceptions and demands towards forests, peri-urban and urban forests, forested parks, small woods in urban areas, and trees in public and private spaces (European Forest Institute, 2018).

As NBS seek to remedy situations that are experienced as being problematic by humans, they need to be recognised as such by people in order to be successful. The quality of the landscape is always determined by human appraisal (Karjalainen & Tyrväinen, 2002). People do not think on the level of ecosystems; they interact with their environment on a human scale, which Gobster et al. (2007) call the "perceptible realm". How people gauge the ecological value of this perceptible realm is debated. What is certain however, is that the aesthetics of a place are an important carrier of information to the observer. For this reason, landscape aesthetics were included as part of this study's investigation into public perceptions.

Bridging the different societal demands on forests and trees requires policymakers to take important decisions on the best strategies for the implementation and management of NBS. The majority of citizens now living in cities and largely detached from nature, a process commonly referred to as urbanisation. At the same time, our societies are culturally more diverse, and environmental awareness and the need for recreation in nature has increased in Europe (European Commission, 2021). It is now for policymakers as well as forest managers and owners to provide for these changing realities and beyond the traditional raw materials and become the providers of several societal needs and interests.

Against this background, the HORIZON 2020 research project "Collaborative Learning in Research, Information-sharing and Governance on How Urban forest-based solutions support Sino-European urban future" (CLEARING HOUSE) aims to provide evidence and tools that support urban forests as

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nature-based solutions (UF-NBS) to mobilise their full potential in rehabilitating, reconnecting, and restoring urban ecosystems in Europe and China. This study falls under CLEARING HOUSE Work Package 1 which reviews existing knowledge and develops an analytical concept (European Forest Institute. 2018).

In detail, task 1.3 "Surveying societal perceptions and demands towards UF-NBS" investigates the relationship of European and Chinese societies towards their forests, parks, and trees. It particularly assesses public perceptions of, and societal demands for, ES and EDS. An online questionnaire across 33 countries in Europe and China was used to better understand perceptions and demands towards NBS, including their design, barriers for visits, and aesthetics.

The **main objective** of this study is to assess perceptions and demands towards forests and trees in rural and urban settings. More particularly, we consider 4 specific objectives

- To assess public perceptions of forest ecosystem services as well as forest ecosystem disservices
- To establish why citizens do not go to forests and parks and the main reasons citizens do visit parks and forests
- To make visible visitor patterns of forests and parks (frequency, modes of transport to travel to the park/forest, travel time)
- To better understand which type of forest/woodland is perceived as attractive compared to which provides most benefits provided by nature to society

1.1 Concepts of ecosystem services (ES) and ecosystem disservices (EDS)

Ecosystem services (ES)

Research into ecosystem services (ES) has a long history, but only since the work of Costanza et al. (1997) and Daily (2013), it has gained strong momentum. Daily (2013) defined ES as "the conditions and processes through which natural ecosystems. and the species that make them up, sustain and fulfil human life" (p. 455-456). Costanza et al. (1997) was among the first to quantify the total value of ES and estimated that the main value of terrestrial ecosystems comes from forests. They estimated that the total value per ha ($\$ha^{-1}\,yr^{-1}$) for temperate/boreal forests amount to $302 (Costanza et al., 1997). Today, the ES concept is frequently used to describe the value of nature to human well-being and to visualise the relationships between humans and nature, in particular, to highlight and identify consequences of ecosystem changes for humans and society. There are now several classifications for ES applied to better understand the consequences of human decisions and activities for ecosystems.

One of the frequently used classifications is that of the Millennium Ecosystem Assessment (MEA) (Millennium Ecosystem Assessment. 2005) which aimed at providing a solid knowledge base for decision makers. The MEA (2005) established four categories of ES: provisioning (e.g., food,. water, wood)., regulating (e.g., climate, disease control), supporting (e.g., soil formation, pollination) and cultural (e.g., recreational. spiritual), see Figure 1 for details.

Since 2005, other classifications and schematic representations have evolved, such as the one by The Economics of Ecosystems and Biodiversity (TEEB) (TEEB, 2010). The TEEB defined ES as the direct and indirect contributions of ecosystems to human well-being, and it showcased concrete economic examples as to provide a comprehensive and convincing economic justification for the protection of biodiversity.

More recently in 2009, the Common International Classification of Ecosystem Services (CICES) was introduced by the European Environment Agency (Haines-Young & Potschin, 2018). It is rooted in the MEA and aims to enable increased comparability of ES. Using CICES can be useful to map and quantify

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ES supply and demand to enable successful environmental management, land use planning, and development in cities and communities. This study used elements from CICES v5.1 from 1 January 2018. A complete list of ecosystem services used in this report is compiled in Table 1. The ES in Table 1 are grouped in provisioning (blue), regulating (green) and cultural (yellow).

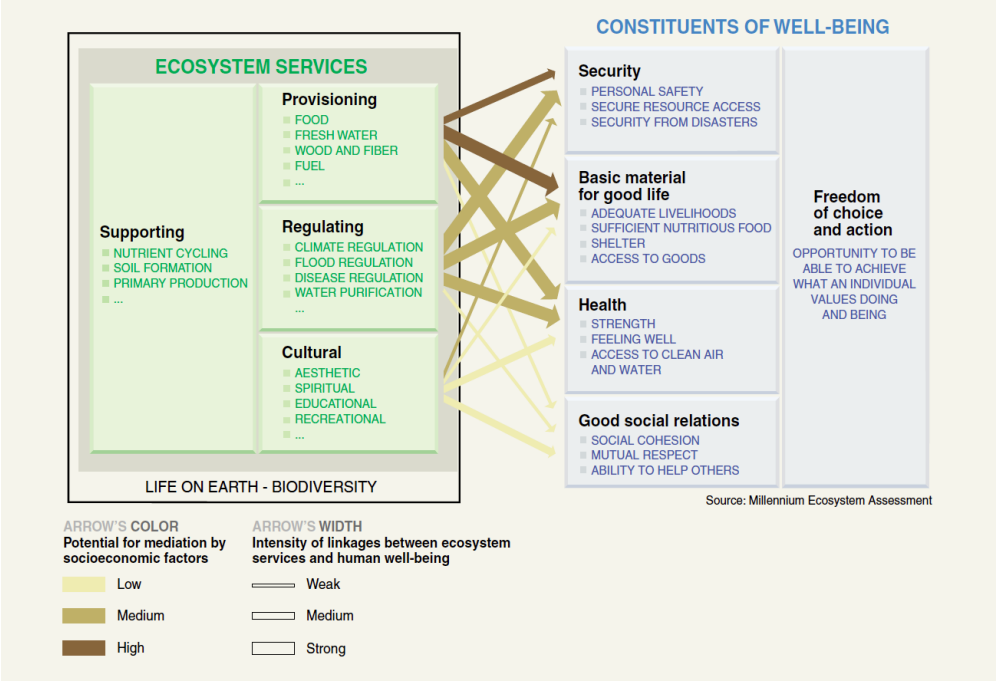

Figure 1: Linkages between ecosystem services and human well-being (Millennium Ecosystem Assessment, 2005)

Table 1: List of ecosystem services used in this study (Adapted from: Haines-Young & Potschin, 2018)

ES title	ES description	ES used in questionnaire
Timber	Material from plants that we can use [Timber used as material for the saw industry and as source for pulp production]	Provide wood for timber and furniture
Firewood	Plant materials used as a source of energy (fuel wood)	Provide fuelwood
Wild food	Food from wild plants (e.g., mushrooms. berries. nuts. medicinal plants)	Provide products other than wood (e.g., mushrooms, berries, nuts, medicinal plants)
Game	Food from wild animals	Provide opportunities to hunt game
Water quality and erosion	Controlling the chemical quality of freshwater and controlling preventing soil loss; stopping landslides and avalanches harming people	Protect water quality and protect soils from erosion
Air quality	Regulating the physical quality of air for people	Improve air quality
Carbon storage	Regulating our global climate	Store carbon and reduce climate change
Habitat	Providing habitats for wild plants and animals that can be useful to us	Provide living space for plants and animal species
Noise reduction	Reducing noise [from anthropogenic sources]	Reduces noise
Temperature reduction	Regulating the physical quality of air for people	Reduces temperature

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Natural hazard protection	Protecting people from winds	Lessen the negative impact of natural hazards (e.g., storms, floods)
Spiritual and cultural	The things in nature that help people identify with the culture of where they live or come from and that have spiritual importance	Provide cultural. emotional. and spiritual value
Education	Studying nature	Provide opportunities for education (e.g., for forest kindergartens. schools)
Recreation	Using the environment for sport and recreation; using nature to help stay fit	Provide recreation and sports opportunities
Human health	Using nature to destrees	Provide benefits to human health and well-being
Employment	Using nature for direct and indirect economic activities	Provide jobs and economic activity
Aesthetics	The beauty of nature	Are beautiful

Ecosystem disservices (EDS)

There is generally a positive narrative in favour of the contributions of forests and trees to people and the benefits are widely recognised in the literature, however, there is now a growing body of literature also shedding light on the ecosystem disservices (EDS) – or in other words, the disbenefits of forests and trees. As EDS relate to aesthetic issues, environmentally negative effects, management costs and infrastructure issues, it shows that EDS can be equally diverse and far-reaching as ES (Roman et al., 2020). They can be found in rural as well as urban settings and they are linked to the health and well-being of people (Escobedo et al., 2011). Table 2 shows the use of EDS in this study, a short description adapted from CICES v5.1 and how EDS were used in the online questionnaire.

Table 2: List of ecosystem disservices used in this study (Adapted from Escobedo et al., 2011; Haines-Young & Potschin, 2018; Lyytimäki, 2019)

EDS title	**EDS description**	**EDS used in questionnaire**
Aesthetic issues	Screening things and decreased aesthetics	Are obscuring views
Air pollution	Increased pollution levels from reduced air exchange	Contribute to air pollution from blocking wind
Economic issues	Costs related to planting, maintenance, removal	Are a cost to society (e.g., costs for planting, maintaining, removal)
Environmental issues	Introduction of invasive species and displacement of native species	Cause environmental issues (e.g., spread of invasive species)
Health issues	Forests and trees causing direct health effects through spreading the seeds of wild plants; attraction of wild animals	Are a source of health risks (e.g., wildlife/insect bites, allergies)
Infrastructure issues	Damages originating from vegetation, roots and leaves blocking sewer pipes	Cause damage to public infrastructure (e.g., trees falling on electricity lines)
Land use issues	Indirect costs caused by land use restrictions, especially if the forested or park area is protected	Are foregone land use opportunity (e.g., less land for industry, housing and businesses)
Local climate	Regulating the physical quality of air for people, increased unwanted humidity and blocked sunlight because of shade (increased use of energy)	Have a negative impact on local climate
Safety hazard	Safety hazard from fires and falling trees during storms	Pose a threat to homes and properties (e.g., forest fires, storms)

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Security issues	Safety and security issues related to uncontrolled pet dogs, falling branches, fears related to perceived risk of night-time crime)	Are unsafe (e.g., uncontrolled pet dogs, risk of crime, falling branches)

1.1 Public perceptions of forests, green spaces, and trees

A large and growing body of literature has investigated how people perceive benefits and disbenefits provided by green spaces and trees.

1. Perceptions of forests

At the European level, one of the last large-scale reviews of the perceptions of forests among the public was conducted in 2003 (Rametsteiner & Kraxner, 2003). The study found that recreation was one the main reasons to visit a forest and that very few people rely on provisioning ES such as picking mushrooms and berries or go hunting. Another study in five European countries with 1660 respondents investigated perceptions of ES and found that the environmental orientation of citizens is a stronger predictor for perception of forest ES compared to socio-demographic characteristics (Puelzl et al., 2021). It also found that for example older people and people living in rural areas perceived provisioning services (timber production, firewood) significantly more important compared to younger people and urban dwellers. Recently, Ranacher et al. (2021) in their review found that citizens in Europe generally attach the highest importance to the environmental benefits of forests (carbon storage, biodiversity protection, and natural hazard protection). Overall, that study found that citizens are pleased with forest management however forestry operations are seen less positive. The People and Nature Survey for England conducted by Natural England examined how people think about the environment and it found that the main reasons people visited woodlands in England were fresh air, physical and mental health, and to connect with wildlife/nature (Natural England, 2021). In Italy, Carrus et al. (2020) recently showed that citizens in an exploratory national survey (N=1059) valued climate change, biodiversity protection and benefits towards human health and social cohesion as the most important ES. In southern Germany, recent research on recreation in urban and rural forests in southern Germany indicated that ES such as providing fresh air, experiencing nature, escaping everyday life and contributing to better health are the most important for visitors in the investigated urban and rural forest (Meyer et al., 2019). Another study from Southwest Germany compared stakeholder and citizens´ (N=520) views on ES between mixed and monospecific forests. They found that respondents preferred hiking, observing plants and wildlife and collecting mushrooms, fruits as activities in the forests (Almeida et al., 2018). In Brasov, Romania more than 50 % of interview respondents (N=40) viewed the forest functions of production and protection (understood as water protection, land and soil protection, climate change protection, recreation, and scientific and genetic conservation) to be equally important (Pacurar & Albu, 2018). Another face-to-face survey with 1,112 forest visitors in Czech Republic in 2008 looked at how they view the importance of different forest ecosystem functions. The study found that visitors rated timber production and non-timber production as least important, in contrast, functions like nature-protection and soil-conservation, climate and recreation were rated as most important (Šišák, 2011).

2. Perceptions of urban green spaces, and parks

In light of the importance of forests and greenspaces in peri urban and urban areas, a large body of literature has focussed on how citizens view their benefits and disbenefits. For instance, to determine the evidence about perceived benefits of urban green spaces, Giannico et al. (2021) recently compared quality of life with level of greenness in 51 European cities. The results show that greenness, especially in lower-income cities, has a strong impact on perceived quality of life. A questionnaire conducted in 11 cities in Europe examined perceptions of urban green spaces and showed that there is overall a strong demand for urban green spaces and that citizens are willing to contribute a small share of their

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income to urban green (Arvanitidis et al., 2009). In times of prolonged and extreme heat periods, urban green spaces have shown to have an alleviating effect by reducing temperatures to more comforting levels, as was perceived by 800 survey respondents in Italy and the UK (Lafortezza et al., 2009). A comparative study using a semi-quantitative survey (N=175) in Galicia, Spain investigated the different perceptions between landowners and visitors in a communal peri-urban forest. Overall, the most important ES were drinking water, recreation activities and climate regulation. Furthermore, the cultural ecosystem services of socializing, mythical features, and sense of place were mentioned as being important (Rodríguez-Morales et al., 2020). In Turkey, a study in two parks with 300 respondents showed a universal concern about cleanliness and maintenance of parks. In comparison to Western countries where people like to walk their dogs, walk, and exercise, the people in Turkey use parks for resting and relaxing as well as picnicking (Özgüner, 2011). Carrus et al. (2015) found that urban and peri-urban areas with high level of biodiversity contribute to self-reported benefits of residents in Bari, Florence, Rome and Padua in Italy. A recent review of 178 studies examining public perceptions of urban forests and trees found that most studies were limited to specific cities albeit in different countries; most studies fell short in reporting on the diversity of perceptions (positive benefits as well as disbenefits) and they lacked to capture the views of the diversity of people (ethically, culturally, and demographically) (Ordóñez Barona et al., 2022).

3. Perceptions of trees

A recent survey coupled with outcomes from focus groups run by Forest Research in the UK assessed public perceptions of urban trees in England, Scotland, and Wales. It revealed that trees located in woodlands, parks and public recreation grounds, community gardens, and near schools and hospitals are valued more compared to trees along railway lines, in residential streets, roadsides and roundabouts. Additionally, respondents with higher age and higher levels of education valued trees in terms of their mental and physical health benefits (Ambrose-Oji et al., 2022). Research using a combination of methods (sidewalk interviews, focus groups, participants observations and surveys) in a suburban community in Canada, showed that citizens particularly valued native and mature trees, as well as the aesthetic aspects of trees (Barron et al., 2021). A large-scale review with 201 studies investigated the link between human health and urban trees. Their results indicate that most studies (41 %) focussed on topics linked to reducing harm which includes air pollution, ultraviolet radiation, heat exposure, and pollen. Other topics were stress reduction, attention restoration and mental health (31 % of studies papers) (Wolf et al., 2020)

4. Perceptions of the aesthetics of landscape

Aesthetics appears as one of the main aspects people appreciate about (urban) green spaces. Landscape design can be an important tool for, and conveyor of ecological quality, since people interact with their environment on a human scale, which Gobster et al. (2007) call the “perceptible realm”. The deductions that people derive from observing their surroundings may have an evolutionary history, but various cultural and social factors have also been shown to influence environmental and aesthetic preferences (Lyons, 1983), landscape preferences: evolution and socialisation, nature and nurture.

The deductions that people derive by observing their surroundings may have an evolutionary history, with some researchers postulating that good ecological quality is associated with good aesthetic quality (Gobster et al., 2007). The popular prospect and refuge theory (Appleton, 1975) states that people prefer landscapes where they feel sheltered but have a wide view at the same time, and landcapes that help people to make sense of their surroundings (Ulrich, 1977; Wherrett, 2000), which may have an effect on their perceived wellbeing (Bieling & Plieninger, 2013).

Various cultural and social factors have also been shown to influence environmental and aesthetic preferences (Anderson, 1981; Grisoni & Sierra, 2013; Lyons, 1983), which also change with time and

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with society (Bauer et al., 2009; Buijs et al., 2006; Carvalho-Ribeiro & Lovett, 2011), as well as personal development. This is true both on a collective level as on an individual level (Zheng et al., 2011), with people across cultures tending to like landscapes that feel familiar to them (Balling & Falk, 1982; Niemiec et al., 2017; Zube & Pitt, 1981)

2. Methodology

In relation to our research questions and our aim to identify public perceptions on forests and trees, we developed a standardised online survey to collect data in Europe and China. As the sample was expected to be around 12,000 responses, no open questions were included. The study was conducted in 33 countries in Europe and in 18 provinces in China. We investigated forests, trees and parks in rural, peri-urban and urban locations. The reason is that depending on their location, these woodlands can have different structures, serve different purposes and serve demographically, ethnically and culturally diverse people.

2.1 Survey design

The survey design has been designed through an iterative process between researchers from several European and Chinese institutions, coordinated by the European Forest Institute (EFI). To cover all themes in the survey, researchers included their own expertise and used existing studies as a basis for this research. To collect data at the European level, a cross-sectional online survey was designed. The structure of the online questionnaire constitutes seven thematic blocks with 37 questions in total. The seven blocks are:

A. Personal information
B. Views on forests and parks
C. Aesthetic preferences towards forests and parks
D. Relationship between humans and the environment (PVQ 21, NEP)
E. Perceptions related to single trees
F. Visits to forests, city parks and green spaces during Covid-19 pandemic
G. Country of origin

The first section A. Personal information should ease the respondents into the questionnaire. It contained questions on year of birth, gender, number of children, and education. As the terms used to capture peoples levels of education were kept as simple as possible, we show the categories from our study corresponding to the International Standard Classification of Education (ISCED) in Table 3 to allow for comparison. However, it was rather challenging to find a scale that works in all 33 countries in Europe and China because all the education systems vary greatly internationally. Therefore, we do not claim correctness our categories matching ISCED levels and recommend to use them for orientation purposes only.

Table 3: Overview of levels of education used (Adapted from UNESCO Institute for Statistics, 2012)

CLEARING HOUSE study	**ISCED levels**	**ISCED name**
No qualification	Level 0	Less than primary education
School up to 16 years of age	Level 1+2 + 3	Primary education
School 17-19 years of age	Level 4	Secondary education
Undergradutate degree (Bachelor)	Level 5 + 6	Short-cycle tertiary education; Bachelor or equivalent
Postgraduate diploma (e.g., Masters, PhD)	Level 7 + 8	Master or equivalent, Doctoral or equivalent

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In sections B. and E., people were asked the questions about the ES that forests, parks, and trees provide, albeit with small variations (see Table 4). The rating was done using a scale from 1-100.

Table 4: Ecosystem services as they appeared in the online questionnaire

Forests…/Trees ...	Slider (1-100)
…Provide wood for timber and furniture	
…Provide fuelwood	
…Provide products other than wood (e.g., mushrooms, berries, nuts, medicinal plants)	
…Provide opportunities to hunt game	
…Protect water quality and protect soils from erosion	
…Improve air quality	
…Store carbon and reduce climate change	
…Provide living space for plants and animal species	
…Provide cultural, emotional and spiritual value	
…Provide opportunities for education (e.g., for forest kindergartens. schools)	
…Provide recreation and sports opportunities	
…Provide benefits to human health and well-being	
…Lessen the negative impact of natural hazards (e.g., storms, floods)	
…Provide jobs and economic activity	
…Are beautiful	
…Reduce noise	
…Reduce temperature	

Section C was used to assess the differences between perceived beauty on the one hand, and on the other hand, the perceived landscape that provides most natural benefits. For this, respondents were asked to select images that depicted different levels of naturalness (see Figure 2). Studying aesthetic preferences can be a complicated process because images do not contain the same amount of information as a real landscape, and only appeals to one of the senses. However, the use of images in preference studies has been shown to be effective and to yield similar results as on-site surveys (Kaplan, 1985; Shafer & Brush, 1977).

We investigated the correlation between perceived beauty and perceived ecological values, and how this correlation is impacted by socio-demographic characteristics. The set-up is partly based on a previous study by (Derks et al., 2022), where 350 people were interviewed on site in different stands of a peri-urban forest and where the correlation between perceived ecological and aesthetic values was clearly shown. By utilising a representative pan-European survey, socio-cultural factors can now be included in the analysis.

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Figure 2: Images used to establish a) the most attractive landscape, and b) the landscape that offers the most benefits

The images in Figure 2 represent – along 5 drawings – a gradient from a wild landscape (upper left) to a more cultivated alternative (lower left), making alternations in the vegetation structure (unmanaged grasslands versus mown lawns) and in the infrastructure (e.g. straightness of the paths, lampposts, straight canal versus sloped banks). Using drawings instead of pictures allowed to use the same base landscape for all 5 images, eliminating potential preference bias based on factors such as weather condition, lighting and framing (Huang & Lin, 2020). The only variable was thus the "naturalness" of the landscape, as people are most likely focussing on the unique features of a landscape (Karjalainen & Tyrväinen, 2002).

In section D, we asked for the respondent's environmental orientation and personal value orientation in order to capture more diverse perceptions (Ordóñez Barona et al., 2022). The relevance of section F is attributed to the Covid-19 pandemic (starting in 2020) during which the questionnaire was designed and which had implications for forest and greenspace visits (da Schio et al., 2021; Derks et al., 2020). Both these sections were not part of the analysis in this Europe-China report because these were not used in China.

To conclude the questionnaire, we asked more detailed questions about the socio-demographic background of the respondents. Not all questions were relevant for each respondent, hence the number of questions to be answered can vary and is influenced by choices of the respondents. As a result, we report different numbers of responses in the result chapter of this report. The online questionnaire was accessible through desktops and mobile devices on the commonly available operating systems (e.g., iOS; Windows. Android).

The Chinese version of survey had minor adjustments considering the cultural differences. For example, the order of questions in Chinese version survey is different, and the lists of ES did not include the ES hunting game.

The questionnaire used in this study in China and Europe is available in Appendix I.

2.2 Tendering, encoding and test runs

In Europe, the online implementation of the questionnaire and data collection along representative panels was conducted by a third-party surveying agency that specialises in market research, selected through a tendering process. The tendering process consisted of an open call for proposals (July 2020) to which no applications were received in the first round. After a second call (September 2020), two applications were received. A point-based decision tree was used to decide between the two competing offers. Subsequently, the task to compile the data was awarded to Bilendi (https://www.bilendi.de/). Between December 2020 and July 2021, researchers in the CLEARING HOUSE project and Bilendi staff finetuned the survey, encoded the survey in 29 languages, conducted test runs and surveyed the full sample in Europe.

In China, the online implementation of the questionnaire and data collection along representative panels was conducted by a third-party surveying agency that specialises in market research. Wenjuanxing (https://www.wjx.cn/) is a platform website which provides professional online questionnaire survey, votings, testing, and comments. It provides series of services of online questionnaire design, data collection, customized forms and basic survey results analysis. Compared with traditional survey methods and other survey systems, Wenjuanxing outperforms on convenience, facilitation and low-cost. As thus, the social survey in China selected Wenjuanxing. Between December 2020 and July 2021, researchers from CAF-RIF translated the English version survey to Chinese, pre-tested the survey based on the web platform and survey the sample in China.

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2.3 Translations of the source questionnaire

After a final questionnaire was developed together with Bilendi, that source questionnaire was translated from British English into 29 languages (Albanian, Bosnian, Bulgarian, Croatian, Czech, Danish, Dutch, Estonian, Finnish, French, German, Greek, Hungarian, Italian, Latvian, Lithuanian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovak, Slovenian, Spanish, Swedish, Turkish, Ukrainian). The source questionnaire was also translated into Chinese Mandarin although as already described in a slightly shorter version (e.g., parts that were taken out covered the Covid-19 pandemic, questions on environmental orientation and basic human values). The translations were conducted by native speakers who were part of the research consortium or external researchers working in the field of forestry.

After the implementation of the questionnaire in the online format by Bilendi, test links were provided and used to quality check the translations. Before approval of any language, all translation were tested and amended, which occurred on several occasions due to the complexity of the survey questionnaire.

2.4 Data collection

2.4.1 Data collection in Europe

The use of standardised quantitative questionnaires is a well-established approach in establishing people´s preferences towards services and products. The advantages of questionnaires is that they, among others, are simple to deliver at large scale and an economic choice if time and funds are limited. The data collection of the survey was administered by Bilendi between March and July 2021. The target group for the data collection was the general population aged 18 year and above, from all states and regions, urban and rural areas in all covered countries. Bilendi provided the basis for the sample of this research through their network of survey panels consisting of close to 2 million panelists in twelve countries: United Kingdom, Germany, Austria, Switzerland, France, Belgium, Italy, Spain, Denmark, Sweden, Finland and Norway. The markets of Albania, Bosnia and Herzegovina, Bulgaria, Czech Republic, Estonia, Greece, Hungary, Ireland, Latvia, Lithuania, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, The Netherlands, Turkey, and Ukraine were provided through a partner firm called Data Diggers.

We did not include the smallest European countries due to a high cost for representative sampling in these countries (e.g., Malta, Cyprus and Luxemburg). For legal reasons, we did not approach respondents below 18 years of age.

The length of the questionnaire was established to be around 20 minutes after several rounds of testing. The target for the number of responses was set at n=384 per included country with an incidence rate of 100% among the general population.

1. **Pre-testing**

Each national questionnaire was pre-tested during a so-called soft launch in each country. That way, it was possible to detect any errors early on and if needed, to address these before a full launch. During all soft launches, no technical errors were detected, and it was possible to directly proceed with a full launch in each country.

2. **Representativeness, quality control and oversampling**

The network panel of Bilendi and that of their partners is representative with regards to their geographical, gender and age distribution. Representativeness in this study means that the sample is representative if all attribute carriers of the population had the same chance to become part of this sample. This is different to the sole quality feature of a statistic representativeness; hence the analysis

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should consider the error margin of the collected data and the confidence level of the study. The confidence level was given as 95%. The final sample represents a complete, scaled-down mirror image of the population, so that all (essential) characteristics of the population can be reproduced correctly.

The panel composition from which the sample was drawn is based on the characteristics age, gender, and the regions in the respective countries. The national distributions per characteristic were derived by Bilendi from the current census data of the statistical offices or alternatively Eurostat. The respondents for the overall panel were recruited through a diversified multi-sourcing process. To avoid bias, different methods were used in the panel building process, including partnerships, public relations, ads, panellists' referral programmes and emailing. Panel members were recruited exclusively using permission-based techniques. The panels thus already have an approximate representative distribution of all target groups.

However, the structure of the sample is not the only decisive factor for a successful study and compliance with the confidence level, but rather the possibility of achieving a predetermined quota structure from the existing panelists. For this purpose, the response rate of the respective subpopulations must be taken into account, which varies by age group and gender. Quota control – predefining the proportions of the target groups – was applied to ensure that the exact target is achieved. This approach enabled a representative picture of the population and to achieve the required confidence level. To ensure representativeness, careful sampling was used, taking into account that some subpopulations respond more quickly to study invitations than others (Bilendi, 2020).

Throughout the entire process, a high level of attention was paid to quality control measures which included 5% oversampling which already excluded speeders. This allowed for succinct data cleaning and kept the sample highly representative for each country and for Europe in total. Furthermore, in this research, speeders were defined as respondents who completed the entire survey in less than 7:30 minutes and these were automatically disqualified as respondents.

2.4.2 Data collection in China

1. Representativeness and quality control

Considering the characteristics of socio-economic status and ecological conditions of the provinces in China, we selected the representative provinces based on the Hu line (also called Heihe-Tengchong line or Aihui-Thengchong line). Hu line is a geo-demographic demarcation line that divides the area of China into two parts with contrasting population densities. As of 2015, 94% of China's population live east of the line, in an area that is 43% of China's total, whereas 57% of the Chinese territory found west of the line has but only 6% of the country's population (https://en.wikipedia.org/wiki/Heihe%E2%80%93Tengchong_Line). Thus, in this study we selected Anhui, Beijing, Fujian, Guangdong, Guangxi, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shandong, Shanxi, Shaaxi, Shanghai, Tianjing, Zhejiang, Chongqing as our representative provinces. The 18 provinces are located in the east of Hu line with relative more density populations compared to those in the west of Hu line, and usually have higher Gross Domestic Product which have very strong support for urban greening projects. The target population for the online survey was between 16-59 year, which is the largest age group (the proportion is 63.35%) according to the national annual statistics in 2019 (National Bureau of Statistics, 2022).

2. The minimum sample size for each province

The level of precision, the level of confidence and the degree of variability were considered when confirmed the minimum sample size of each province. In our study, the minimum sample size (the target number of responses) determination was based on the province's population in 2020 and

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applied the Yamane method with a 95% confidence interval. Finally, each province was set at n=390 with an incidence rate of 100% among the general population in corresponding selected province.

3. Quality control

Throughout the entire process, a high level of attention was paid to ensure the quality of collected data and speeders were defined as respondents who completed the entire survey in less than 7:00 minutes and these were automatically disqualified as respondents.

4. Data collection

The sample service was provided by Wenjuanxing (https://www.wjx.cn/sample/service.aspx) as their sample pool is representative with regards to the geographical, social and age distribution of China's population. Our online survey was running from 21st May 2021 to 22nd July 2021, which lasted two months.

2.5 Data cleaning

2.5.1 Data cleaning of European dataset

Before data analysis, data cleaning was performed for the respondents´ perceived ES and EDS (Sections B and E). Cases that did not meet the following assumptions were excluded: (i) when the mean of all benefits and disbenefits by one respondent equaled "No entries"; "0"; "50" or "100"; (ii) when the standard deviation of all benefits and disbenefits equaled "0" (i.e., all questions answered with the same number); (iii) when more than 50% of all answers were missing from each subsection.

In a second step, we detected unusual cases among the perceived values for benefits and disbenefits using the function 'Detect data anomalies' in SPSS 27. This algorithm detects cases based on deviations from the norms of their cluster groups. Cases were placed into cluster groups based on their similarities on the mean and standard deviation of benefits and disbenefits, respectively.

Subsequently, variable deviation and group deviation indices were created, which form the base for a so-called 'anomaly index'. The target group size for detection was set at 10%, and all cases with an anomaly index of >1.5 were excluded from further analyses.

As a result, 2,928 cases from a total of 13,319 cases were removed.

2.5.2 Data cleaning of Chinese dataset

Data cleaning was conducted for all responses collected with the following steps: i) the respondents who did not live in the target provinces were removed; ii) the answer time for respondents was less than 7 minutes were removed; iii) age stages that could not be covered by the online questionnaire were removed in question 2 and 7, for example, some respondents filled 1900, 1903 in question 2.

Finally, total number of 7,323 cases were analysed in this report.

2.6 Statistical data analysis

2.6.1 Pre-evaluation of the dataset

Levene and Brown-Forsythe tests were used to test for variance homogeneity, and Kolmogorov-Smirnov tests were used for normal distribution of the respondents´ perceived benefits and disbenefits of FES. Normal distribution of data was not given for any forest benefit or disbenefit (Appendix IV). The assumption of variance homogeneity was met for 5/17 benefits and for 4/10 disbenefits (Appendix V and Appendix VI). Accordingly, data were not transformed, and non-parametric statistical tests to evaluate differences between groups were applied.

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2.6.2 Data analysis and statistical tests used

Throughout this study, we used descriptive statistics to analyse the data set for central tendency (median) and variability (Interquartile range (IQR)). The median has the advantage that is most informative given our skewed distribution and in light of outliers.

After the pre-evaluation of the data set, we determined to use non-parametric tests (Kruskal-Wallis test, Mann-Whitney U test) to evaluate statistical significance between in the respondents´ perception of benefits and disbenefits of forests and greenspaces between countries of origin, age classes, levels of education, and gender. A p-value < 0.05 dedicates statistical significance, with ***, $p < 0.001$; **, $p < 0.01$; and *, $p < 0.05$. All statistical analyses were conducted in SPSS 26 and SPSS 27.

Similar statistical analysis was conducted in Chinese survey. The descriptive analysis (median, IQR, mean, Standard Deviation (SD) of ES or EDS importance value) was applied to explore the statistical characteristics of respondents collected. We analyzed differences of societal perceptive for each ES and EDS at single factor level. Factors with more than two categories, i.e., province, age, education, income, number of children were analyzed by the Kruskal-Wallis tests of median, and the Dunn´s method for multiple comparison test. While factors with two categories were analyzed by the Wilcoxon test of median. p-value <0.05 was considered significant. These differences at single factor level, i.e., gender, rurality and age were analyzed with chi-square tests to determine statistical significance, with two-sided p-value <0.05 as the threshold. Multiple categorical regressions of socio-demographic factors to ecosystem services and disservices were used. The gender, age, education, region and rurality were set as category variables, while age and the importance value of ecosystem services or disservices were set as numerical variable. Significance of these regression models were tested by ANOVA (p-value <0.05 was considered significant). Regression coefficients (with p-value) and their relative importance were used to report effects of socio-demographic factors.

3. Presentation of results

3.1 Results from Europe

3.1.1 Characteristics of the sample population in Europe

The first set of analysis assessed the sample composition for the European part of the survey. The overall number of responses to our survey after data cleaning were n=10,391. The sample population can be compared to the parent population on demographic characteristics – which are age, gender, and education. The parent population constitutes the EU-27. It should also be noted that the EU-27 data is available for 2020 and that the study was conducted in spring 2021. It is more challenging to compare for the income structures across all countries.

Overall, from the sampled data in 33 countries, the largest number of valid responses (after data cleaning) came from Ireland (n=345), France (n=342) and Switzerland (n=341) whereas the lowest number of responses came from Turkey (n=284), Bosnia and Herzegovina (n=282), and Bulgaria (n=280). An overview of the distribution of responses can be seen in Table 5.

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Table 5: Distribution of responses per country in Europe (n)

Country	**Sample population** (n total)	**Sample population** (%)
Albania	289	2.8
Austria	319	3.1
Belgium	332	3.2
Bosnia and Herzegovina	282	2.7
Bulgaria	280	2.7
Croatia	310	3.0
Czech Republic	328	3.2
Denmark	318	3.1
Estonia	310	3.0
Finland	315	3.0
France	342	3.3
Germany	332	3.2
Greece	328	3.2
Hungary	310	3.0
Ireland	345	3.3
Italy	331	3.2
Latvia	305	2.9
Lithuania	323	3.1
Netherlands	320	3.1
Norway	295	2.8
Poland	310	3.0
Portugal	321	3.1
Romania	291	2.8
Russia	305	2.9
Serbia	318	3.1
Slovakia	331	3.2
Slovenia	327	3.1
Spain	315	3.0
Sweden	317	3.1
Switzerland	341	3.3
Turkey	284	2.7
Ukraine	300	2.9
United Kingdom	317	3.1

The average age for the sample population is 43.2 years and is very close compared to the median age of 43.7 years for the EU-27 population (Eurostat. 2020). The majority of respondents belong in the age group 31-50 (40.3%) and about one-third of the respondents belong in the age group 18-30 (31.3%).

Figure 3 shows the distribution of the four age groups for each country. It shows that particularly younger people are overrepresented in Bosnia and Herzegovina and Albania compared to all other countries. Minors under 18 – who are an important visitor group - have not been included in the sample for legal reasons.

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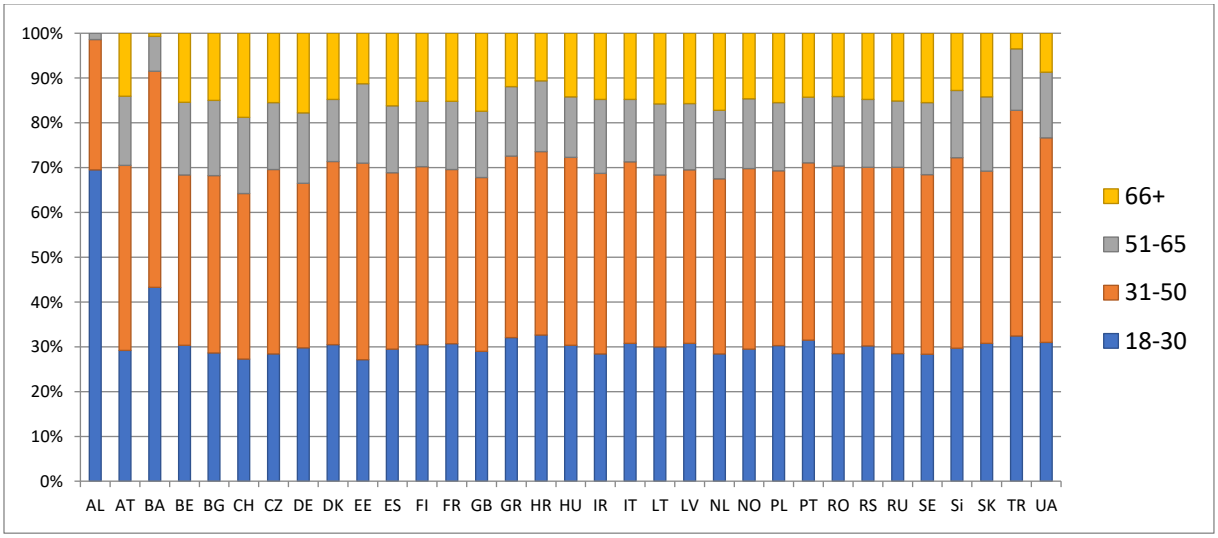

Figure 3: Age group distribution in Europe

The gender distribution as shown in Figure 4 is fairly evenly distributed, whereby 51.2% are female and 48.5% are male respondents. Only 0.2% identify their gender in the category “other” and another 0.2% preferred not to disclose their gender. Due to their very low responses rates of a combined 0.4%, the two categories “other” and “no answer” were not further included into the analysis.

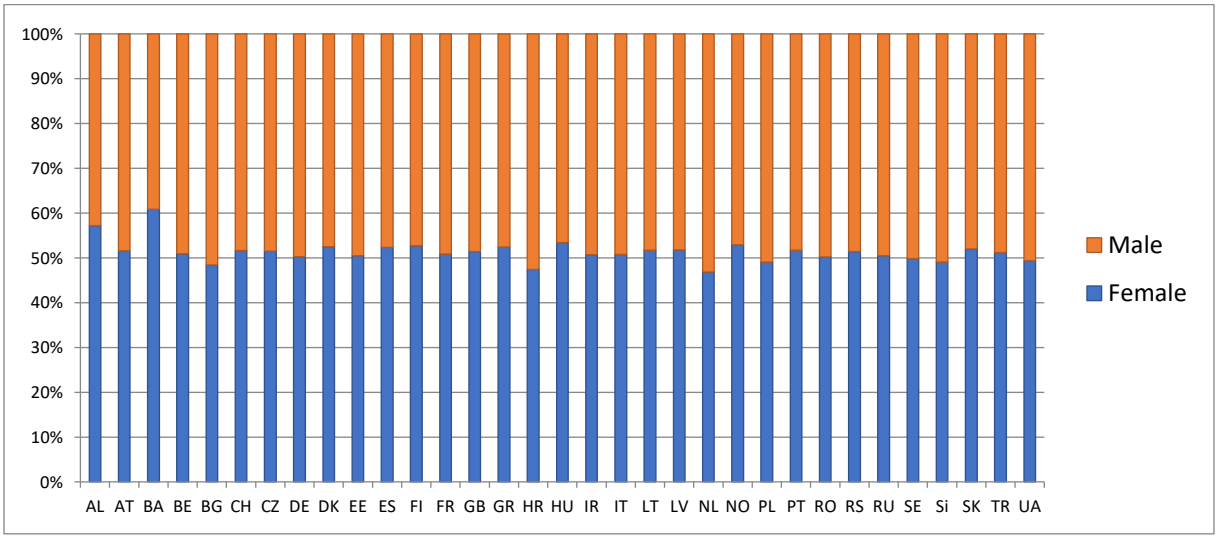

Figure 4: Gender distribution in Europe

Figure 5 shows the highest level of education of the respondents for each country. The sample is characterised by just over one-third of respondents who answered “School between 17 – 19 years of age" (36.2%) as their highest school-leaving qualification. About another one-third of respondents indicated as their highest school-leaving qualification “Undergraduate university degree or equivalent (Bachelor)” (34.9%). Furthermore, the sample is characterised by 23.5% of respondents that hold a postgraduate university degree like a Master’s degree or PhD.

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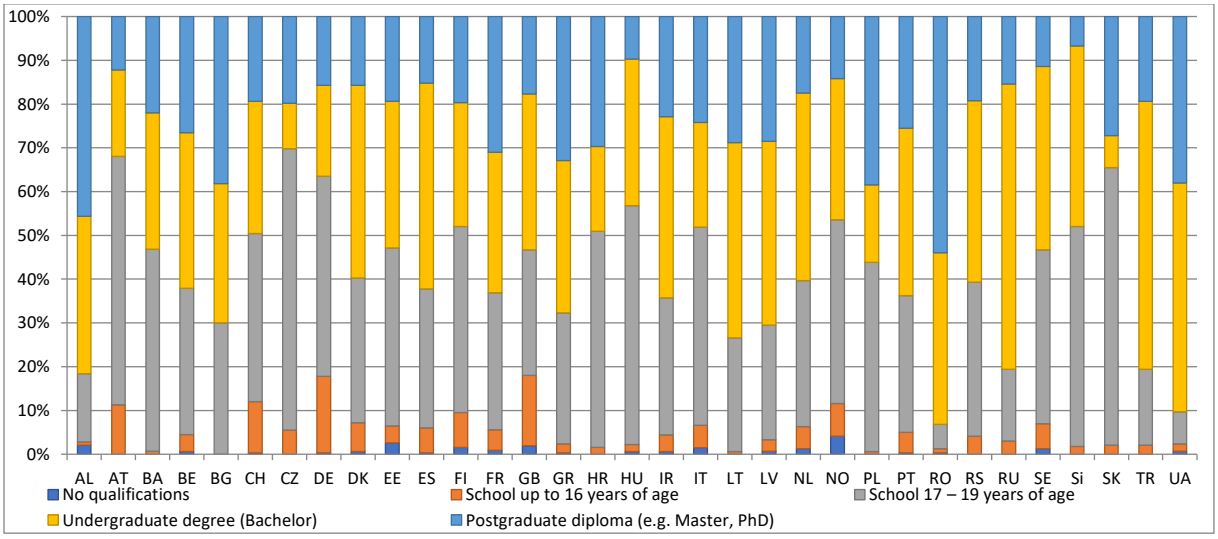

Figure 5: Distribution of education levels in Europe

Figure 6 shows the 15 income classes in the questionnaire, whereby the largest share of respondents did not disclose their income category. The income is challenging to sample and can be a delicate question, which may explain why many respondents did not answer this question. The largest share of respondents that indicated their income was 10.1 % who earn less than 3,500 EUR per year. This was followed by 9.1 % that earn between 16,001 – 22,000 EUR per year.

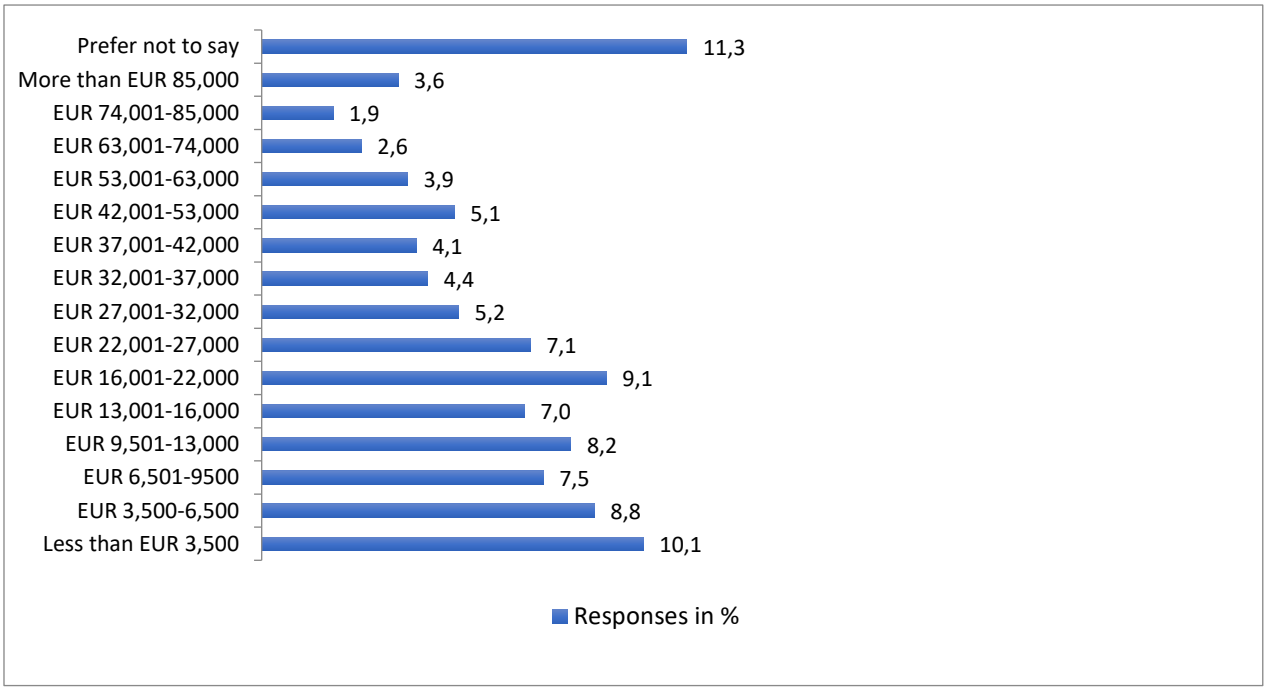

Figure 6: Distribution of income classes in Europe

In addition to the demographic and socio-economic characteristics, we also asked about other personal information and living conditions. For example, the majority of respondents (62.3 %) have no children or young people (under 18 years of age) living in their household. Furthermore, 13.9 % of the respondents either own a forest themselves or have a family member that owns or manages a forest.

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About half the respondents live in a city or town centre (52.7 %) and just above a tenth (11.1 %) live in a rural area or countryside.

The detailed results on socio-demographic and economic characteristics are shown in Appendix III.

3.1.2 General perceptions of ecosystem services and ecosystem disservices for forests and greenspaces in Europe

This section presents the overall societal perceptions and demands for ES and EDS for all woodland types (forests and parks, both rural and urban). On completion of the socio-demographic questions, the questionnaire moved to the central questions on the importance of benefits (ES) and disbenefits (EDS) of forests and parks that respondents most frequently visit. Those who do not visit a particular forest or park had the opportunity to indicate this and could then share their general views on forests.

1. Ecosystem services (ES)

Across the entire data set, the importance of ES across all woodlands as perceived by the public is shown in Figure 7.

The importance of provisioning ES (depicted in blue) was low with three out of four ES having a median under 50. From the provisioning ES, hunting game was deemed the least important ($\tilde{x}$=7) compared to other provisioning ES wild food ($\tilde{x}$=57), timber ($\tilde{x}$=23), and firewood ($\tilde{x}$=23).

The perceptions of the importance of regulating ES were also assessed, whereby the respondents indicated that all regulating ES are considered important or very important as their median values exceeded 75. The most important regulating ES were considered to be air quality ($\tilde{x}$=95) and habitat for plants and animals ($\tilde{x}$=93). The least important regulating ES were natural hazard protection ($\tilde{x}$=80) and improving water quality and reducing erosion ($\tilde{x}$=77).

When determining the importance of cultural ES, it was revealed that four out of six ES scored a median higher than 75. Aesthetics ($\tilde{x}$=94), human health ($\tilde{x}$=93) and recreation ($\tilde{x}$=83) were rated most important while employment ($\tilde{x}$=51) and education ($\tilde{x}$=70) the least important from the six cultural ES.

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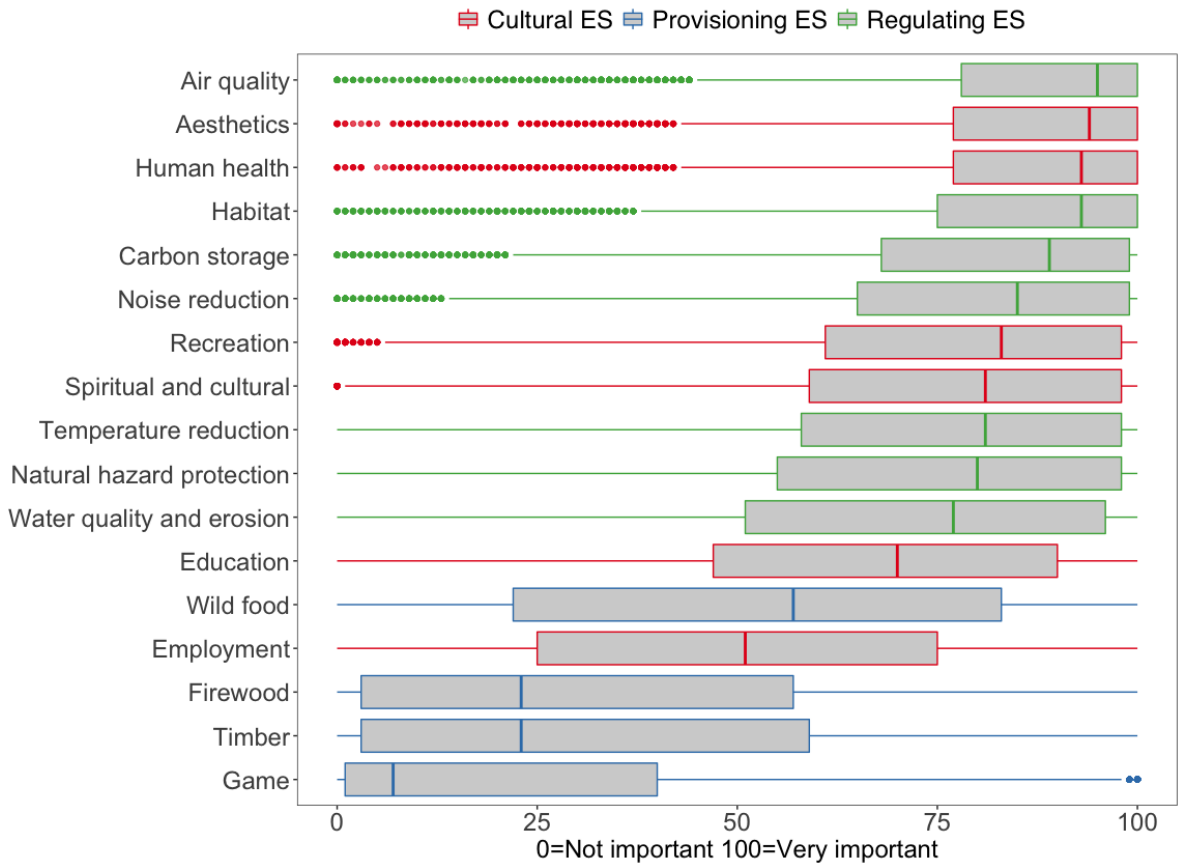

Figure 7: Importance of ES across all woodlands. Responses to the questions: How important are the following benefits of forests to you? (n=1058), and How important are the following benefits of this forest/park to you? (n=9333)

2. Ecosystem disservices (EDS)

When looking at EDS, we found that all EDS are considered to be of low importance across all woodland types, as shown in Figure 8. From all EDS, security issues (x̃=16) and health issues (x̃=14) were the most important although both are still scored low on the scale from 0 to 100. Security issues are related to uncontrolled pet dogs, falling branches, fears related to perceived risk of night-time crime). Health issues are understood as forests and trees causing direct health effects through spreading the seeds of wild plants; attraction of wild animals. The least important EDS with a median of 6 were land use issues (indirect costs caused by land use restrictions, especially if the forested or park area is protected) and local climate (Regulating the physical quality of air for people; increased unwanted humidity and blocked sunlight because of shade).

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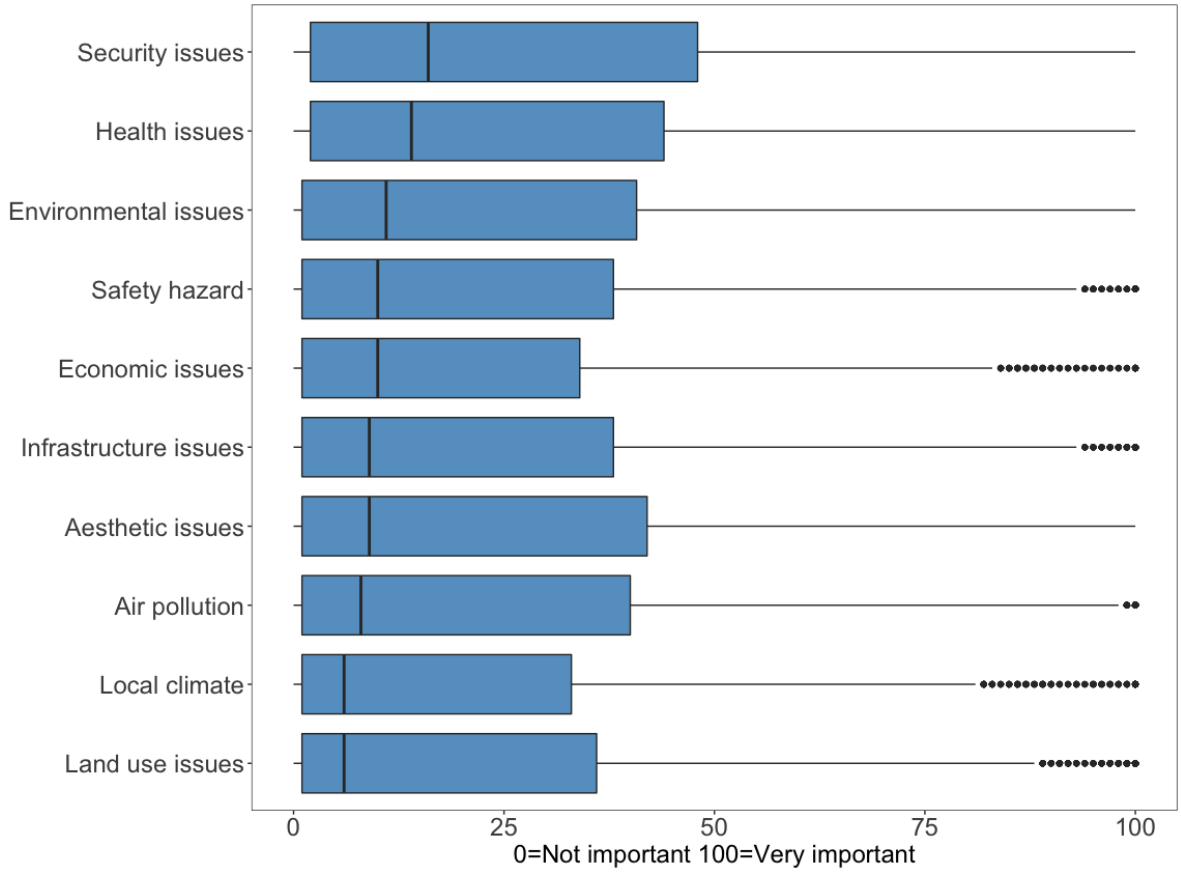

Figure 8: Boxplots showing the importance of EDS across all woodlands. Responses to the questions: How important are the following disbenefits of forests to you? (n=1058), and How important are the following benefits of this forest/park to you? (n=9333)

The detailed results can be obtained from Appendix VII.

3.1.3 Visual preferences towards landscape aesthetics

One main section in the questionnaire covered the views of respondents towards different greenspaces by using visuals, thereby two different questions were asked: a) one covering the landscape that respondents found most attractive, and the other b) covering the landscape that respondents thought to offer the most benefits provided by nature to society. After viewing all images, the respondents had to select one image before continuing with the rest of the questionnaire.

Figure 9 shows the share of responses for each image that respondents selected as most attractive near their homes. The largest shares of people either preferred the image with the wild greenspace (27.3 %) or the image depicting the somewhat wild greenspace (26.7 %). In addition, the image that depicted a cultivated greenspace was also selected as most attractive by around a quarter of respondents.

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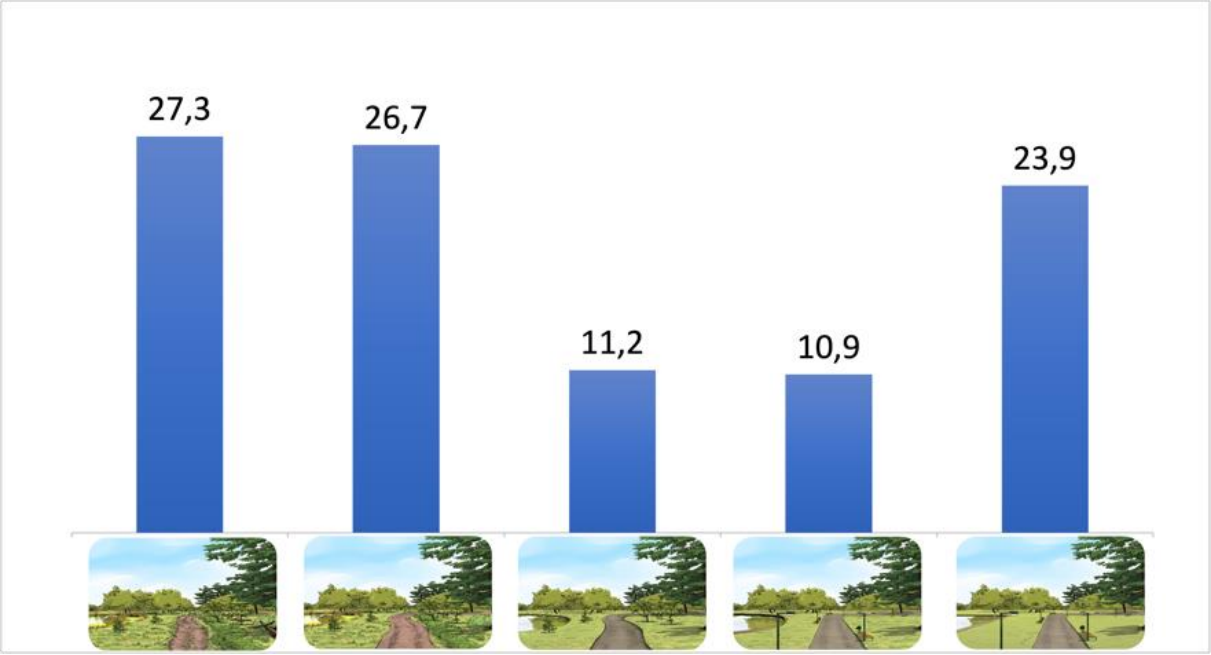

Figure 9: Perceptions of aesthetics along a gradient of naturalness near peoples' homes. Responses to the question: "From the 5 pictures below, please select the landscape which you find most attractive"; Likert scale: 1=Wild, 2=Somewhat wild, 3=Neither wild nor cultivated, 4=Somewhat cultivated, 5=Cultivated; (n=10,391)

Table 6 shows the how respondents selected their most attractive landscape according to their gender, rurality, and age.

Table 6: View of the most attractive landscape in Europe

	wild	Somewhat wild	Neither wild nor cultivated	Somewhat cultivated	cultivated
Gender (n=10,359)					
Female	24.3 %	27.1 %	12.1 %	11.7 %	24.8 %
Male	30.4 %	26.3 %	10.3 %	10.1 %	23.0 %
Rurality (n=10,363)					
City or town centre	22.8%	24.3%	11.6%	12.5%	28.8%
Suburb of a city or town	27.1%	29.4%	11.0%	11.1%	21.3%
Rural area nearby a city or town	35.7%	29.8%	12.0%	7.3%	15.2%
Rural area/countryside	38.8%	28.8%	8.8%	7.2%	16.4%
Age (n=10,391)					
18-30	21.2%	25.9%	12.1%	14.8%	25.9%
31-50	27.6%	27.0%	12.1%	10.3%	23.0%
51-65	33.4%	27.0%	9.6%	7.8%	22.2%
+66	33.5%	27.4%	8.1%	7.3%	23.8%

3.1.4 Visual preferences towards landscapes with the most ecological value

Figure 10 shows the share of responses for each image that respondents think has the most benefits provided by nature to society. The image with the highest share was the one depicting the cultivated greenspace (29.6 %). In contrast, the two images depicting wild and somewhat wild greenspaces were selected by just over 50% of the total number of responses (n=10,391).

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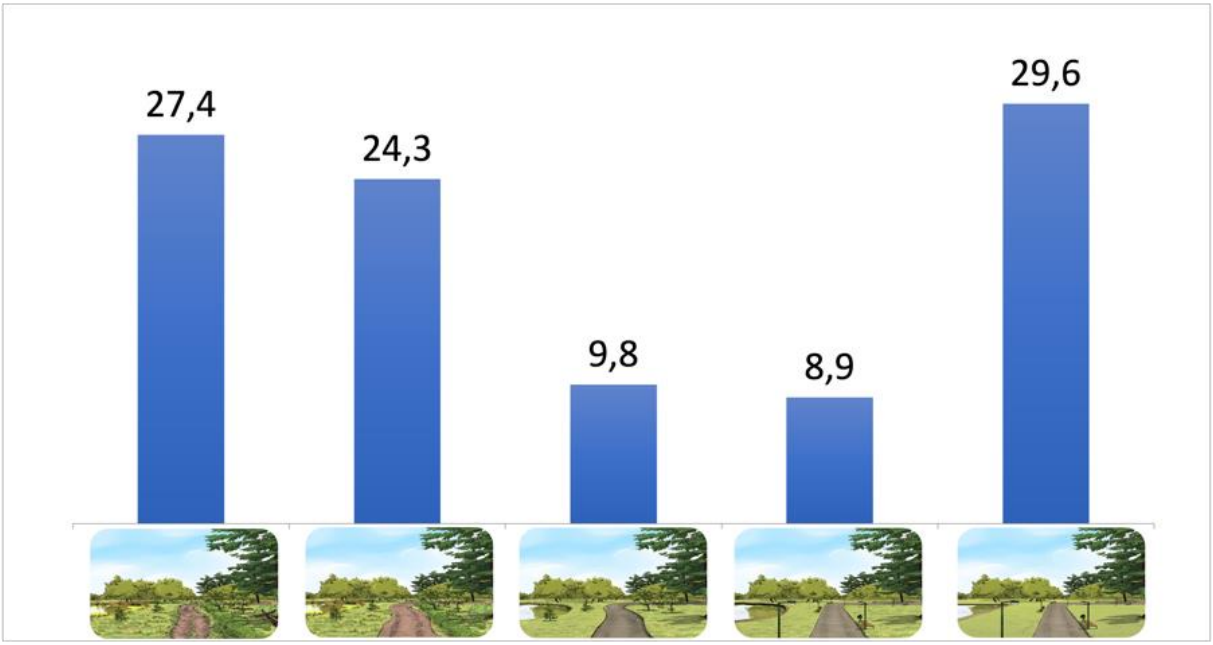

Figure 10: Perceptions of most benefits provided by nature along a gradient of naturalness near peoples' homes. Responses to the question: "From the 5 pictures below, please select the landscape which you think offers the most benefits provided by nature to society"; Likert scale: 1=Wild, 2=Somewhat wild, 3=Neither wild nor cultivated, 4=Somewhat cultivated, 5=Cultivated; (n=10,391)

Table 7: View of the aesthetics along a gradient of naturalness near peoples' homes in Europe

	Wild	Somewhat wild	Neither wild nor cultivated	Somewhat cultivated	Cultivated
Gender (n=10,359)					
Female	25.3%	24.2%	10.0%	9.7%	30.8%
Male	29.5%	24.4%	9.6%	8.1%	28.3%
Rurality (n=10,363)					
City or town centre	23.1%	21.6%	10.3%	10.0%	35.0%
Suburb of a city or town	28.2%	26.8%	10.5%	8.6%	25.7%
Rural area nearby a city or town	35.4%	29.2%	8.6%	6.7%	20.0%
Rural area/countryside	36.1%	26.2%	7.4%	6.5%	23.8%
Age (n=10,391)					
18-30	23.1%	25.6%	12.0%	11.7%	27.7%
31-50	27.6%	24.3%	9.7%	8.9%	29.5%
51-65	31.1%	23.4%	8.4%	5.3%	31.9%
+66	32.7%	22.7%	6.5%	6.4%	31.8%

3.1.5 Most frequently visited landscape types

The questions capturing ES and EDS of different types of woodland follow directly after the first set of questions on the demographic and socioeconomic status of the respondents. Table 8 shows the detailed distribution of answers. The aim was to gather information on the example of a specific forest or greenspace that respondents most frequently visit. From all respondents (N=10,391), just over one-third chose to answer for parks (35.4 %). About a quarter of the respondents chose to answer for a forest in the countryside (rural forest) and a forest in or nearby a city (urban and peri-urban fores) respectively. The lowest number of people indicated that they do not go to the forest (10.2 %). Respondents who indicated that they do not go to the forest, nevertheless, these respondents

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evaluated ES and EDS for forests in general. For this reason, their views are still included in this report. The subsequent sections of results will show responses based on what citizens indicated to the question "what do you visit most frequently?"

Table 8: Most frequently visited woodland types in Europe (Responses to the question: "what do you visit most frequently?" (n=10,391))

Question item	Frequency (n)	Percent (%)
Forest in the countryside (rural forest)	2894	27.9
Forest in or nearby a city (urban and peri-urban forest)	2764	26.6
Park	3675	35.4
I do not go to a forest/park at all	1058	10.2
Total	10,391	100

When we looked at the demographic differences between visitors to different woodland types and non-visitors in Table 9, then it shows that there were no noteworthy differences in gender. In case of rurality, we found that more than half the urban dwellers (people who indicated that they life in the city centre or suburb) then most frequently go to a forest in the countryside.

Table 9: Characteristics of frequent visitors of forests/green spaces and non-visitors in Europe

	Rural forest	Urban and peri-urban forest	Park	I do not go to a forest/park at all
Gender				
Female	48.8%	50.1%	53.7%	53.2%
Male	51.2%	49.9%	46.3%	46.8%
Rurality				
City or town centre	34.1%	56.8%	66.9%	44.9%
Suburb of a city or town	19.2%	27.9%	21.4%	24.3%
Rural area nearby a city or town	23.6%	10.6%	6.5%	15.9%
Rural area/countryside	23.1%	4.8%	5.3%	14.9%
Age				
18-30	32.1%	30.7%	32.7%	26.0%
31-50	40.0%	42.9%	39.8%	36.0%
51-65	14.1%	14.7%	14.3%	18.3%
+66	13.8%	11.7%	13.3%	19.7%
Education				
No qualification	0.7%	0.6%	0.5%	1.5%
School up to 16 years of age	5.6%	3.7%	3.6%	9.0%
School between 17-19 years of age	39.2%	34.5%	32.5%	45.7%
Undergraduate university degree	33.3%	36.9%	36.7%	27.4%
Postgraduate university degree	21.3%	24.3%	26.7%	16.4%

3.1.6 Frequency of visits to a woodland and greenspace

After having asked the respondents about which forest or greenspace they most frequently visit, we checked the frequency of visits for each type of greenspace in more detail in Figure 11. The number of

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daily visitors to rural forests, urban and peri-urban forests as well as parks was very low and only between 3.1 to 4.8 %. Only around 5 % of the respondents indicated that they frequently, meaning 4-6 times a week, visit one of the woodland types in this study. Then, 15.8 % and 17.9 % of the respondents still rather frequently, 2-3 times per week, go to a greenspace located in a peri urban or urban area. This is slightly lower for rural forests (13.1 %). Around 20% of the respondents go to one of the greenspaces 2-3 times a month. Around 17% of the respondents go to a forest on a monthly basis but this is much less so for visits to parks (13.9 %). About one quarter of the respondents visit a rural forest at least a few times a year. In contrast, the number of people going to an urban forest or park a few times a year is much lower (17.3 % and 16.7 %). Only 1.2 % of respondents said that they visit an urban or peri-urban forest once a year, and only 1.4 % indicated that they visit a park once per year.

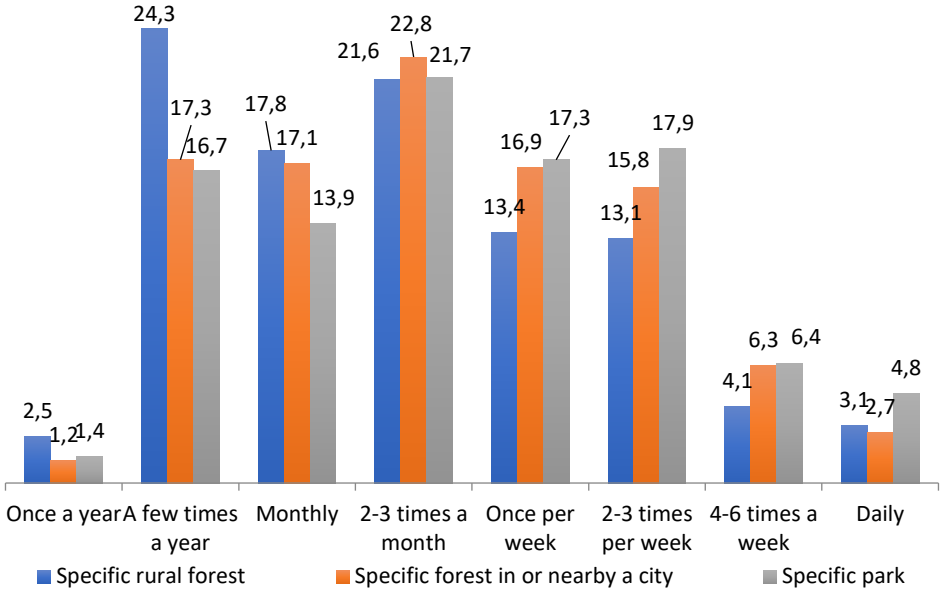

Figure 11: Frequency of visits to a forest or park (In response to the question: On average, how often do you visit this forest/park?)

3.1.7 Means of transport and travel time to reach a woodland or greenspace

Looking at the choice of transport in Figure 12, some difference emerge how respondents reach a forest or park. Most people walk to either the forest or park that they most frequently visit. Walking was particularly the most frequent way to reach a park. With 40.4 %, car use was the most dominant choice of transport to reach a rural forest whereas going to an forest in or nearby a city, the highest share of people used a bicycle (14.9 %).

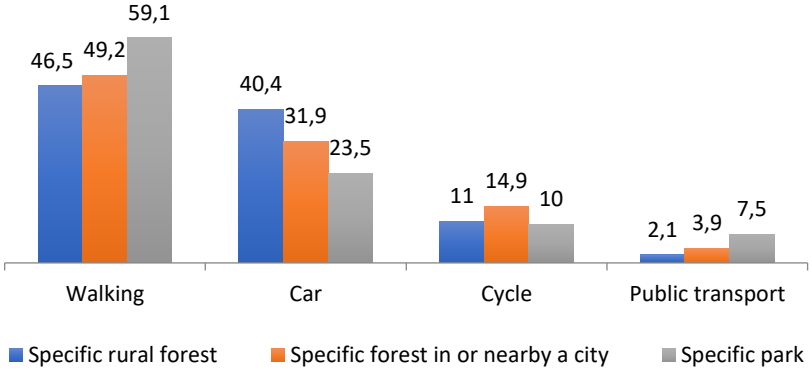

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Figure 12: Choice of transport to reach a forest or park (In response to the questions: how do you typically get to this forest/park?)

Regarding the time that respondents take to travel to a forest or park, we found that around half the respondents use between 1-15 minutes for their travel. Around 30% of the respondents take 16-30 minutes. Still around 8% of the respondents indicated that they travel somewhere from 31 minutes to over one hour to reach a forest in the countryside. Only 2.6 % of the respondents use more than one hour to reach a park.

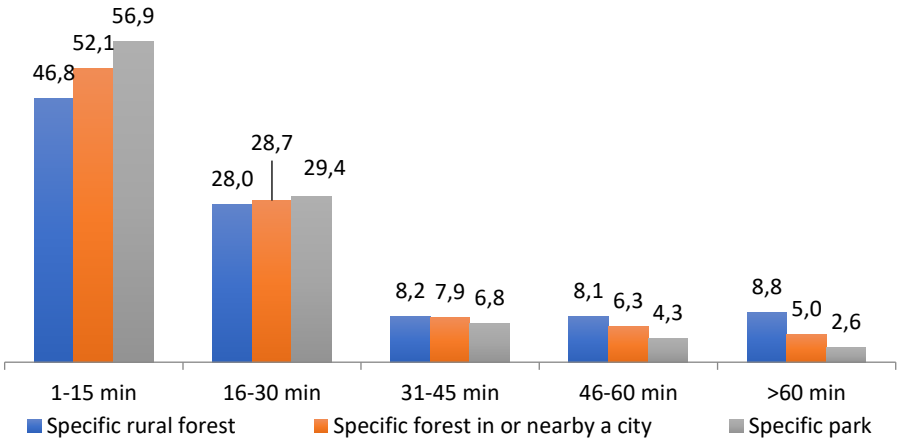

Figure 13: Travel time to a forest or park (In response to the question How long do you need to travel to this forest/park?)

3.1.8 Main reasons for not visiting a woodland or greenspace

For those respondents that indicated that they do not visit forests or parks (n=1058), the questionnaire examined their reasons for not visiting a forest or park. The main reason indicated was no time (23.9 %) as shown in Figure 14. Around 18 % of the respondents then indicated that the forest or park is too far from their home or that they are not interested to go. The least frequently mentioned reasons were

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lack of parking space, fear of domestic animals and fear of falling trees/branches, and fear to get unwell.

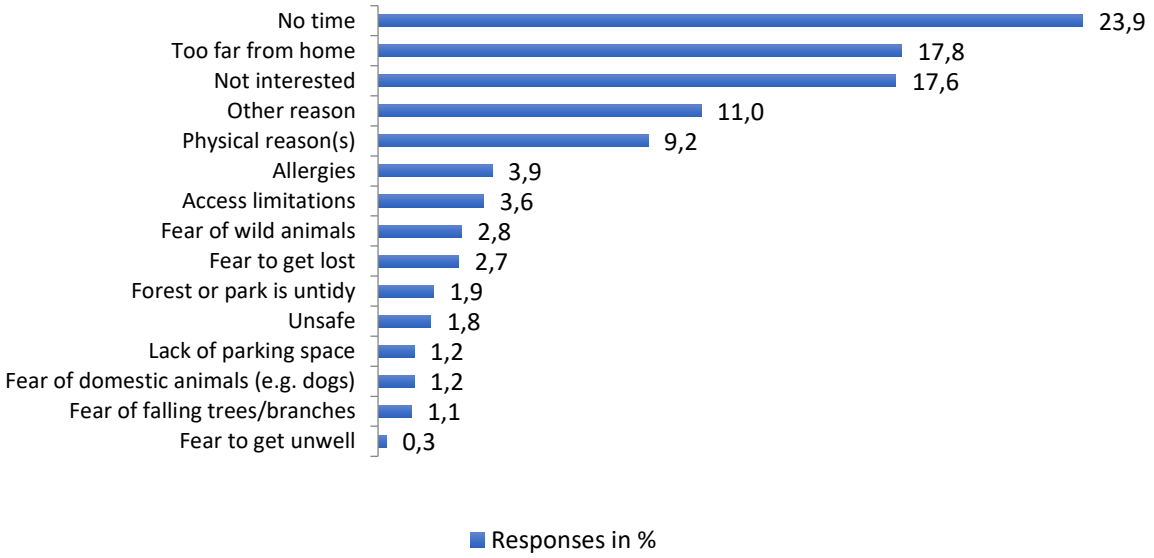

Figure 14: Main reasons for not going to a forest or park (in %). A total of n=1058 people aged over 18 were surveyed

3.1.9 Overall satisfaction with a woodland and greenspace

When looking at the overall satisfaction with forests and parks, where respondents evaluated the proportion of benefits and disbenefits that forests or parks provide to them, we found that 50 % of the respondents who frequently go to a forest or park view only benefits. In addition, around one third of respondents view that forests and green spaces somewhat provide benefits. Taken together, the share of respondents who frequently visit forest or park and evaluated that they provide more benefits than disbenefits amounts to more than 80 %. In contrast, Figure 15 shows that the share of respondents thinking that forests or parks provide more disbenefits than benefits is well below 10 %. Interestingly, 20 % of respondents that do not go to a forest or park, think that forests in general provide neither benefits nor disbenefits.

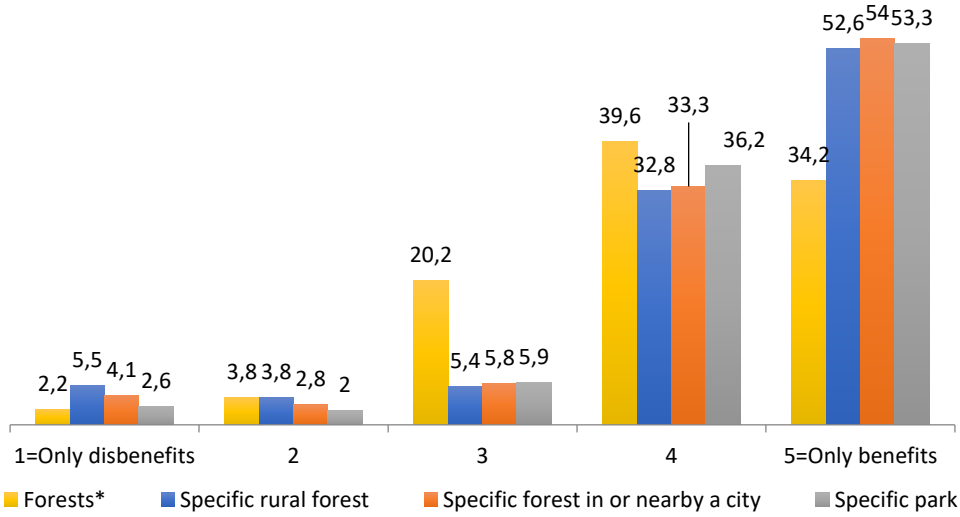

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Figure 15: Overall satisfaction with forests and greenspaces (*Respondents who indicated that they do not go to the forest (N=1058); Likert scale: 2=Somewhat disbenefits; 3= Neither benefits nor disbenefits; 4=Somewhat benefits)

3.1.10 Public perceptions of ecosystem services and disservices by landscape types

Some differences emerged when comparing the importance of ES for different types of woodlands. When examining Table 10, it is evident that the importance of forests and parks for improving air quality was consistently very high across all woodland types. Aesthetic beauty was particularly important for respondents that frequently visit a rural forest, urban forest, or park (x̃>94), but slightly less for people that do not go to a forest or park (x̃=86.5). Water quality and erosion as well as natural hazard protection were seen as more important by respondents that do not go to a forest compared to respondents that frequently go to parks. The role of parks was considered most important by respondents frequently going to parks, urban forests and rural forests compared to respondents that do not go to a forest or park. It is noteworthy that temperature reduction was seen as only slightly more important by respondents going to parks and urban forests compared to respondents that frequently visit rural forests. The respondents that frequently visit a rural forest rated timber production (x̃=32) 50 % lower than respondents that do not go to a forest or park (x̃=64). Not surprisingly, we saw that provisioning services have the lowest importance in urban forests and parks (x̃<22).

Table 10: Importance of ES according to different woodland types in Europe (Median values shown; Scale: 0=Not important, 100=Very important)

	Forests in general (n=1058)*	**Rural forest (n=2894)**	**Urban and peri-urban forest (n=2764)**	**Park (n=3675)**
Air quality	95	94	95	95
Habitat	93	95	95	89
Carbon storage	91	89	90	89
Aesthetics	86,5	95	95	94
Water quality and erosion	85	80	79	69
Natural hazard protection	84	81	82	74
Human health	82	92	93	95
Temperature reduction	80	79	82	82
Noise reduction	80	84	87	85
Wild food	74	69	62	30
Spiritual and cultural	70	78	83	85
Recreation	68	79	85	88
Employment	65	50	50	50
Education	65	68	72	70
Timber	64	32	21	8
Firewood	54	41	22	6
Game	25	20	9	1
	*Those respondents who indicated that they do not go to the forest.			

In terms of EDS, all of them were considered consistently more important by respondents that do not go to a forest or park compared to respondents that frequently visit a specific forest or greenspace. Aesthetic issues, forests obscuring views, was viewed as most important EDS among respondents that do not go to a forest (x̃=39).

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Table 11: Importance of EDS according to different woodland types in Europe (Median values shown; Scale: 0=Not important, 100=Very important)

	Forests in general (N=1058)*	Rural forest (N=2894)	Urban and peri-urban Forest (N=2764)	Park (N=3675)
Aesthetic issues	39	9	8	7
Infrastructure issues	30	9	8	6
Safety hazard	30	9	10	7
Security issues	30	11	15	18
Land use issues	29	6	6	4
Environmental issues	29	10	10	8
Health issues	29	13	13	11
Air pollution	22	7	8	6
Economic issues	22	8	9	10
Local climate	21	5	6	4
	*Those respondents who indicated that they do not go to the forest.			

3.1.11 Detailed perceptions of a rural forest

Here, we report the results of the responses by the people who indicated that they most frequently visit a forest in the countryside. From the entire data set, the share of respondents amounts to 27.9 %.

3.1.11.1 Importance of ES and EDS in different countries

Table 12 shows the country-level differences for provisioning ecosystem services in Europe for a frequently visited forest in the countryside. In more detail, we frequently report the three countries where an ES was perceived as most important and where it was least important. For example, timber production was important in Hungary (x̃=70), Albania, Sweden but least important in Croatia, the Netherlands, and Belgium (x̃=7). That a specific forest provides firewood was perceived as most important in Slovenia (x̃=66), Hungary, and Poland but least important in the UK, Belgium, and the Netherlands (x̃=10.5). Respondents also rated the provision of wild food (mushrooms, berries, nuts, and medical plants). From all 33 countries, this ES was perceived as the most important in Lithuania (x̃=88), Russia, and Turkey. It was least important in Denmark, Belgium, and the UK (x̃=34). Last but not least, opportunities to hunt game was considered most important in Norway (x̃=49), Hungary and Bosnia and Herzegovina, in comparison to Belgium, the Netherlands and the UK (x̃=2.5), where it was least important.

Table 12: Importance of provisioning ES of a rural forest at country level in Europe. Responses to the questions: How important are the following benefits of this forest to you? (N=2,894)

Country	Timber	Firewood	Wild food	Game
Albania	60,0	46,0	71,0	42,0
Austria	36,0	47,0	63,0	23,0
Belgium	7,0	13,0	44,0	5,0
Bosnia and Herzegovina	45,5	50,0	75,0	45,0
Bulgaria	31,0	45,0	73,5	42,5
Croatia	16,0	32,0	56,0	23,0
Czech Republic	23,5	30,0	78,0	17,0
Denmark	22,0	19,0	44,0	11,0
Estonia	17,0	34,0	78,0	18,0
Finland	39,5	55,0	81,5	21,0
France	33,5	40,0	67,0	22,0

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Germany	20,5	41,5	55,5	24,5
Greece	46,0	47,0	66,5	34,5
Hungary	70,0	61,5	82,0	45,0
Ireland	23,0	20,0	47,0	8,0
Italy	33,5	41,0	71,0	14,5
Latvia	32,0	43,0	76,0	20,0
Lithuania	25,5	50,0	88,0	8,0
Netherlands	14,0	10,5	55,0	3,0
Norway	39,0	49,0	62,0	49,0
Poland	48,0	60,0	79,0	10,0
Portugal	20,5	50,0	59,0	27,0
Romania	41,5	38,5	78,0	22,0
Russia	17,0	38,5	87,0	38,5
Serbia	17,0	47,5	64,5	25,5
Slovakia	28,5	37,5	75,0	38,0
Slovenia	50,5	66,0	74,0	24,0
Spain	25,0	39,0	72,0	12,0
Sweden	51,0	46,0	76,0	44,0
Switzerland	35,0	48,5	68,5	11,0
Turkey	48,0	52,0	85,0	39,5
UK	19,5	14,5	34,0	2,5
Ukraine	36,5	48,5	85,0	10,5

When looking at the country-level results for regulating ES in Table 13, some patterns and differences emerge between the 33 countries in Europe. For example, the ability of a frequently visited forest to improve air quality which was seen as very important in Bosnia and Herzegovina, Serbia, and Albania (all x̃=100). On the other hand, it was perceived as important Finland, Norway, and Denmark (x̃=76) but these are the countries with the lowest median for this category. The ES of carbon storage was perceived as most important in Albania (x̃=99), Bosnia and Herzegovina, and Turkey, in contrast, respondents in Slovakia, Norway, Denmark (x̃=71) gave less importance to this ES. Respondents answering for the forest that they most frequently visit rated temperature reduction as very important in Turkey (x̃=99), Russia, and Romania but less so in Denmark, Norway, the UK (x̃=56). The ES of habitat was seen as very important in all 33 countries (x̃>89) with the highest important in Bosnia and Herzegovina (x̃=100), Albania, and Turkey. Furthermore, water quality and erosion protection were perceived as very important in Turkey (x̃=97), Albania, Romania and still as important ES in Estonia, Denmark, and Latvia (x̃=64.5). That the most frequented forest provides natural hazard protection was seen as very important in Turkey (x̃=98), Romania and Greece compared to respondents in Finland, Denmark, Norway (x̃=63) who were perceiving this as less important. Finally, noise reduction was perceived as most important in Turkey (x̃=99), Croatia, and Russia. Respondents in Ireland, the UK and Denmark (x̃=68.5) perceived this as less important.

Table 13: Importance of regulating ES of a rural forest at country level in Europe. Responses to the questions: How important are the following benefits of this forest to you? (N=2,894)

Country	Air quality	Carbon storage	Temperature reduction	Habitat	Water quality & Erosion	Natural hazard protection	Noise reduction
Albania	100,0	99,0	72,5	99,0	96,0	91,0	91,0
Austria	96,0	93,0	77,0	96,5	80,0	83,0	79,0
Belgium	90,0	84,0	77,0	90,0	74,5	72,0	77,0
Bosnia and Herzegovina	100,0	98,0	94,0	100,0	92,0	86,0	96,0
Bulgaria	99,0	93,0	91,0	95,0	90,5	92,0	94,0
Croatia	95,0	88,0	85,0	93,0	73,5	85,5	97,5
Czech Republic	93,0	82,5	80,0	98,0	80,0	81,0	84,0
Denmark	76,0	71,0	61,5	89,0	68,0	64,0	68,5
Estonia	90,0	84,0	74,0	95,5	68,0	73,0	83,0

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Finland	83,0	81,0	71,0	89,0	78,0	66,0	82,5
France	90,0	84,0	74,0	93,0	76,0	77,5	80,0
Germany	96,0	94,0	77,0	98,0	80,0	82,5	87,0
Greece	99,0	96,0	92,0	96,0	92,0	94,0	87,0
Hungary	94,0	90,0	93,0	95,0	83,5	88,0	91,5
Ireland	90,0	88,0	74,0	95,0	72,0	81,0	75,0
Italy	96,0	97,0	88,0	91,0	75,0	82,0	86,0
Latvia	92,0	85,0	65,0	89,0	64,5	72,0	82,5
Lithuania	96,0	97,0	73,0	98,0	73,0	79,0	92,0
Netherlands	90,0	89,0	78,5	90,0	73,5	72,0	76,0
Norway	78,0	75,0	58,0	90,0	70,0	63,0	77,0
Poland	96,0	94,0	82,5	91,0	84,0	81,5	87,0
Portugal	98,0	94,0	87,5	91,0	86,5	88,0	85,0
Romania	99,0	95,0	95,0	98,0	94,0	95,0	95,0
Russia	96,0	94,5	95,0	96,5	85,5	88,0	96,5
Serbia	100,0	96,0	91,0	98,0	84,0	82,0	88,0
Slovakia	93,0	80,5	85,0	92,0	84,0	82,0	85,5
Slovenia	97,0	93,0	88,5	96,0	88,0	87,0	92,0
Spain	97,0	90,0	86,0	97,0	87,0	86,0	87,0
Sweden	93,0	88,5	73,5	94,5	76,5	79,0	82,0
Switzerland	90,0	86,0	78,0	94,0	79,0	79,0	79,0
Turkey	98,0	97,0	96,0	98,5	97,0	98,0	99,0
UK	83,5	82,0	56,0	95,0	69,5	71,0	69,0
Ukraine	99,0	94,0	82,0	98,0	89,0	94,0	83,0

Next are the country-level differences for cultural ES in a rural forest in Europe as they are shown in Table 14. The respondents in Bosnia and Herzegovina (x̃=100), Albania, and Turkey perceived aesthetics as most important compared to respondents in Norway, the UK, and France (x̃=84) who perceived it as least important from all 33 countries. That a frequently visited forest provides cultural, emotional and spiritual value was most important in Albania (x̃=100), Lithuania, and Turkey. This had the lowest importance in Norway, Belgium, and Austria (x̃=65). Looking at a specific forest for providing opportunities for education, we found that this ES was perceived as very important in Spain (x̃=82), Romania, and Switzerland. From all 33 countries, this was least important in Ukraine, Albania, Latvia (x̃=45). Recreation was perceived as very important in Eastern European countries of Romania (x̃=95), Bulgaria and Russia. The respondents in Greece, the UK and Ukraine (x̃=60) still perceived recreation as moderately important. Furthermore, that a frequently visited forest provides benefits to human health was perceived as very important in Albania (x̃=100), Romania, and Russia. On the other hand, this was still perceived as important in Finland, Norway, and Denmark (x̃=80.5) but least important from all 33 countries. Finally, respondents perceived that a frequently visited forest provides jobs and economic activity as very important in Hungary (x̃=72), Sweden, and Portugal whereas it was least important in Russia, Ukraine and Estonia (x̃=24).

Table 14: Importance of cultural ES of a rural forest at country level in Europe. Responses to the questions: How important are the following benefits of this forest to you? (N=2,894)

Country	Aesthetics	Spiritual and cultural	Education	Recreation	Human health	Employment
Albania	100,0	99,0	48,0	91,0	100,0	49,0
Austria	95,0	65,0	66,0	72,0	95,5	48,0
Belgium	89,0	68,5	70,0	80,0	89,0	45,0
Bosnia and Herzegovina	100,0	74,0	60,0	88,0	97,0	46,0
Bulgaria	98,0	74,0	71,0	93,5	95,0	46,0
Croatia	96,0	77,0	60,0	87,0	92,0	45,0
Czech Republic	98,0	78,0	66,0	79,0	87,0	47,0
Denmark	89,0	80,0	66,0	69,5	80,5	46,0
Estonia	95,0	76,0	55,0	69,0	88,0	24,0
Finland	93,0	71,5	51,0	88,0	84,0	51,0

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France	84,0	78,0	73,5	76,0	85,5	52,5
Germany	92,5	71,0	72,5	73,0	94,0	50,0
Greece	98,0	84,0	69,0	63,0	95,0	55,0
Hungary	97,5	88,5	73,5	88,0	91,5	72,0
Ireland	93,0	85,0	72,5	72,0	90,0	63,0
Italy	97,0	85,5	70,0	76,0	92,0	63,0
Latvia	90,5	73,0	45,0	76,0	87,0	44,0
Lithuania	97,0	92,5	56,5	81,0	96,5	42,0
Netherlands	90,0	71,0	63,0	75,5	87,0	49,5
Norway	87,0	69,0	60,0	79,5	84,0	47,5
Poland	95,0	77,5	71,0	79,5	91,0	54,5
Portugal	96,0	85,0	75,0	81,5	95,0	64,5
Romania	99,0	87,0	80,0	95,0	99,0	49,0
Russia	97,5	92,0	56,0	93,5	99,0	41,0
Serbia	98,0	81,0	70,0	85,0	98,0	45,0
Slovakia	94,0	82,0	66,5	82,5	87,0	50,0
Slovenia	96,0	74,0	70,0	82,0	95,0	52,0
Spain	92,5	90,0	82,0	81,0	99,0	63,0
Sweden	95,5	74,0	67,5	82,0	95,5	64,5
Switzerland	92,0	74,0	76,0	73,0	88,0	51,0
Turkey	99,0	92,0	66,5	79,0	97,0	64,0
UK	86,0	75,0	74,5	62,0	85,0	52,0
Ukraine	99,0	87,0	50,5	60,0	92,5	40,0

The importance of EDS of a rural forest in Europe showed that there is no EDS that was considered to be more important than x̃>50. At the level of a country, some differences in importance of EDS emerged which are shown in Table 15. For example, the importance of a rural forest to contribute to increased pollution levels from reduced air exchange was seen as unimportant by respondents in the UK (x̃=21), followed by respondents in Ireland and Greece. For this EDS, it was perceived as not important at all by respondents from Bulgaria, Ukraine, and Albania (x̃=1). The EDS local climate – a forest having a negative impact on local climate – was seen as unimportant in the UK (x̃=22), Slovakia, and Sweden. It was not at all important in Portugal, Bosnia and Herzegovina, and Ukraine (x̃=2). When looking at the map of safety issues – meaning that a specific forest is unsafe because of uncontrolled pet dogs, risk of crime, falling branches – was rated as unimportant in the UK (x̃=19), Hungary, and Poland, but it scored as being not at all important in Ukraine, Germany, and Bulgaria (x̃=2).

Table 15: Importance of EDS of a rural forest at country level in Europe. Responses to the questions: How important are the following disbenefits of this forest to you? (N=2,894)

Country	Air pollution	Local climate	Safety hazard	Environmental issues	Landuse issues	Infrastructure issues	Aesthetic issues	Security issues	Health issues	Economic issues
Albania	1,0	5,0	7,0	6,0	11,0	4,0	19,0	11,0	16,0	6,0
Austria	5,5	5,0	6,5	5,0	10,0	8,0	15,0	6,5	9,0	7,0
Belgium	5,5	6,0	6,0	10,0	5,0	7,0	5,0	13,0	10,0	8,0
Bosnia and Herzegovina	5,0	2,0	6,0	5,5	2,0	4,0	7,0	4,0	12,0	2,0
Bulgaria	2,5	3,5	2,0	4,0	5,0	4,0	6,0	4,0	5,5	3,0
Croatia	5,0	4,0	7,0	8,0	4,0	8,5	8,0	13,0	22,0	5,0
Czech Republic	6,0	6,0	9,5	15,0	3,0	10,0	6,0	12,0	18,0	10,0
Denmark	5,0	6,0	6,5	6,0	6,0	5,0	9,0	7,0	8,0	7,0
Estonia	7,0	3,0	6,5	5,0	4,5	6,0	3,5	4,0	21,0	3,0
Finland	6,0	4,0	6,5	8,5	4,0	5,5	7,5	3,0	9,0	4,0

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France	7,5	6,0	11,0	12,0	4,0	8,5	6,0	11,0	10,0	10,0
Germany	4,0	3,0	4,0	7,0	6,0	7,0	8,0	9,0	8,0	9,0
Greece	13,0	5,0	13,0	9,5	8,0	11,5	7,0	23,0	16,5	6,5
Hungary	10,0	6,0	18,5	19,0	5,5	15,5	7,0	13,5	16,0	14,0
Ireland	13,0	10,0	11,0	14,0	9,0	14,0	10,0	15,0	10,0	13,0
Italy	5,0	6,0	9,0	7,0	9,0	14,0	11,5	13,5	13,5	9,5
Latvia	6,0	4,5	9,0	10,0	4,0	9,0	8,5	15,0	13,0	6,0
Lithuania	9,5	8,0	15,0	19,0	7,0	13,5	5,0	15,0	16,5	9,0
Netherlands	6,0	3,5	6,5	9,0	3,0	3,5	3,0	22,0	16,0	8,0
Norway	9,0	7,0	11,0	9,5	7,5	11,0	9,0	13,5	16,0	10,0
Poland	9,0	8,5	17,5	26,5	6,0	22,5	8,5	11,5	27,0	14,0
Portugal	3,0	3,0	8,0	7,0	2,0	4,0	11,5	9,0	8,0	5,0
Romania	6,0	4,0	9,0	5,0	7,0	7,5	17,0	11,0	8,0	5,0
Russia	4,0	7,5	12,0	9,0	21,5	17,0	16,0	19,5	14,5	10,5
Serbia	4,0	5,5	8,0	6,0	10,0	12,5	28,0	9,0	9,0	6,0
Slovakia	8,0	11,0	8,0	11,0	13,0	8,5	13,0	10,0	14,0	10,0
Slovenia	5,0	4,0	11,0	10,0	6,0	13,0	6,5	10,0	20,0	9,5
Spain	9,0	4,0	15,0	12,0	4,0	12,0	30,0	10,0	19,0	16,0
Sweden	11,0	10,5	15,0	17,5	13,0	17,0	6,5	12,0	13,0	9,0
Switzerland	8,0	6,0	10,0	13,0	8,0	9,0	11,0	13,0	15,5	13,0
Turkey	11,0	6,0	14,0	18,5	21,5	7,0	3,0	16,5	9,0	9,5
UK	21,0	22,0	19,0	24,0	21,0	17,0	16,0	28,0	19,5	14,5
Ukraine	2,0	2,0	4,5	3,0	3,0	1,5	2,0	5,5	11,0	2,0

That a specific rural forest could contribute to the introduction of invasive species and displacement of native species (Environmental issues) was seen as unimportant in Poland (x̃=26.5), the UK, and Hungary but this was not of any relevance to respondents in Estonia, Bulgaria, and Ukraine (x̃=3). Indirect costs arising by land use restrictions (land use issues) because of a rural forest was seen as unimportant in Turkey (x̃=21.5), Russia, and in the UK. It was not at all important in Ukraine, Portugal, and Bosnia and Herzegovina (x̃=2). The maps further show that infrastructure issues were slightly important in Poland (22.5), Russia, and the UK but not in Bosnia and Herzegovina, the Netherlands, and Ukraine (x̃ =1.5). That a rural forest is obscuring views was considered slightly important in Spain (x̃=30), Serbia, and Albania but not at all in Turkey, the Netherlands, and Ukraine (x̃=2). Similarly, economic issues were also slightly important in Spain (x̃=16), but not at all in Ukraine (x̃=2). That a rural forst could pose a health risk was considered somewhat important in Poland (x̃=27), Croatia and Estonia, but not at all in Germany, Denmark, and Bulgaria (x̃=5.5). Safety and security issues related to uncontrolled pet dogs, falling branches, fears related to perceived risk of night-time crime were seen as somewhat important in the UK (x̃=28), Greece and the Netherland but not so in Bulgaria, Estonia, and Finland (x̃=3).

3.1.11.2 Importance of ES and EDS by gender

When determining the results for the responses to a specific forest in the countryside to the question "How important are the following benefits of this forest to you?", Figure 16 shows that for all ES – excluding water quality and erosion, employment, firewood and timber – women perceived them as significantly ($p < 0,05$) more important compared to men. Women perceived mostly regulating and

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cultural ES more important than men. On the other hand, men perceived employment, firewood, timber and hunting for game as more important than women.

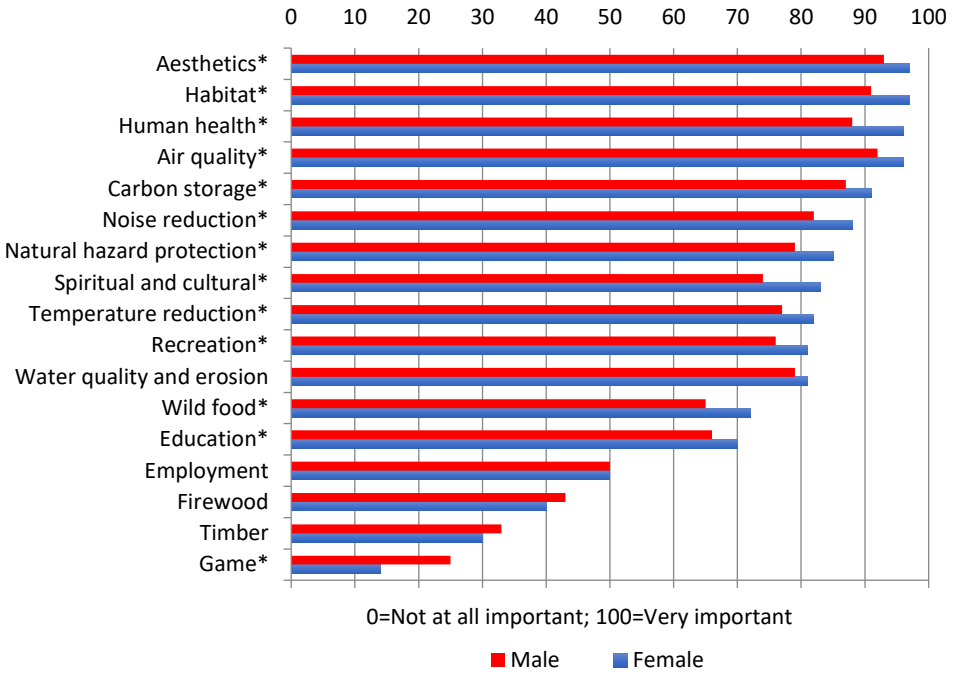

Figure 16: Importance of ES by gender of a rural forest in Europe. The * denotes significant differences (Mann-Whitney U test, $p<0.05$). Responses to the questions: How important are the following benefits of this forest to you? In relation to a specific forest in the countryside.

Next was to determine the differences between gender for EDS for a specific forest in the countryside as shown in Figure 17. Women scored all EDS significantly more important than men, except for land use issues, which are more important to men (but not significantly). The most prominent EDS was health issues meaning that forests constitute a source of health risks (e.g., wildlife/insect bites. allergies) whereby females viewed this significantly more important compared to males. The least important EDS was land use issues (foregone land use opportunity), and males rated this higher than females, but not at a significant level.

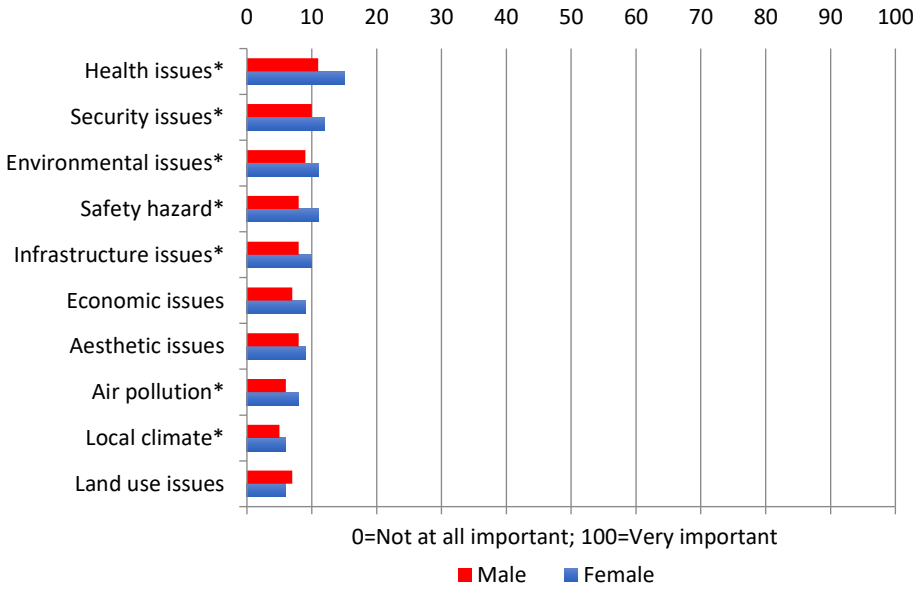

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Figure 17: Importance of EDS by gender of a rural forest in Europe. The * denotes significant differences (Mann-Whitney U test, p<0.05). Responses to the questions: How important are the following disbenefits of this forest to you? In relation to a specific forest in the countryside.

3.1.11.3 Importance of ES and EDS by age groups

Here we examined the importance of all ES by the people that most frequently go to a rural forest according to different age groups as shown in Figure 18. We found that there is a statistically significant difference between several median ES ratings across the four age groups. The statistically significant differences occurred in all ES but not in air quality, aesthetics, habitat, wild food, firewood, timber, and hunting game. In noise reduction and natural hazard protection that particularly respondents in the age group of 51-65 perceived this as very important. Younger respondents (18-30 years of age) and middle-aged respondents (31-51 years of age) perceived provisioning ES of firewood, timber, and hunting game as more important than older respondents (51-65, >66 years of age).

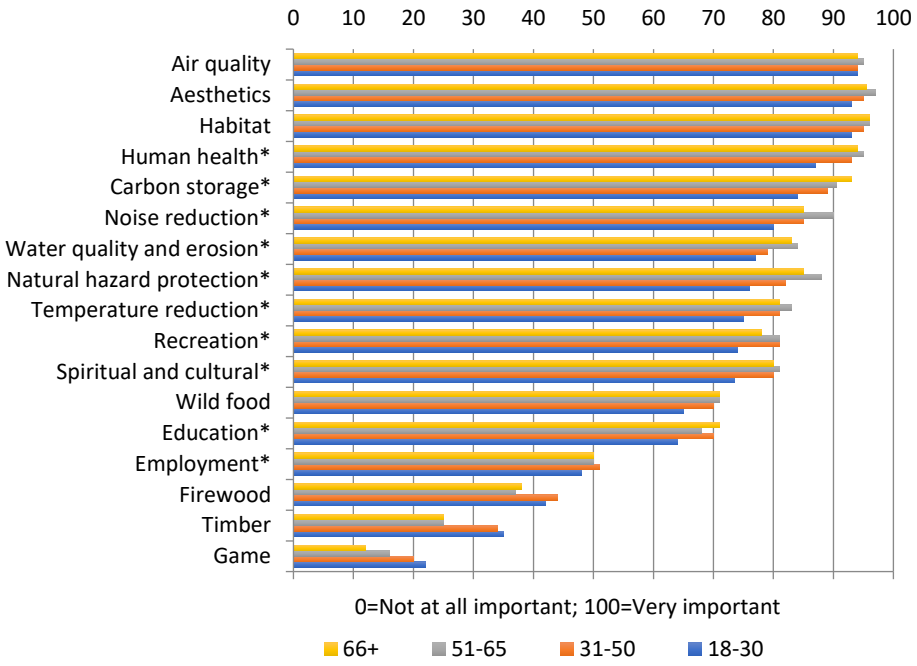

Figure 18: Importance of ES by age group of a rural forest in Europe. The * denotes significant differences (Kruskal-Wallis test, p<0.05). Responses to the questions: How important are the following benefits of this forest to you? In relation to a specific forest in the countryside.

Next, we examined the importance of the EDS for a rural forest as shown in Figure 19. There was significant difference between all median EDS ratings across the four age groups. Particularly, younger respondents perceived the EDS as more important compared to the older age groups.

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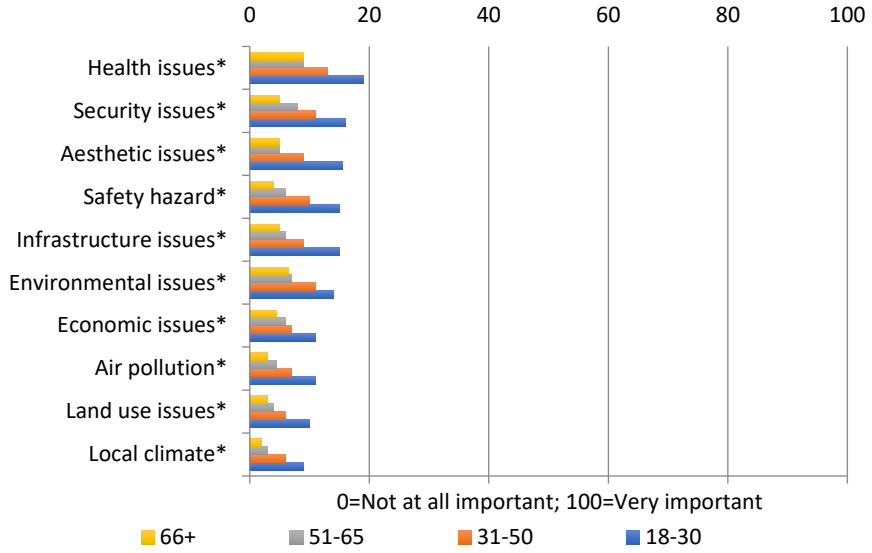

Figure 19: Importance of EDS by age group of a rural forest in Europe. The * denotes significant differences (Kruskal-Wallis test, $p<0.05$). Responses to the questions: How important are the following disbenefits of this forest to you? In relation to a specific forest in the countryside.

3.1.11.4 Importance of ES and EDS by levels of education

Our analysis investigated the differences in importance of ES by the highest level of education by the respondents. Figure 20 shows that there were statistically significant differences between several median ES ratings across the five education categories. For example, respondents with no educational qualification perceived natural hazard protection as moderately important whereas respondents with a education qualification as important. On the other hand, respondents without a qualification rated recreation as very important, but respondents with a qualification rated it as somewhat important, however this relationship was not statistically significant.

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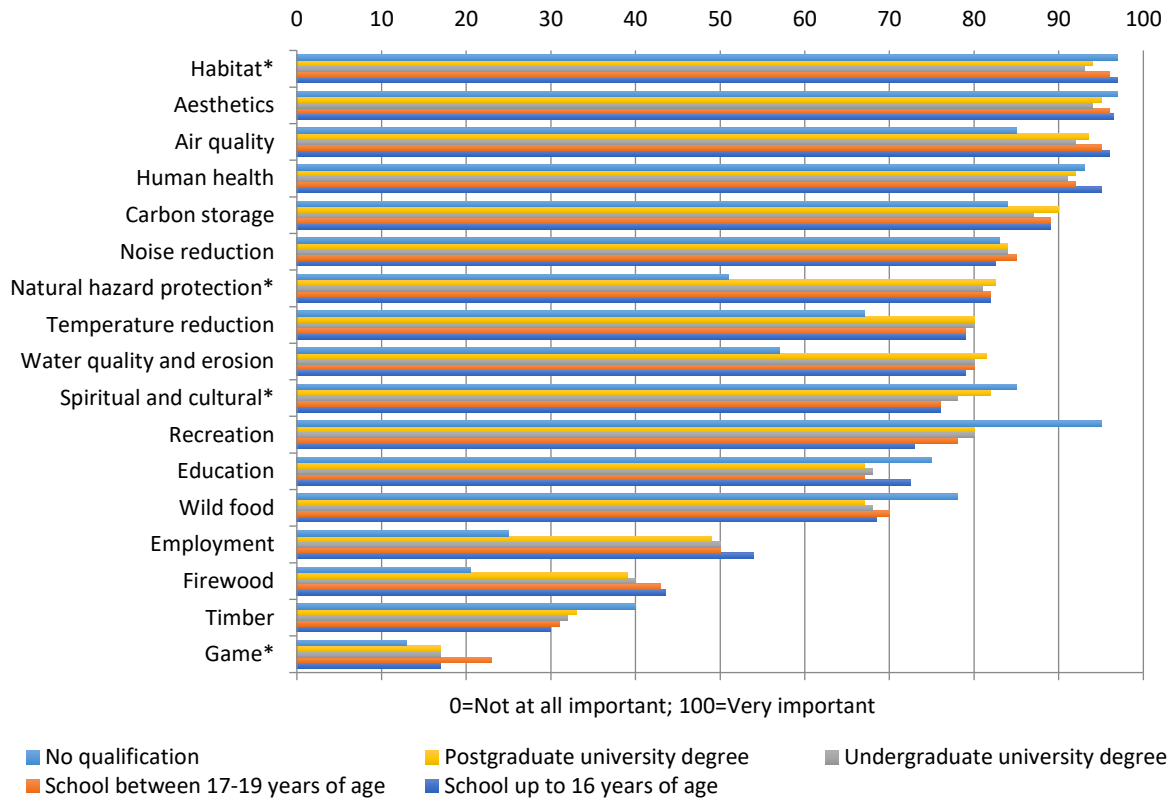

Figure 20: Importance of ES by highest education of a rural forest in Europe. The * denotes significant differences (Kruskal-Wallis test, $p<0.05$). Responses to the questions: How important are the following benefits of this forest to you? In relation to a specific forest in the countryside.

The analysis revealed for EDS that there were statistically significant differences between the five education groups. As shown in Figure 21, for example in health issues, economic issues, environmental issues, infrastructure issues, air pollution, land use issues, and local climate. It is noteworthy that respondents who do not hold a qualification, perceived health issues – so that the forest is causing direct health effects through spreading the seeds of wild plants and through the attraction of wild animals – as significantly more important compared to respondents with a qualification.

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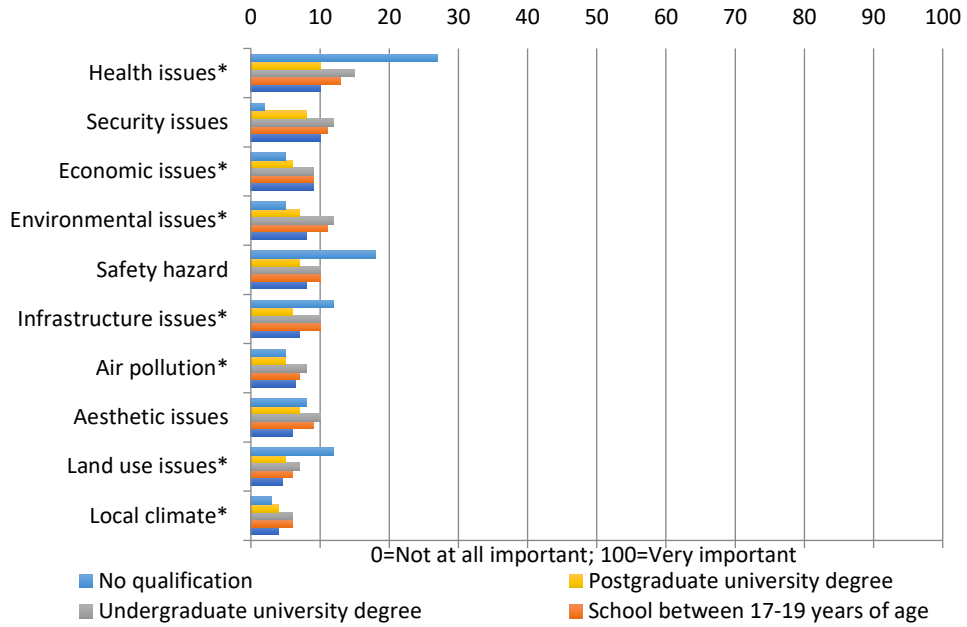

Figure 21: Importance of EDS by highest education of a rural forest in Europe. The * denotes significant differences. Responses to the questions: How important are the following disbenefits of this forest to you? In relation to a specific forest in the countryside.

3.1.12 Detailed perceptions of an urban and peri-urban forest

This section reports on the results of the responses by the people who indicated that they most frequently visit a forest in or nearby a city (urban or peri-urban forest). From the entire data set, the share of respondents amounts to 26.6 %.

3.1.12.1 Importance of ES and EDS in different countries

In this section, we present the country-level differences for ES in Europe for a frequently visited urban forest. Here, we also report mainly on the countries where the specific ES were perceived as most important and least important. Additionally, some regional patterns are pointed out.

As shown in Table 16, timber production was perceived as moderately important in Ireland (x̃=50), Hungary, and Slovenia. In contrast, respondents in Serbia, Latvia, and Estonia (x̃=5) perceived it as not important. The provision of firewood was considered moderately important in Slovenia (x̃=48), Portgual, and Sweden whereas again, it was important in Serbia, Latvia, and Estonia (x̃=4). An Urban Forest providing products other than wood (e.g., mushrooms, berries, nuts, medicinal plants) was perceived as important in Albania (x̃=86.5), Poland, and Turkey. However, it was only moderately important in Spain, Norway, and Denmark (x̃=44.5). Hunting game was slightly important in Bosnia and Herzegovina (x̃=27), the UK, and Hungary and least important in Finland, Estonia, and Latvia (x̃=1).

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Table 16: Importance of provisioning ES of a forest in or nearby a city at country level in Europe. Responses to the questions: How important are the following benefits of this forest to you? (N=2,764)

Country	Timber	Firewood	Wild food	Game
Albania	41,0	41,5	86,5	10,0
Austria	20,5	22,5	60,0	6,0
Belgium	13,5	11,0	59,0	3,5
Bosnia and Herzegovina	16,0	42,0	55,5	27,0
Bulgaria	16,0	16,0	64,0	15,5
Croatia	11,0	22,5	54,0	15,5
Czech Republic	11,0	13,5	67,0	5,0
Denmark	10,0	10,0	44,5	4,5
Estonia	5,0	4,0	58,0	2,0
Finland	14,0	14,0	64,0	3,0
France	18,0	28,0	56,0	8,5
Germany	16,0	21,5	53,0	5,0
Greece	29,0	28,5	59,5	15,0
Hungary	48,5	39,0	74,0	23,0
Ireland	50,0	35,0	57,0	18,0
Italy	37,0	37,0	60,0	12,0
Latvia	4,0	5,0	58,0	1,0
Lithuania	27,0	23,0	59,0	4,0
Netherlands	16,5	15,0	61,0	5,5
Norway	16,5	19,0	48,0	10,0
Poland	45,5	41,0	82,0	13,0
Portugal	30,0	46,0	60,0	9,0
Romania	22,5	12,0	74,0	11,0
Russia	18,5	12,0	66,0	9,0
Serbia	8,0	8,5	66,0	9,0
Slovakia	10,0	11,0	63,0	14,0
Slovenia	48,0	48,0	71,0	9,5
Spain	15,0	23,5	51,0	4,0
Sweden	46,0	43,0	72,0	21,0
Switzerland	30,0	37,5	60,0	4,0
Turkey	44,0	21,0	81,0	12,0
UK	44,0	29,5	56,0	24,0
Ukraine	17,0	20,0	70,0	6,0

When comparing the importance of regulating ES of an urban forest across Europe, as shown in Table 17, some main characteristic is that these are considered at least moderately important ($\tilde{x}$>50). Air quality and carbon storage were most important in Albania (both $\tilde{x}$=100), but least important in Norway ($\tilde{x}$=74 and $\tilde{x}$=69 respectively). Not surprisingly, temperature reduction was perceived as particularly important in Serbia ($\tilde{x}$=99), Romania, and Greece but only moderately important in the UK, Denmark, and Norway ($\tilde{x}$=51). As shown in the map, other regulating ES such as temperature reduction, water quality and erosion, natural hazard protection, and noise reduction were perceived as moderately important particularly in Norway, but also in other Scandinavian countries like Denmark and Finland. All regulating ES were perceived as very important in south-eastern European countries such as Serbia, Albania, Bosnia and Herzegovina, Greece, and Turkey.

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Table 17: Importance of regulating ES of a forest in or nearby a city at country level in Europe. Responses to the questions: How important are the following benefits of this forest to you? (N=2,764)

Country	Air quality	Carbon storage	Temperature reduction	Habitat	Water quality and Erosion	Natural hazard protection	Noise reduction
Albania	100,0	100,0	82,5	100,0	99,0	91,0	93,5
Austria	98,0	97,5	88,0	98,0	86,0	87,5	95,5
Belgium	84,0	83,0	72,0	87,0	79,0	77,0	72,0
Bosnia and Herzegovina	99,0	96,5	94,0	93,0	84,0	95,0	97,0
Bulgaria	98,0	95,0	79,5	88,0	79,5	83,0	82,0
Croatia	96,0	86,5	86,0	95,0	77,0	80,0	90,0
Czech Republic	97,0	85,0	85,0	98,0	80,0	77,0	89,0
Denmark	80,0	76,0	57,0	94,0	62,0	69,5	73,0
Estonia	90,0	87,0	73,0	96,0	75,0	78,0	91,0
Finland	85,0	81,0	76,5	91,0	68,5	68,0	84,5
France	90,0	88,0	72,0	94,0	77,0	78,0	77,0
Germany	96,0	92,0	78,0	98,0	81,5	81,0	86,0
Greece	98,0	95,0	95,0	97,0	86,0	96,0	92,5
Hungary	98,0	89,5	94,5	98,0	86,0	88,5	91,0
Ireland	82,0	82,0	71,0	81,0	78,0	80,0	77,5
Italy	96,0	93,0	85,0	94,0	81,0	83,0	90,0
Latvia	97,5	90,0	68,5	96,5	70,0	79,0	91,0
Lithuania	95,5	96,0	79,0	96,5	73,0	81,0	91,0
Netherlands	83,0	75,5	74,0	80,0	66,0	74,0	73,5
Norway	74,0	69,0	51,0	85,0	57,0	58,5	73,0
Poland	98,0	97,0	94,0	98,0	86,5	90,0	96,0
Portugal	98,0	96,5	84,0	89,0	88,0	88,0	87,0
Romania	99,0	98,0	98,0	98,0	92,0	98,0	98,0
Russia	98,0	90,0	93,0	95,0	85,0	77,0	92,0
Serbia	99,0	97,0	99,0	98,0	87,5	90,0	97,0
Slovakia	98,0	90,0	91,0	96,0	81,0	82,0	90,0
Slovenia	98,0	95,0	92,0	98,0	90,0	93,5	92,0
Spain	97,0	83,0	81,0	89,5	80,5	85,5	87,0
Sweden	87,5	85,0	75,0	91,0	78,0	79,0	79,0
Switzerland	89,0	87,0	78,0	91,0	78,0	77,0	79,0
Turkey	99,0	98,0	93,0	99,0	98,0	98,0	95,0
UK	77,0	81,0	60,5	84,0	69,0	74,0	68,0
Ukraine	98,0	93,0	80,0	94,0	80,0	80,0	86,0

For the cultural ES in Europe, a general trend emerged between some eastern and western European countries. For example, landscape aesthetics were particularly important in Bosnia and Herzegovina, Serbia, Austria, Albania, and Bulgaria (x̃=99). On the other hand, albeit still considered important but less so in Belgium, the UK, and France (x̃=77). Furthermore, the provision of spiritual and cultural values was considered of very high importance in countries like Serbia (x̃=98), Albania, and Lithuania compared to the UK, the Netherlands, and Belgium (x̃=70). Turning to education, we can report that this was considered only moderately important in Ukraine (x̃=49.5). That urban forests provide opportunities for recreation was very important in Serbia (x̃=98), Bulgaria, and Romania compared to Ireland, Ukraine and the UK (x̃=59.5). Overall, human health was perceived as very important by the

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public in eastern European countries, e.g., Albania (x̃=99.5), Serbia, and Romania. It was least important in the UK (x̃=74). Lastly, urban forests providing job opportunities was of low importance in Estonia (x̃=16), but rather important in Albania (x̃=80), Portugal, and Turkey.

Table 18: Importance of cultural ES of a forest in or nearby a city at country level in Europe. Responses to the questions: How important are the following benefits of this forest to you? (N=2,764)

Country	Aesthetics	Spiritual and cultural	Education	Recreation	Human health	Employment
Albania	99,0	97,0	50,5	94,0	99,5	80,0
Austria	99,0	86,0	70,5	90,0	97,0	49,0
Belgium	81,0	70,0	74,0	75,0	86,0	48,0
Bosnia and Herzegovina	99,0	80,0	60,0	84,0	96,0	39,0
Bulgaria	99,0	83,5	78,0	98,0	96,0	41,5
Croatia	98,0	80,0	72,0	87,0	94,0	44,0
Czech Republic	97,0	81,0	65,0	84,0	93,0	40,0
Denmark	89,5	90,0	66,0	76,0	90,0	46,0
Estonia	94,0	83,0	70,0	83,0	91,0	16,0
Finland	91,0	80,0	76,5	95,0	91,0	40,0
France	77,0	73,0	69,5	76,0	82,0	55,0
Germany	94,5	73,0	69,0	77,0	92,0	47,0
Greece	97,0	93,0	81,0	83,5	97,5	52,0
Hungary	96,5	81,0	77,0	95,0	95,0	61,5
Ireland	92,0	82,5	80,5	73,0	88,5	60,0
Italy	94,0	85,0	77,0	81,0	93,0	64,0
Latvia	97,5	91,0	64,0	95,0	98,0	39,0
Lithuania	92,5	95,0	68,5	91,0	96,0	45,0
Netherlands	87,0	70,0	71,0	76,0	80,0	53,5
Norway	82,0	77,0	64,0	78,0	84,0	32,5
Poland	98,0	87,0	77,0	90,0	97,0	51,0
Portugal	92,0	87,0	74,0	82,0	94,0	73,0
Romania	99,0	92,0	76,0	96,5	99,0	47,5
Russia	98,0	94,0	65,0	90,0	98,5	41,0
Serbia	99,0	98,0	87,5	98,0	99,0	41,5
Slovakia	98,0	86,0	67,5	89,0	96,0	30,0
Slovenia	98,0	86,5	80,5	95,5	98,0	60,0
Spain	90,0	81,0	74,0	83,0	91,5	64,0
Sweden	89,0	77,5	70,0	80,0	90,0	59,5
Switzerland	83,0	78,0	76,0	79,0	88,0	50,0
Turkey	98,0	92,0	82,0	87,5	97,0	72,0
UK	80,0	72,0	66,0	59,5	74,0	54,0
Ukraine	98,0	81,0	49,5	66,0	96,0	47,0

Further analysis showed the importance of EDS of an urban forest in Europe in Table 19. Overall in most European countries, the EDS were viewed as not very important. On the one hand, one notable exception is Ireland where all EDS scored the highest. For example air pollution (x̃=50), local climate (x̃=40), safety issues (x̃=49), infrastructure issues (x̃=48), aesthetic issues (x̃=48), security issues (x̃=48), health issues (x̃=37), and economic issues (x̃=39). That urban forests are a foregone land use opportunity (land use issues) was considered also moderately important in the UK (x̃=54).

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Table 19: Importance of EDS of a forest in or nearby a city at country level in Europe. Responses to the questions: How important are the following disbenefits of this forest to you? (N=2,764)

Country	Air pollution	Local climate	Safety hazard	Environmental issues	Landuse issues	Infrastructure issues	Aesthetic issues	Security issues	Health issues	Economic issues
Albania	9,0	2,0	11,0	6,0	4,5	4,5	13,5	15,0	23,5	7,0
Austria	3,0	3,0	3,0	4,0	7,0	8,0	8,0	7,0	5,0	6,5
Belgium	17,0	8,0	17,5	20,0	6,0	8,0	8,0	13,5	14,0	10,0
Bosnia and Herzegovina	5,0	5,0	6,0	6,5	3,0	8,0	11,0	10,5	12,0	4,5
Bulgaria	2,0	3,0	3,5	2,0	6,5	4,0	9,0	10,0	12,0	3,0
Croatia	4,0	4,0	10,5	10,5	2,0	4,0	6,0	10,0	11,0	5,5
Czech Republic	4,5	2,0	5,0	11,0	2,0	8,0	3,5	8,0	10,0	6,5
Denmark	7,5	7,0	4,0	9,5	2,5	5,5	6,0	10,5	9,0	9,0
Estonia	15,0	4,0	10,0	7,5	8,0	6,0	4,0	14,0	13,0	6,0
Finland	10,0	4,5	6,0	7,0	5,0	5,0	5,0	10,5	8,0	9,0
France	7,0	6,5	8,0	9,5	3,0	7,0	5,0	13,0	10,0	8,0
Germany	6,0	5,0	10,0	7,5	10,0	7,0	8,0	11,0	8,0	9,0
Greece	11,0	4,0	14,5	10,0	6,0	7,0	6,0	24,0	19,5	5,0
Hungary	6,0	3,0	11,5	13,0	3,0	9,0	5,0	16,0	21,0	11,0
Ireland	50,0	40,0	49,0	41,0	32,0	48,0	48,0	48,0	37,0	39,0
Italy	6,0	6,0	12,5	15,0	9,0	10,5	13,0	21,0	15,0	12,0
Latvia	7,5	4,0	8,0	12,0	2,0	6,0	5,0	13,0	12,5	5,0
Lithuania	8,0	9,5	20,5	18,0	6,0	17,0	8,0	28,0	18,0	12,0
Netherlands	15,0	13,5	16,0	15,0	6,5	5,5	11,5	19,0	11,0	13,5
Norway	6,0	6,0	11,0	9,5	6,0	9,0	9,0	12,0	9,0	9,5
Poland	11,0	8,0	17,0	19,0	9,0	18,0	9,0	13,0	14,0	11,0
Portugal	2,0	3,0	18,0	10,5	3,0	6,0	21,0	13,0	6,0	3,0
Romania	2,5	2,0	6,0	4,0	4,5	4,0	3,0	9,5	9,5	6,0
Russia	4,0	6,0	11,0	7,0	5,0	6,0	4,0	18,5	17,5	8,0
Serbia	5,0	4,0	5,5	5,0	11,0	9,0	20,0	22,5	13,0	4,0
Slovakia	5,0	4,0	5,0	8,0	5,0	4,0	7,5	8,0	9,0	8,0
Slovenia	6,0	6,0	11,0	13,5	6,0	13,0	5,0	16,0	16,5	10,0
Spain	12,0	10,0	17,0	20,5	17,0	22,0	33,0	24,0	21,0	17,0
Sweden	17,5	15,0	24,5	29,0	21,0	22,0	15,0	32,0	22,0	17,5
Switzerland	5,0	5,0	10,0	10,5	4,0	7,5	5,0	12,0	10,0	10,0
Turkey	13,0	9,0	11,0	13,0	5,5	7,0	4,5	16,0	14,0	9,0
UK	40,0	16,0	36,0	35,5	54,0	17,0	35,0	33,5	20,0	35,5
Ukraine	2,0	1,0	7,0	4,0	2,0	2,5	1,0	6,0	10,0	6,0

3.1.12.2 Importance of ES and EDS by gender

For the forest in or nearby a city, we determined similarities and differences between male and female respondents, as shown in Figure 22. There is a statistically significant difference between the two genders for all ES, except water quality and erosion, employment, firewood, and timber. For all ES

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where there is a significant difference, females rated the ES significantly more important compared to male respondents.

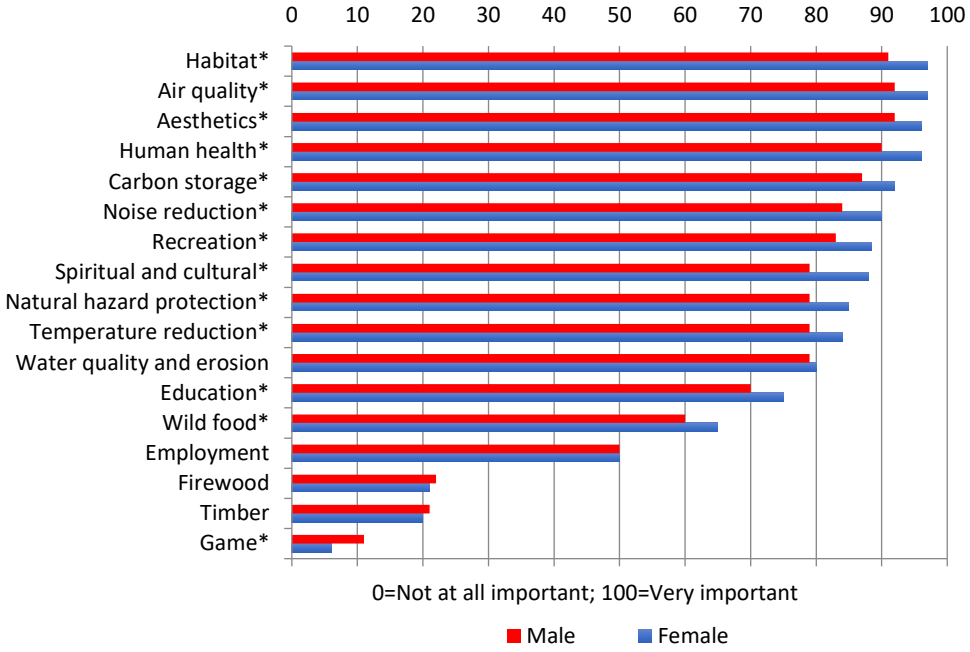

Figure 22: Importance of ES by gender of a forest in or nearby a city in Europe. The * denotes significant differences (Mann-Whitney U test, p<0.05). Responses to the questions: How important are the following benefits of this forest to you? In relation to a specific forest in or nearby a city.

Figure 23 below illustrates the differences between gender for EDS for a specific forest in or nearby a city. What stands out in the figure is that females who most frequently visit a forest in or nearby a city perceived security issues and air pollution as significantly more important compared to men. In contrast, male respondents perceived land use issues as significantly more important than females.

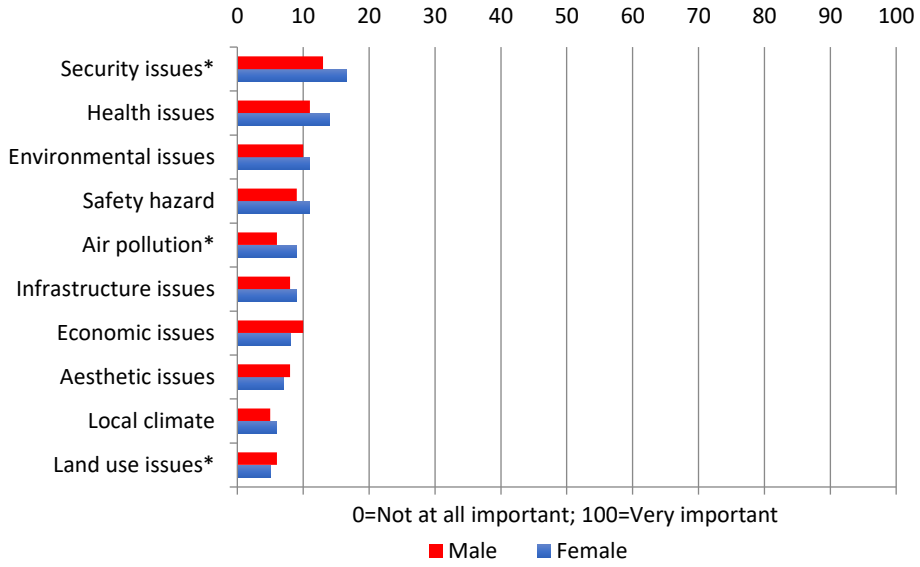

Figure 23: Importance of EDS by gender of a forest in or nearby a city in Europe. The * denotes significant differences (Mann-Whitney U test, p<0.05). Responses to the questions: How important are the following disbenefits of this forest to you? In relation to a specific forest in or nearby a city.

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3.1.12.3 Importance of ES and EDS by age groups

The results of the Kruskal-Wallis test are summarised in Figure 24 and shows that there were significant differences between the four age groups for all ES except recreation and wild food. Younger respondents (18-30) viewed the provisioning ES of firewood, timber and game as more important compared to the other three age groups.

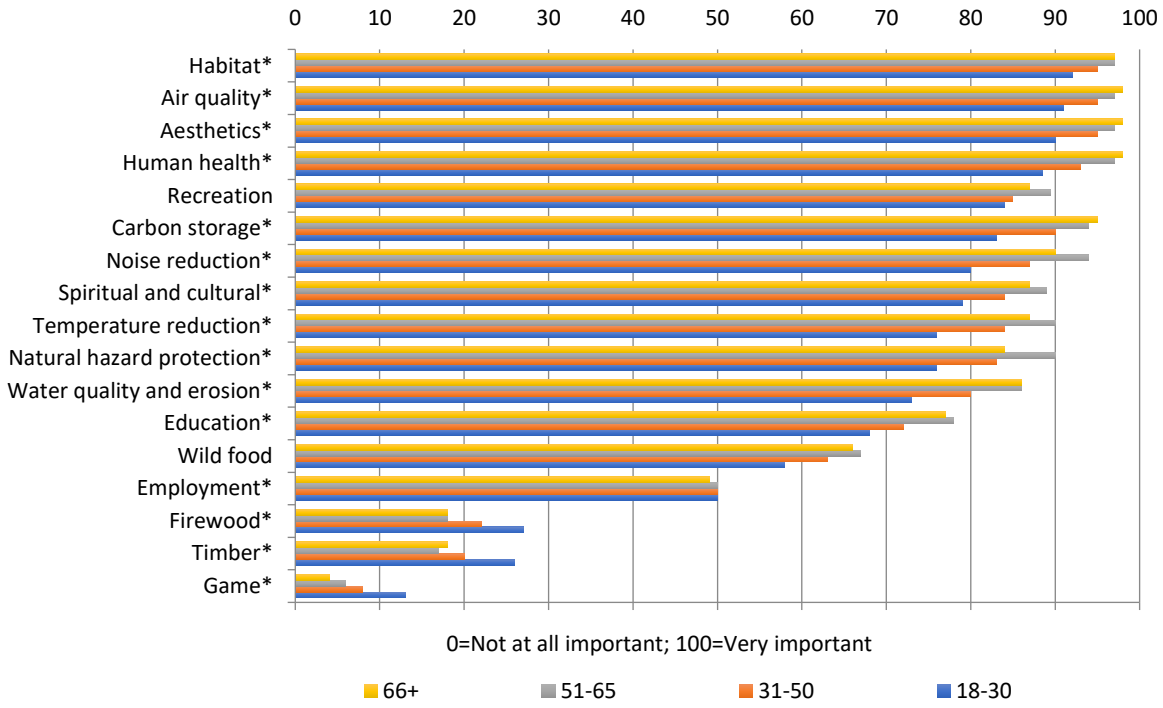

Figure 24: Importance of ES by age group of a forest in or nearby a city in Europe. The * denotes significant differences (Kruskal-Wallis test, $p<0.05$). Responses to the questions: How important are the following benefits of this forest to you? In relation to a specific forest in or nearby a city.

The results, as shown in Figure 25, indicate that there were statistically significant differences between the four age groups for all EDS. It is noteworthy that younger respondents (18-30) viewed all EDS as significantly more important compared to the other age groups.

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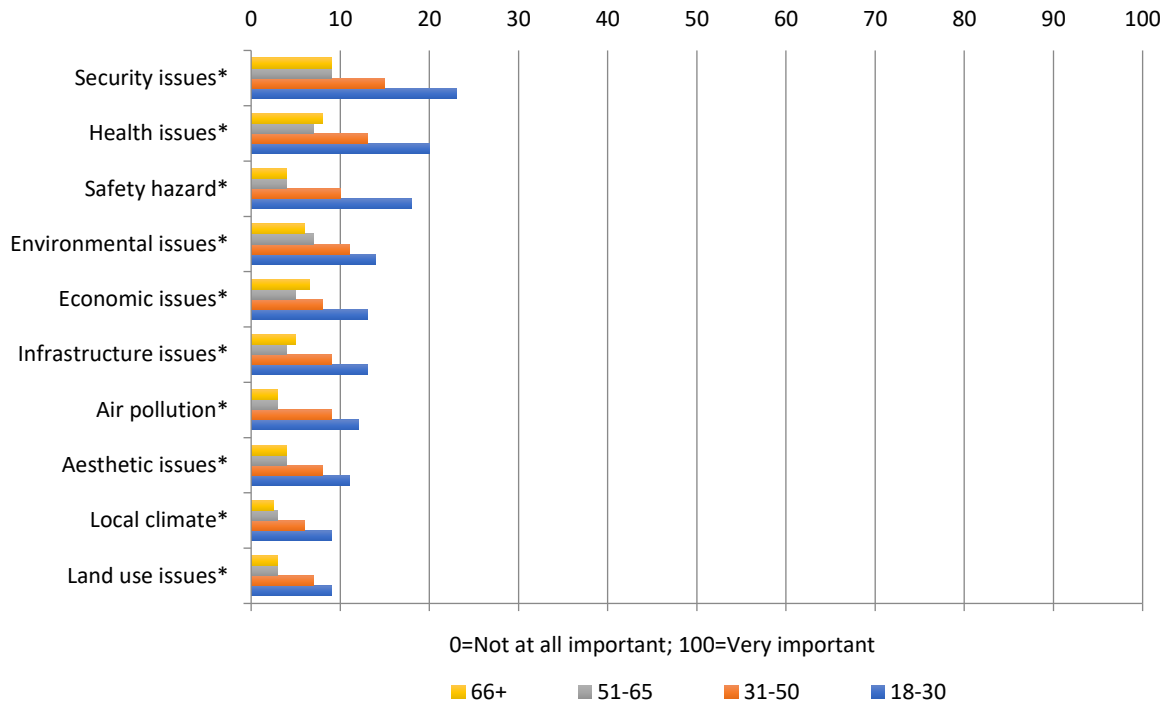

Figure 25: Importance of EDS by age group of a forest in or nearby a city in Europe. The * denotes significant differences (Kruskal-Wallis test, $p<0.05$). Responses to the questions: How important are the following disbenefits of this forest to you? In relation to a specific forest in or nearby a city.

3.1.12.4 Importance of ES and EDS by levels of education

When comparing the differences of ES importance according to the highest level of education by respondents, we found that particularly natural hazard protection and hunting game were perceived as relatively important by respondents with no formal qualification compared to respondents with formal school qualification.

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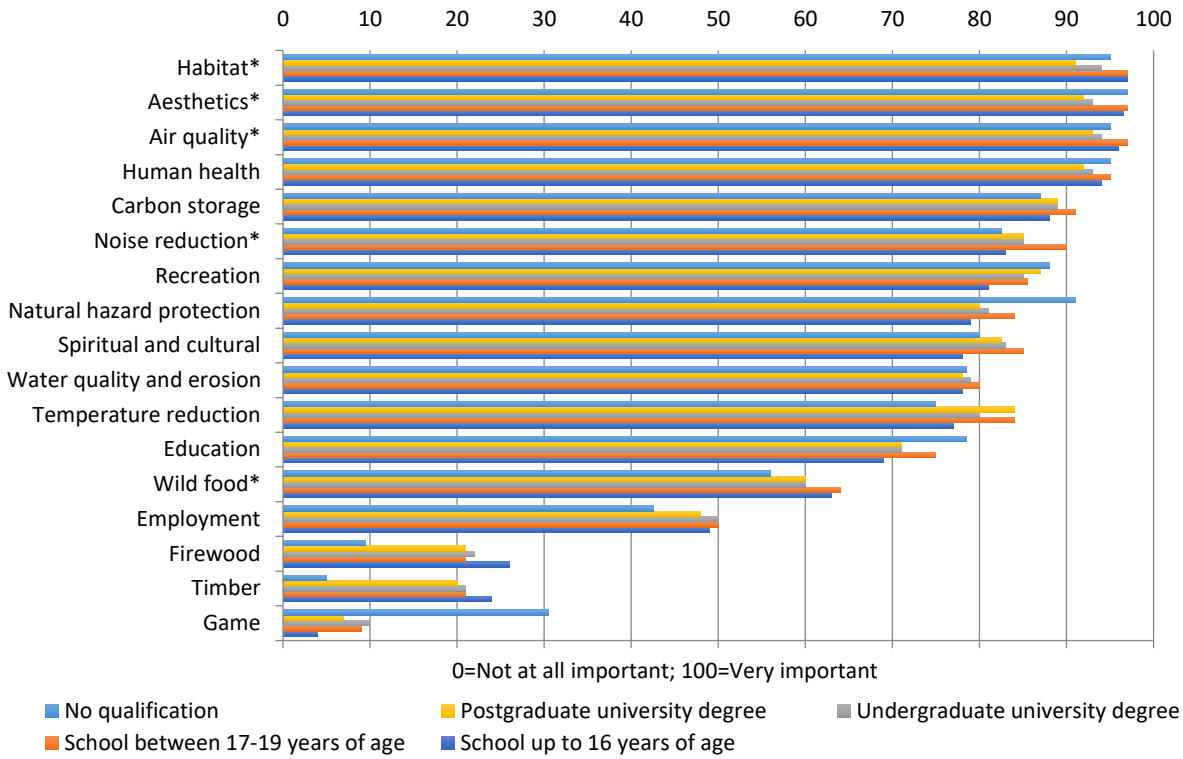

Figure 26: Importance of ES by highest education of a forest in or nearby a city in Europe. The * denotes significant differences (Kruskal-Wallis test, $p<0.05$). Responses to the questions: How important are the following benefits of this forest to you? In relation to a specific forest in or nearby a city.

When examining the different views of EDS by respondents with different degrees of education, a variety of perspectives were expressed, but what stood out was that safety hazard (forests posing a threat to homes and properties (e.g., forest fires, storms)), air pollution from blocking wind, and a negative impact on the local climate were perceived as relatively important by respondents with no qualification compared to the other groups.

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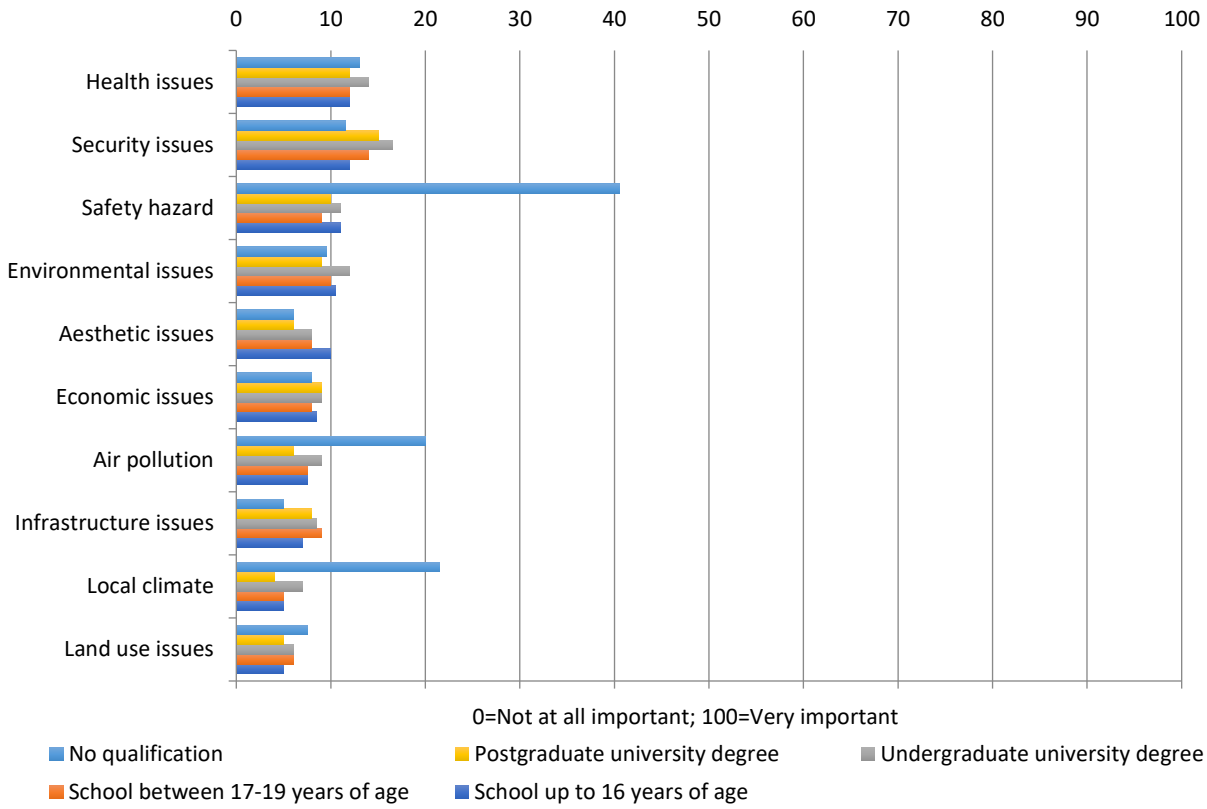

Figure 27: Importance of EDS by highest education of a forest in or nearby a city in Europe. The * denotes significant differences (Kruskal-Wallis test, p<0.05). Responses to the questions: How important are the following disbenefits of this forest to you? In relation to a specific forest in or nearby a city.

3.1.13 Perceptions of a park

3.1.13.1 Importance of ES and EDS in different countries

As with the other woodland types, the provisioning ES in parks are not surprisingly perceived as only slightly important or not at all important. Here, the country-level differences for provisioning ecosystem services in Europe for a frequently visited park are shown in Table 20. As we have, we report the countries where an ES was perceived as most important and where it was least important. For example, the map clearly shows that timber production was perceived comparatively important in Turkey ($\tilde{x}$=30.5) while it was perceived as not important in Romania, Estonia, and Slovakia ($\tilde{x}$=1). The collection of firewood was relatively important still in Spain ($\tilde{x}$=32), but not important in the East of Europe like in Estonia, Romania, Serbia or in Slovakia ($\tilde{x}$=1). The collection of wild food in a frequently visited park was considered moderately important in Turkey ($\tilde{x}$=58), Sweden, and Hungary but not important in Estonia ($\tilde{x}$=5.5). When it came to hunting game, then this was not perceived as important anywhere in Europe in parks.

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Table 20: Importance of provisioning ES of a park at country level in Europe. Responses to the questions: How important are the following benefits of this park to you? (N=3,675)

Country	Timber	Firewood	Wild food	Game
Albania	16,0	8,0	36,0	4,0
Austria	7,0	8,0	15,0	1,0
Belgium	9,0	11,5	37,0	1,0
Bosnia and Herzegovina	10,0	10,0	23,0	4,0
Bulgaria	5,0	2,0	13,0	2,0
Croatia	3,0	5,0	30,0	2,0
Czech Republic	4,0	3,0	29,0	1,0
Denmark	7,0	4,0	25,0	1,0
Estonia	2,0	2,0	5,5	1,0
Finland	12,5	7,5	32,0	2,5
France	10,0	10,0	19,0	1,0
Germany	6,0	6,0	24,0	1,0
Greece	12,0	9,0	38,0	1,0
Hungary	20,0	9,5	50,0	2,0
Ireland	15,0	10,0	33,5	4,0
Italy	15,0	14,0	42,0	3,5
Latvia	4,0	4,0	21,5	1,0
Lithuania	5,0	4,0	23,5	1,0
Netherlands	17,0	12,5	48,0	2,0
Norway	6,0	5,0	15,0	1,0
Poland	13,0	9,0	49,0	2,0
Portugal	12,0	10,0	29,0	2,0
Romania	2,0	2,0	20,0	1,0
Russia	6,0	3,0	19,0	1,0
Serbia	2,0	2,0	18,0	1,0
Slovakia	1,0	1,0	20,0	1,0
Slovenia	11,0	7,0	29,0	1,0
Spain	16,5	32,0	47,0	1,0
Sweden	19,5	16,0	53,0	4,0
Switzerland	10,0	10,0	33,0	1,0
Turkey	30,5	11,0	58,0	4,5
UK	9,0	8,0	18,5	1,0
Ukraine	4,0	3,0	17,0	1,0

Following the provisioning ES, we look at the country-level differences for regulating ES in Europe. These are shown in Table 21. For example, that a frequently visited park improves air quality was perceived as very important in Albania (x̃=100), Turkey, Russia, along with other Eastern European countries. In contrast, air quality was perceived as least important in Scandinavia and particularly in Denmark (x̃=71). The pattern looks similar for the next ES: Carbon storage. For example, it has shown to be highly regarded in Romania (x̃=98.5) and Ukraine, but less so in Norway, Denmark, and Switzerland (x̃=64). Similarly, temperature reduction by frequently visited parks was considered very important in Serbia (x̃=94.5) and Russia. On the other hand, in comparison to all other countries, it was least important in the UK, Norway, and Denmark (x̃=48). That a frequently visited park served as habitat for animals and plants was considered very important, particularly in countries in the East of Europe. For example in Turkey (x̃=99) but comparatively less so in Scandinavia, like in Norway (x̃=71). The regulation of water quality and erosion was perceived as most important in Turkey (x̃=93.5) whereas it was least important in Denmark, Norway, and Estonia (x̃=41). A similar North-South divide exists for natural hazard protection, it was perceived as most important in Turkey (x̃=97), but less so in

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Denmark (x̃=53). Lastly, the regulation of noise reduction was very important in Turkey, Ukraine, and Russia (all x̃=95). In contrast, this ES was perceived by respondents as comparatively less important in the Netherlands, Switzerland and the UK (x̃=70).

Table 21: Importance of regulating ES of a park at country level in Europe. Responses to the questions: How important are the following benefits of this park to you? (N=3,675)

Country	Air quality	Carbon storage	Temperature reduction	Habitat	Water quality and erosion	Natural hazard protection	Noise reduction
Albania	100,0	96,0	70,5	89,0	87,0	83,0	90,0
Austria	86,5	82,0	76,0	86,5	55,5	58,5	79,5
Belgium	90,0	88,0	81,0	89,0	74,5	71,0	82,0
Bosnia and Herzegovina	96,0	88,5	93,0	85,0	79,0	83,0	89,0
Bulgaria	98,0	94,5	84,0	79,5	57,0	67,0	92,0
Croatia	96,0	91,0	86,0	84,0	66,0	77,0	85,0
Czech Republic	93,5	81,0	79,0	93,0	68,5	62,5	81,0
Denmark	71,0	66,0	48,0	80,0	48,5	53,0	75,0
Estonia	81,0	74,5	69,0	79,0	41,0	55,0	82,0
Finland	74,0	70,0	67,0	83,0	55,0	57,0	76,0
France	80,5	76,0	70,5	82,0	65,5	67,5	73,5
Germany	90,0	84,0	72,0	93,0	65,0	65,0	83,0
Greece	91,0	90,0	89,0	88,0	69,5	83,5	85,0
Hungary	98,0	89,0	91,0	96,0	79,0	81,5	93,5
Ireland	89,0	84,0	71,5	89,0	70,0	78,0	82,0
Italy	91,0	88,0	82,0	87,0	66,0	75,0	79,0
Latvia	97,0	89,0	75,0	80,0	69,0	66,0	89,0
Lithuania	96,0	97,0	70,5	82,0	60,0	71,0	83,5
Netherlands	81,0	75,5	79,0	83,0	69,0	68,0	73,0
Norway	71,0	69,0	50,0	71,0	45,5	59,0	75,0
Poland	97,0	97,0	93,0	95,0	78,0	85,0	93,0
Portugal	97,0	90,0	85,5	87,0	77,0	81,5	87,0
Romania	99,0	98,5	93,0	93,0	74,0	93,0	92,5
Russia	99,0	96,0	94,0	96,0	82,0	71,5	95,0
Serbia	98,0	93,0	94,5	94,0	64,0	80,0	90,5
Slovakia	98,0	78,0	93,0	95,0	73,5	71,5	91,0
Slovenia	98,0	89,0	82,0	88,0	65,0	74,0	82,0
Spain	94,0	87,0	81,0	92,0	70,0	80,0	86,5
Sweden	80,0	78,5	63,0	78,0	57,0	59,0	79,0
Switzerland	87,0	64,0	70,0	82,0	57,0	60,0	72,0
Turkey	99,0	97,0	90,5	99,0	93,5	97,0	95,0
UK	84,0	76,0	57,0	89,0	54,0	67,0	70,0
Ukraine	99,0	98,0	90,0	96,0	75,0	77,0	95,0

Here, we report on the importance of cultural ES of a park at country level in Europe, as shown in Table 22. First, aesthetics – the beauty of parks – was considered particularly important in Turkey, Ukraine, Poland, Romania, Bulgaria, and Albania (all x̃=99). Still perceived as important, but least from all 33 countries, aesthetics was in Norway, France, and the UK (x̃=81.5). Spiritual and cultural values provided by a frequently visited park was perceived as most important in Albania (x̃=100) and least important in Sweden (x̃=62). The provision of opportunities for education (e.g. for forest kindergartens, schools) by parks was considered very important in Romania (x̃=93) and least important in the Baltic state of Latvia (x̃=50). That parks provide space for recreation was considered very important in Romania and Albania

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(both x̃=99) while it was perceived as least important in Denmark (x̃=71.5). On human health, some differences were observed between Eastern and Western Europe e.g., it was very important in Albania (x̃=100), followed by Romania, Russia, Serbia, and Ukraine (all x̃=99). Then again, it was least important in the Netherlands and Switzerland (both x̃=83). Lastly, the provision of employment opportunities was considered as important in Spain and Portugal (both x̃=65) while it was considered least important in Estonia, Slovakia, Norway (x̃=23).

Table 22: Importance of cultural ES of a park at country level in Europe. Responses to the questions: How important are the following benefits of this park to you? (N=3,675)

Country	Aesthetics	Spiritual and cultural	Education	Recreation	Human health	Employment
Albania	99,0	100,0	59,0	99,0	100,0	53,0
Austria	92,5	73,5	63,0	78,5	93,0	44,0
Belgium	84,0	70,0	74,0	79,5	89,0	52,0
Bosnia and Herzegovina	98,0	80,0	59,0	91,0	94,0	41,0
Bulgaria	99,0	91,0	68,0	98,0	98,0	48,0
Croatia	96,5	72,5	70,0	87,0	92,0	39,0
Czech Republic	97,5	89,0	53,0	89,0	92,5	36,0
Denmark	83,0	84,0	51,5	71,5	87,0	32,0
Estonia	93,0	81,5	60,5	89,0	90,5	24,0
Finland	84,5	74,0	60,0	89,0	85,0	41,0
France	82,0	75,0	68,5	79,0	85,0	53,0
Germany	94,0	76,0	58,0	81,0	91,0	46,0
Greece	95,0	89,0	75,0	87,0	95,0	58,0
Hungary	98,0	91,5	77,5	97,0	97,0	54,0
Ireland	91,0	85,0	77,0	86,0	92,0	56,0
Italy	86,0	85,0	68,0	80,0	89,0	63,0
Latvia	94,0	90,0	50,0	92,0	95,0	38,0
Lithuania	91,0	95,0	61,0	95,0	97,0	44,5
Netherlands	83,0	63,0	62,0	81,0	83,0	51,0
Norway	82,0	76,0	58,0	78,0	89,0	23,0
Poland	99,0	85,0	78,0	87,0	97,0	49,0
Portugal	92,0	81,0	80,0	84,0	96,0	65,0
Romania	99,0	90,0	93,0	99,0	99,0	51,0
Russia	98,0	97,0	56,0	98,0	99,0	43,5
Serbia	98,0	96,0	82,5	97,0	99,0	49,0
Slovakia	98,0	92,0	53,5	81,0	94,0	23,5
Slovenia	94,0	82,0	71,5	87,0	95,0	49,0
Spain	90,5	84,0	76,5	87,0	96,0	65,0
Sweden	85,0	62,0	63,0	80,0	90,0	49,0
Switzerland	85,0	77,0	70,0	76,0	83,0	45,5
Turkey	99,0	94,0	72,0	91,0	98,0	54,0
UK	81,5	75,0	69,5	75,5	92,5	52,0
Ukraine	99,0	98,0	63,0	89,0	99,0	47,0

For a frequently visited park, we report the results on the importance of EDS in Europe, as shown in Table 23. The EDS were viewed as not very important as indicated by scales for each map in the figure below. The map showing the results for air pollution from blocking wind indicate that it was perceived as slightly important in Sweden (x̃=29) and the UK. In the remainder of the continent, it was not considered as important. That a frequently visited park has a negative impact on the local climate was of slight important in the UK (x̃=30) but not considered important in the other 32 countries. Next was to see if that most frequently visited park poses a threat to homes and properties (e.g., forest fires,

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storms). This was somewhat of importance in Sweden (x̃=23), Ireland, and the UK, but not important everywhere else. Noteably, environmental issues (spread of invasive species) was perceived as slightly important in the UK. That a frequently visited park is a foregone landuse opportunity (land use issues) was perceived as slightly important only really in Sweden (x̃=22.5), but not important everywhere else. A frequently visited park causing damage to public infrastructure was considered as slightly important in Ireland (x̃=22), but not important at all in most other countries, e.g. Bulgaria (x̃=1). A park blocking views was considered as moderately important in Serbia (x̃=46), but not at all important in Hungary, Bulgaria, and Ukraine (x̃=1). In Sweden it was considered most important that a frequently visited park is unsafe (x̃=45.5), a source of health risks (x̃=32.5) and a cost to society (x̃=29). In contrast, these three EDS were not considered important in most other countries, notably Bulgaria where all three received the lowest rating (x̃=5, x̃=5, and x̃=2 respectively).

Table 23: Importance of EDS of a park at country level in Europe. Responses to the questions: How important are the following benefits of this park to you? (N=3,675)

Country	Air pollution	Local climate	Safety hazard	Environmental issues	Landuse issues	Infrastructure issues	Aesthetic issues	Security issues	Health issues	Economic issues
Albania	2,0	2,0	5,0	4,0	7,0	3,0	14,0	7,0	9,0	7,0
Austria	4,0	3,0	3,0	7,0	7,0	5,5	10,5	14,0	6,5	10,0
Belgium	12,0	7,0	10,0	14,0	4,0	10,0	7,0	25,0	9,0	11,0
Bosnia and Herzegovina	8,0	4,0	5,0	5,0	4,0	6,0	6,0	11,0	10,0	6,5
Bulgaria	1,0	1,0	1,0	1,0	1,0	1,0	2,0	5,0	5,0	2,0
Croatia	6,0	4,0	6,5	10,0	2,0	7,0	5,0	15,0	15,0	8,0
Czech Republic	3,0	1,5	4,0	4,5	3,0	3,0	3,0	13,0	7,0	7,0
Denmark	11,0	6,0	8,0	9,0	5,0	7,0	7,0	17,0	11,0	17,0
Estonia	12,0	3,0	5,0	4,5	3,0	3,0	5,0	11,0	10,0	10,5
Finland	15,0	5,0	4,5	10,0	5,0	5,0	8,0	16,0	5,0	8,0
France	4,0	2,0	5,0	5,0	2,0	5,5	5,0	18,0	10,0	13,0
Germany	7,0	9,0	5,0	6,5	8,5	8,0	10,0	22,0	5,0	11,0
Greece	8,0	3,0	9,0	8,0	4,5	8,0	6,0	23,0	13,5	9,0
Hungary	5,0	3,0	6,5	7,0	3,0	5,0	2,0	18,0	13,0	9,0
Ireland	15,5	20,0	20,0	22,0	12,0	22,0	18,5	39,0	21,0	19,0
Italy	10,0	7,0	13,0	13,5	15,0	17,0	12,0	23,0	16,0	18,0
Latvia	10,0	6,0	6,0	8,0	3,0	6,0	7,0	20,0	10,0	9,0
Lithuania	17,0	12,0	11,0	16,5	5,0	17,0	5,5	25,0	18,0	16,0
Netherlands	14,0	10,5	14,0	22,5	8,0	10,5	9,0	40,0	22,0	17,0
Norway	5,0	3,0	5,0	7,0	1,0	6,0	3,0	8,0	9,0	8,0
Poland	3,0	2,0	7,0	10,0	3,0	10,0	4,0	9,0	10,0	7,0
Portugal	3,0	3,0	11,0	7,0	1,0	4,0	11,0	20,0	10,0	9,0
Romania	1,0	1,0	3,0	3,0	2,0	3,0	4,0	7,0	10,0	10,0
Russia	5,0	3,5	5,0	6,5	5,0	7,0	3,0	19,0	17,0	9,0
Serbia	3,0	3,0	4,0	4,0	3,0	4,5	46,0	19,0	9,0	4,0
Slovakia	1,0	2,0	2,5	4,0	2,0	4,0	5,0	10,0	5,5	3,0
Slovenia	4,0	4,0	13,0	16,0	5,0	8,0	5,0	11,0	17,0	10,0
Spain	17,0	11,0	14,0	15,0	8,0	17,0	29,0	21,0	21,0	20,0
Sweden	29,0	18,5	23,0	22,0	22,5	17,0	25,0	45,5	32,5	29,0
Switzerland	8,0	4,0	7,0	9,0	6,0	5,5	11,0	19,5	11,5	14,0
Turkey	9,0	4,0	12,0	12,5	4,0	5,0	4,5	22,0	17,0	5,5
UK	25,5	30,0	19,0	27,5	14,5	16,5	21,0	40,5	22,0	25,0
Ukraine	2,0	1,0	2,0	3,0	2,0	3,0	1,0	10,0	9,0	4,0

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3.1.13.2 Importance of ES and EDS by gender

The results in response to the question "How important are the following benefits of this park to you?", Figure 28 shows that for all ES – excluding hunting game – women perceived them as significantly ($p < 0,05$) more important compared to men. Hunting game was the only ES that male respondents perceived as more important than female respondents although statistically not significant.

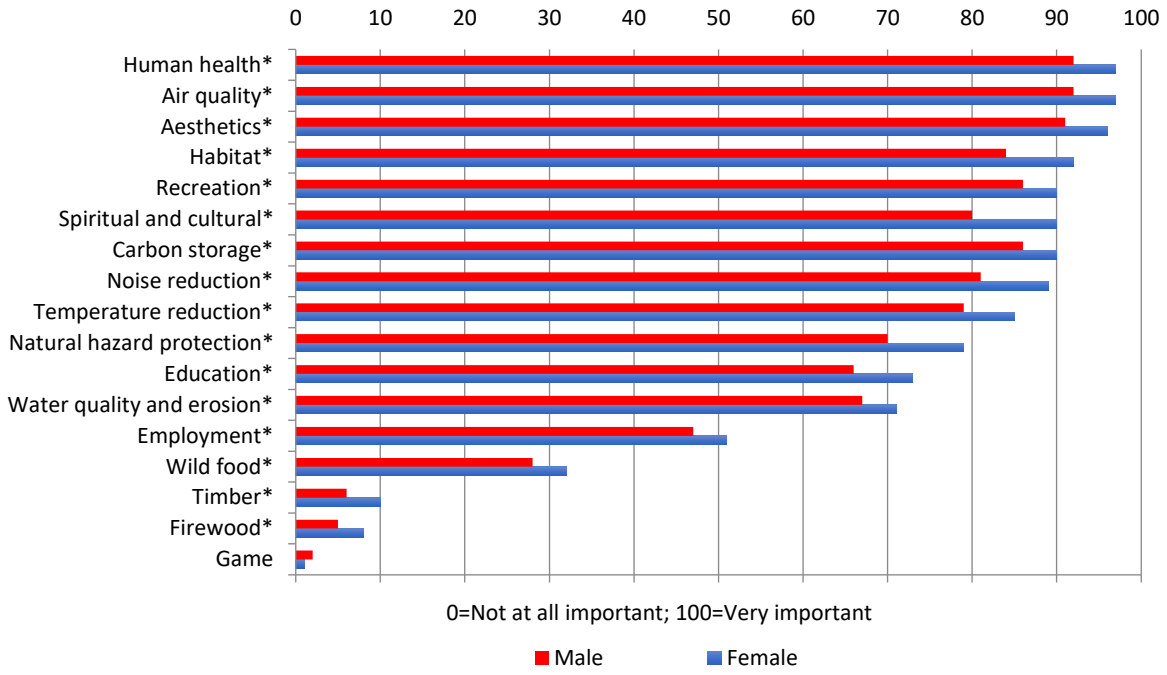

Figure 28: Importance of ES by gender of a park in Europe. The * denotes significant differences (Mann-Whitney U test, $p<0.05$). Responses to the questions: How important are the following benefits of this park to you? In relation to a specific park.

As we determined the differences between gender for EDS for a park as shown in Figure 29, we found that women perceived 8 out of 10 EDS as significantly more important than men. The two exceptions were aesthetic issues (parks obscuring views) and land use issues (parks a foregone land use opportunity). Particularly important for female respondents were security issues – parks being unsafe (e.g., uncontrolled pet dogs, risk of crime, falling branches) which was considered to be slightly important ($\tilde{x}>20$).

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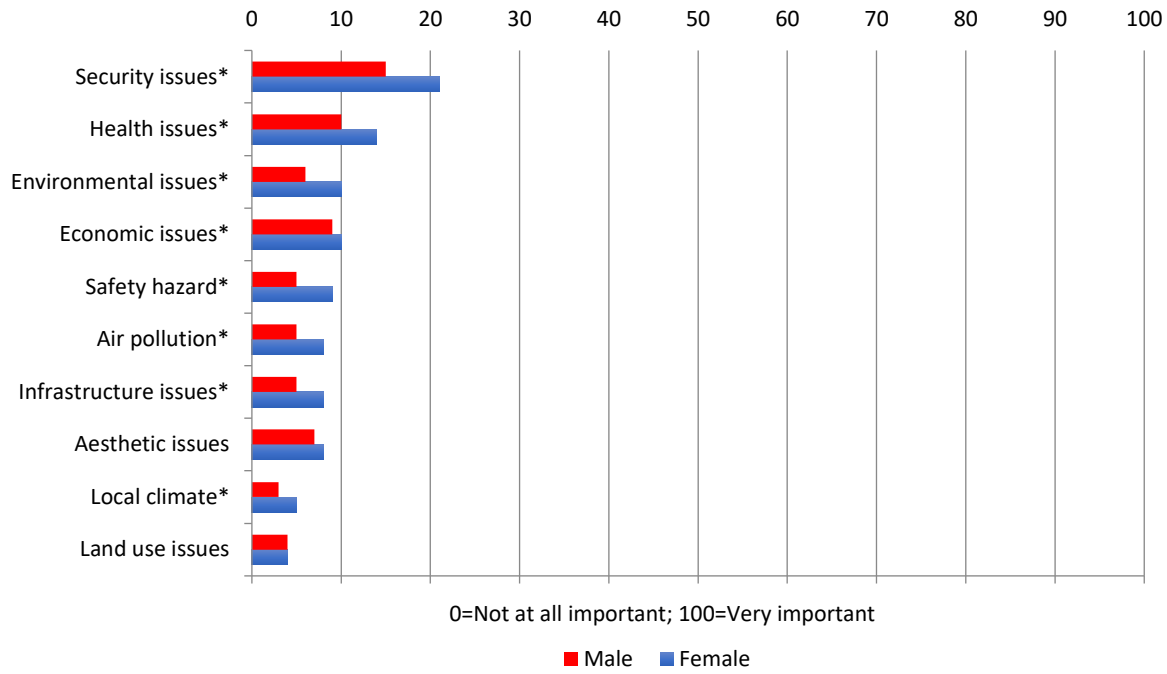

Figure 29: Importance of EDS by gender of a park in Europe. The * denotes significant differences (Mann-Whitney U test, $p<0.05$). Responses to the questions: How important are the following disbenefits of this park to you? In relation to a specific park.

3.1.13.3 Importance of ES and EDS by age groups

As shown Figure 30, the results of the Kruskal-Wallis test indicate that there were significant differences between the four age groups for all ES except air quality, recreation, water quality and erosion, and employment. The strongest differences in perceived importance were found in younger respondents (18-30) who viewed all regulating and cultural ES as less important compared to older age groups. The only exception here was on employment where the perceived importance appears to be tied between age groups 51-65, 31-50 and 18-30. Younger respondents perceived wild food, timber, and firewood statistically significantly more important compared to the other three age groups.

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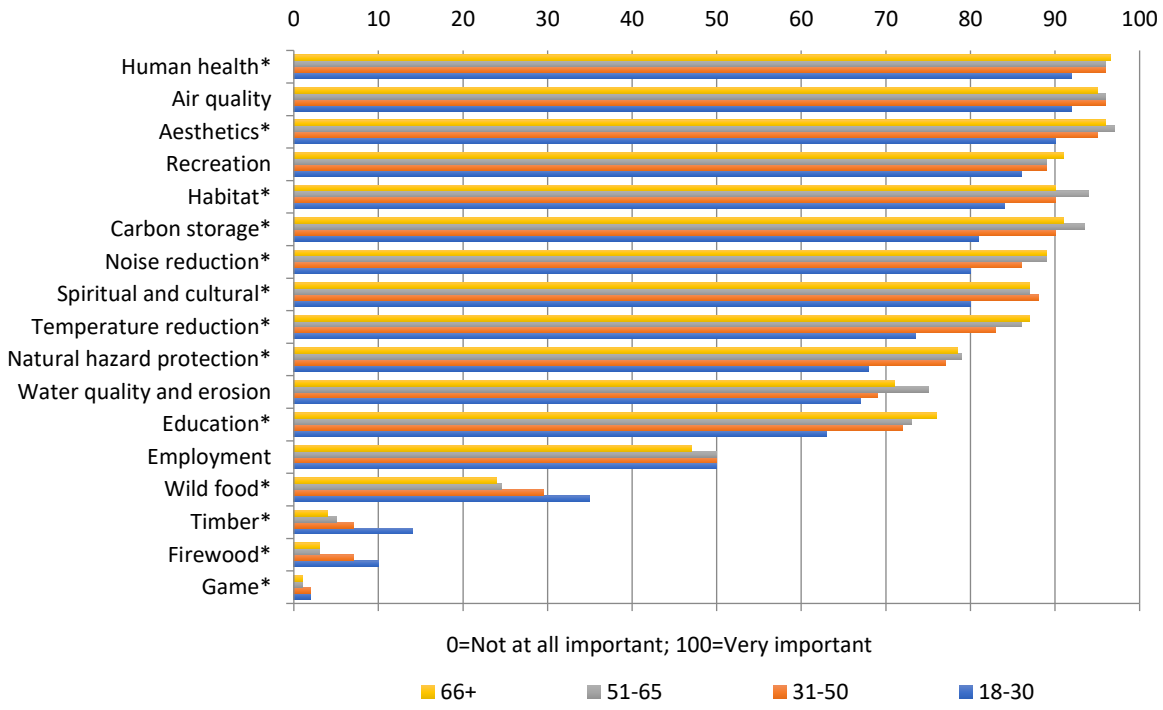

Figure 30: Importance of ES by age group of a park in Europe. The * denotes significant differences (Kruskal-Wallis test, p<0.05). Responses to the questions: How important are the following benefits of this park to you? In relation to a specific park.

When comparing the perceived importance of EDS by age group of a park in Europe, we found statistically significant differences for all EDS. Here, we can report that the differences occurred between younger respondents – 18-30 years of age – compared to the older age groups of 31-50, 51-65, 66+.

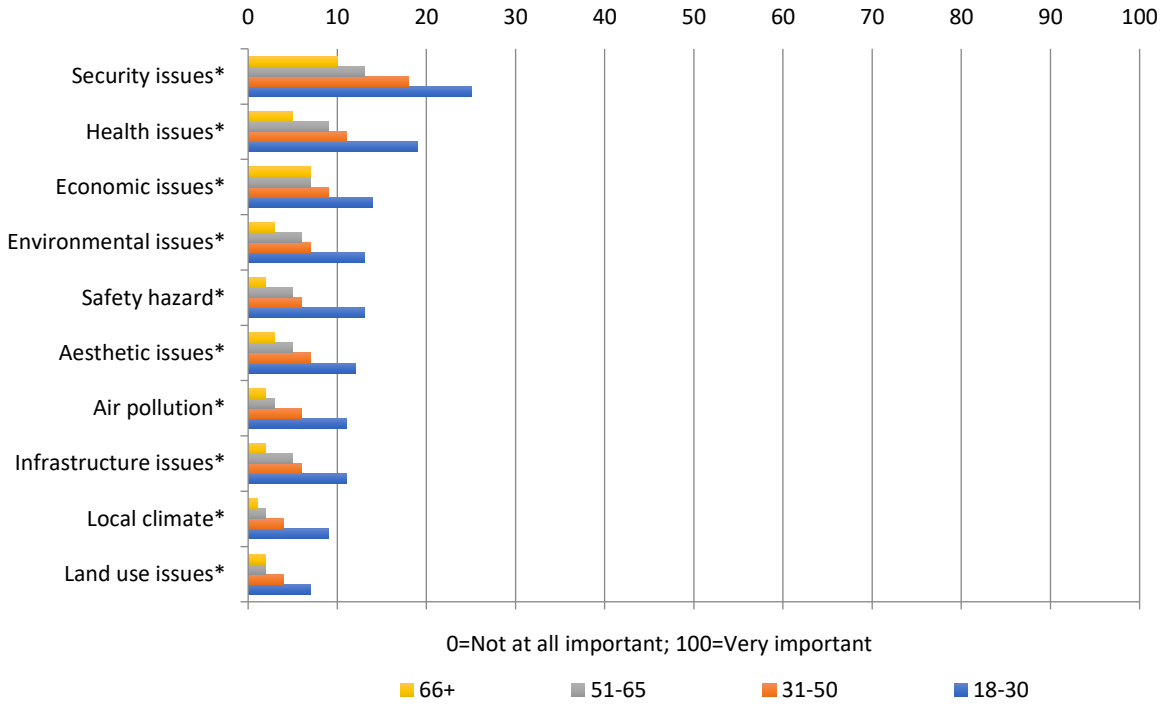

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Figure 31: Importance of EDS by age group of a park in Europe. The * denotes significant differences (Kruskal-Wallis test, p<0.05). Responses to the questions: How important are the following disbenefits of this park to you? In relation to a specific park.

3.1.13.4 Importance of ES and EDS by levels of education

For parks, we also compared the differences of ES importance according to the highest level of education by respondents. Here, we found a statistically significant differences in responses between different levels of education for carbon storage, recreation, spiritual and cultural value, temperature reduction, wild food, timber, firewood and hunting game (Figure 32). Respondents without a formal qualification perceived timer production and firewood as particularly important compared to the other respondents with formal education. Interestingly, they also perceived temperature reduction and natural hazard protection as much less important compared to the other respondents, although, not to a significant level in the case of natural hazard protection.

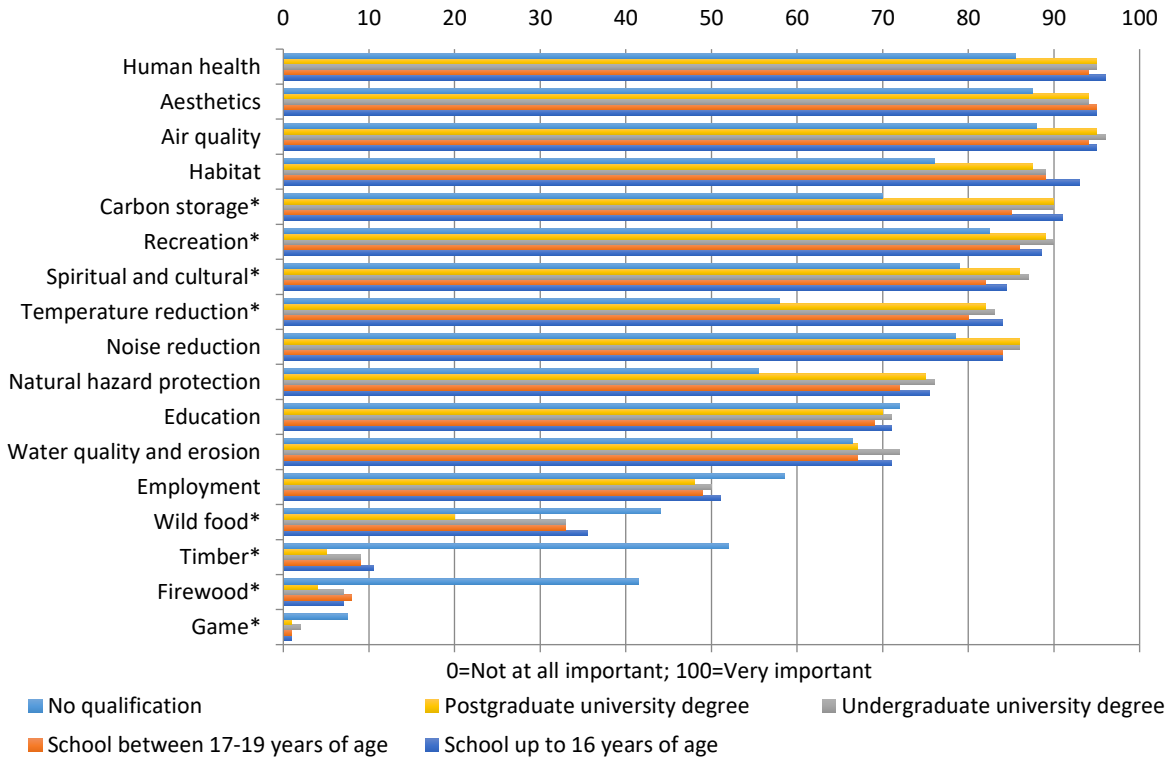

Figure 32: Importance of ES by highest education of a park in Europe. The * denotes significant differences (Kruskal-Wallis test, p<0.05). Responses to the questions: How important are the following benefits of this park to you? In relation to a specific park.

Overall, the analysis revealed that all the EDS are perceived to be slightly important ($\tilde{x}$<30), as shown in Figure 33. There were statistical differences between respondents' highest level of education for 9 out of 10 EDS. Notably, respondents without formal qualification perceived economic issues - parks being a cost to society (e.g. costs for planting, maintaining, removal); health issues - parks being a source of health risks (e.g., wildlife/insect bites, allergies); environmental issues – parks contributing to e.g., spread of invasive species; land use issues – parks being a foregone land use opportunity (e.g., less land for industry, housing and businesses; and safety hazard – parks posing a threat to homes and properties (e.g., forest fires, storms) as particularly important compared to respondents groups with formal education qualification.

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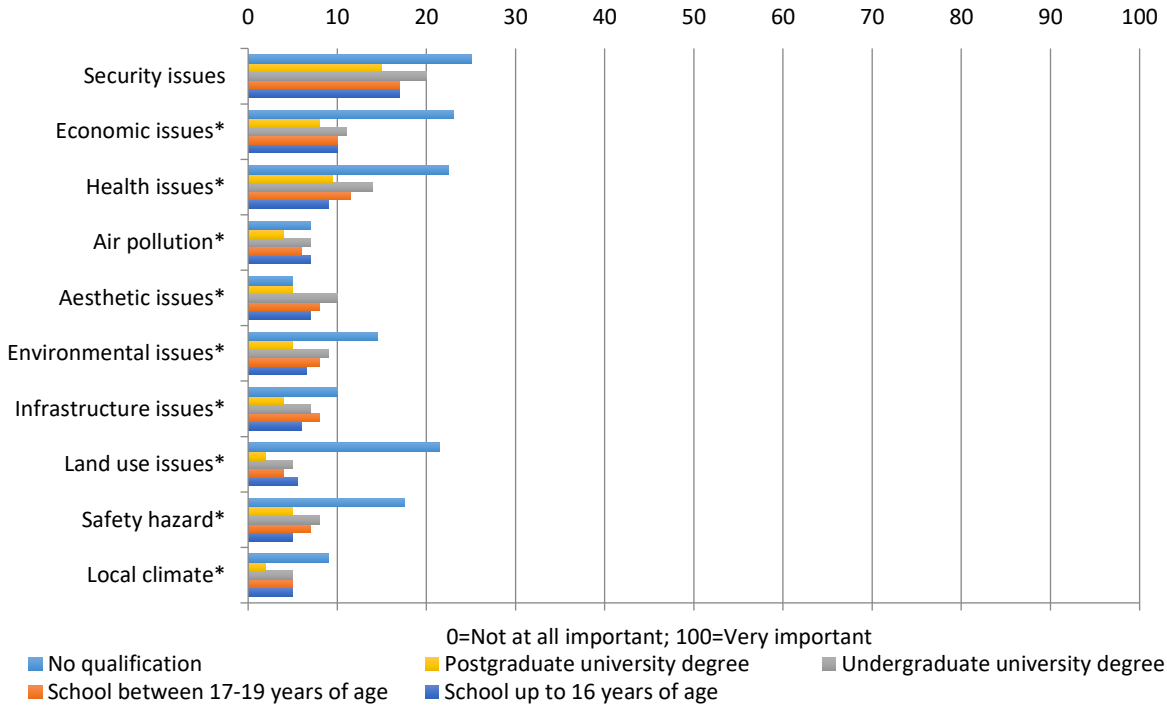

Figure 33: Importance of EDS by highest education of a park in Europe. The * denotes significant differences (Kruskal-Wallis test, p<0.05). Responses to the questions: How important are the following disbenefits of this park to you? In relation to a specific park.

3.1.14 Detailed perceptions of forests by non-visitors

This section of the report covers the responses by people who indicated that that they do not go to a forest or park. These respondents nevertheless answered the following questions: a) How important are the following benefits of forests to you?, b) How important are the following disbenefits of forests to you? We report the top three most and least important ES in each country.

3.1.14.1 Importance of ES and EDS in different countries

Table 24 shows the different preferences for provisioning ecosystem services in 33 countries in Europe. Timber production was seen as particularly important in Slovenia, Germany and Latvia compared to Ukraine, Romania and Slovakia where is was least important. Regarding firewood, it was most important in Latvia, Finland, and Estonia and it was least important in Ukraine, the Netherlands, and Turkey. Respondents in Albania, Bulgaria, and Turkey viewed wild fruit (berries, nuts, mushrooms) as most important, and it was considered least important in the UK, the Netherlands, and Romania. Hunting game was the most important ES in Latvia, Finland, and Bulgaria. On the other hand, it was least important in Romania, the Netherlands, and Greece.

Table 24: Importance of provisioning ES of forests at country level in Europe. Responses to the questions: How important are the following benefits of this forest to you? (N=1,058)

Country	Timber	Firewood	Wild food	Game
Albania	67,5	51,0	97,0	34,5
Austria	64,5	52,0	66,0	31,5
Belgium	66,0	46,0	68,0	10,0
Bosnia and Herzegovina	56,0	62,0	80,5	40,5
Bulgaria	73,0	53,0	90,0	45,5
Croatia	60,0	64,5	73,0	25,0

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Czech Republic	71,0	45,0	68,0	32,0
Denmark	56,0	52,0	65,0	19,5
Estonia	70,5	73,0	76,5	32,0
Finland	76,0	76,0	75,0	59,0
France	62,0	60,0	69,0	30,0
Germany	79,0	69,0	83,0	45,0
Greece	62,0	51,0	80,0	7,0
Hungary	60,0	50,0	72,5	23,5
Ireland	73,5	65,0	70,0	16,0
Italy	62,5	51,5	78,0	23,0
Latvia	83,5	79,0	85,0	60,0
Lithuania	56,0	59,5	88,0	34,5
Netherlands	56,0	22,0	54,0	5,0
Norway	75,0	71,0	62,0	25,0
Poland	55,5	52,0	80,0	13,5
Portugal	70,5	70,0	76,5	17,5
Romania	50,0	49,0	54,0	4,0
Russia	72,0	48,5	64,0	17,5
Serbia	55,0	64,0	84,0	32,0
Slovakia	50,0	51,0	80,5	29,0
Slovenia	76,0	68,5	80,5	38,0
Spain	61,0	63,0	78,0	17,5
Sweden	63,0	51,0	73,0	41,0
Switzerland	53,5	51,0	84,0	43,0
Turkey	75,0	16,5	91,5	12,5
UK	55,0	43,0	62,0	9,5
Ukraine	48,0	29,0	70,0	27,0

When looking at the country-level differences for regulating ES in Table 25, we found that the ES function of improvement of air quality received a full score (x̃=100) in Albania, Bosnia and Herzegovina, Czech Republic, Slovakia, and Slovenia. The respondents in Albania, Slovakia, and Slovenia rated carbon storage and a reduction of climate change as most important, compared to respondents in the UK, Belgium, and Romania. While it was least important in Latvia, the UK, and Norway, another ES linked to climatic changes - temperature reduction - was perceived as most important in Turkey, Germany, and Ukraine. That forests are providing a living space for plants and animal species (habitat) was considered most important in Albania, Slovakia, and Slovenia. In contrast, it was least important in the UK, Belgium, and Portugal. Water quality and erosion protection was viewed as most important in Albania, Slovakia, and Slovenia. It was least important in the UK, Finland, and Poland. That forests lessen the negative impact of natural hazards was perceived as extremely important in Slovenia, Hungary, Albania, in contrast, this was considered least important in Croatia, the UK, and Poland. The reduction of noise was considered most important in Turkey, Germany, and Russia whereas it was of least importance in the UK, Portugal, and France.

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Table 25: Importance of regulating ES of forests at country level in Europe. Responses to the questions: How important are the following benefits of this forest to you? (N=1,058)

Country	Air quality	Carbon storage	Temperature reduction	Habitat	Water quality and Erosion	Natural hazard protection	Noise reduction
Albania	100,0	100,0	86,0	100,0	100,0	96,5	79,5
Austria	93,0	89,0	81,0	86,0	77,0	81,0	80,5
Belgium	89,0	81,0	77,0	83,0	80,0	78,0	76,5
Bosnia and Herzegovina	100,0	97,0	83,0	98,0	97,0	95,0	91,0
Bulgaria	98,0	95,0	90,0	96,0	96,0	92,0	95,0
Croatia	94,0	84,0	73,0	94,0	81,0	64,0	75,0
Czech Republic	100,0	83,0	84,0	98,0	91,0	89,0	82,0
Denmark	83,5	89,5	79,5	88,0	78,0	81,5	74,5
Estonia	90,0	83,0	74,5	89,0	75,5	77,5	87,5
Finland	85,5	83,0	74,5	85,0	75,0	75,0	83,0
France	87,0	82,5	74,0	85,0	80,0	78,5	72,0
Germany	98,0	97,0	94,0	99,0	93,0	92,0	95,0
Greece	90,0	94,0	85,0	96,0	91,0	93,0	87,0
Hungary	98,5	98,0	93,0	98,0	90,0	96,5	91,0
Ireland	90,0	91,0	75,0	92,0	84,0	82,0	79,5
Italy	95,0	95,0	86,0	93,0	89,0	92,0	83,0
Latvia	94,5	89,5	53,5	87,5	84,5	82,0	82,5
Lithuania	98,5	92,0	80,0	95,0	76,5	87,0	92,0
Netherlands	97,0	83,0	79,5	88,0	81,0	78,0	75,0
Norway	91,0	89,0	66,0	95,0	84,0	76,5	77,0
Poland	98,0	98,5	86,5	97,5	72,5	73,0	83,0
Portugal	88,5	87,5	77,0	74,0	87,0	82,5	69,5
Romania	87,0	82,0	80,0	85,0	79,0	87,0	89,0
Russia	99,0	93,0	92,0	99,0	98,5	93,0	96,0
Serbia	98,0	92,0	84,0	98,0	98,0	87,0	91,0
Slovakia	100,0	99,0	89,5	99,0	99,0	91,0	87,5
Slovenia	100,0	100,0	90,0	97,0	99,5	99,5	88,5
Spain	95,0	91,0	82,5	93,0	83,0	85,0	80,0
Sweden	95,0	88,0	71,0	95,0	78,0	80,0	76,0
Switzerland	93,0	90,5	81,0	95,0	93,0	88,0	76,0
Turkey	99,0	91,0	95,0	92,0	96,0	93,0	100,0
UK	83,5	80,0	64,0	83,0	72,5	71,0	68,0
Ukraine	97,0	96,0	94,0	97,0	94,0	96,0	87,0

When it comes to cultural ES, then we can report that aesthetics was considered the most important ES in Czech Republic, Turkey, and Russia, while it was least important in Belgium, Portugal, and France. That forests provide cultural, emotional and spiritual value was perceived as most important in Albania, Greece, and Bosnia and Herzegovina. The respondents in Belgium, Romania, and Sweden who do not go to the forest considered the spiritual value of forests as least important. The ES of education was considered most important in Turkey, Germany, and Slovenia on the one hand, on the other hand, it was considered least important in Czech Republic, Sweden, and Latvia. Forests as a place for recreation and sports were considered most important by respondents in Serbia, Turkey, and Bosnia and Herzegovina while at the same time, this was least important in Portugal, Sweden, and the

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Netherlands. Furthermore, human health was perceived as most important ES in Albania, Serbia, and Slovenia. In contrast, respondents that do not go to a forest considered it least important in Austria, Denmark, and Portugal. Lastly, employment was perceived as most important by respondents in Finland, Slovenia and Hungary compared to respondents in the Netherlands, Romania, Ukraine and Bulgaria, who perceived it as least important.

Table 26: Importance of cultural ES of forests at country level in Europe. Responses to the questions: How important are the following benefits of this forest to you? (N=1,058)

Country	Aesthetics	Spiritual and cultural	Education	Recreation	Human health	Employment
Albania	97,5	94,0	72,5	82,0	100,0	76,5
Austria	80,5	53,0	56,5	58,5	67,5	50,5
Belgium	71,0	50,0	62,0	66,0	77,0	65,0
Bosnia and Herzegovina	98,0	90,0	75,5	83,0	90,0	64,0
Bulgaria	98,0	74,0	75,0	81,0	96,0	50,0
Croatia	76,0	50,0	56,0	69,0	83,5	55,0
Czech Republic	99,0	72,0	52,0	79,0	86,0	51,0
Denmark	81,5	61,0	67,0	55,5	67,0	65,0
Estonia	85,0	70,0	55,5	65,0	83,0	58,5
Finland	82,0	72,5	56,0	78,0	80,0	80,5
France	72,0	60,5	66,0	61,5	74,0	66,5
Germany	98,0	69,0	83,0	69,0	87,0	70,0
Greece	98,0	90,0	78,0	68,5	92,0	68,0
Hungary	96,0	75,5	75,0	71,5	87,5	78,5
Ireland	88,0	75,0	68,0	62,0	80,0	70,0
Italy	90,5	74,5	70,0	72,5	92,0	73,0
Latvia	87,5	65,0	43,5	62,0	74,5	71,0
Lithuania	88,0	82,5	56,0	76,0	89,0	64,0
Netherlands	83,0	50,0	56,0	52,0	77,0	50,0
Norway	76,0	66,0	70,0	56,0	79,0	68,0
Poland	94,5	76,5	71,5	73,0	94,5	69,5
Portugal	71,0	54,0	59,5	50,0	51,5	64,0
Romania	84,0	48,0	64,0	77,0	75,0	45,0
Russia	98,5	83,5	58,5	73,5	93,0	62,0
Serbia	98,0	88,0	70,0	90,0	98,0	57,0
Slovakia	94,0	70,0	57,5	71,5	78,5	52,0
Slovenia	88,0	72,0	80,0	67,5	96,5	78,5
Spain	75,0	70,0	59,5	65,5	85,0	68,0
Sweden	81,5	46,0	53,0	52,0	74,0	57,0
Switzerland	83,5	78,5	71,5	73,0	84,5	72,0
Turkey	99,0	89,0	89,0	89,0	91,0	65,0
UK	75,0	60,0	61,0	54,0	75,0	60,0
Ukraine	98,0	88,0	67,0	79,0	95,0	49,0

Table 27 shows the country-level difference in responses to the question: How important are the following disbenefits of this forest to you? Across all EDS in all countries the highest value was a $\tilde{x}$ =56.50 (e.g., health issues in Slovenia) which on our scale constitutes a moderate importance.

Air pollution (from increased pollution levels from reduced air exchange) was moderately important and the perceived as the highest on our scale in Romania, Germany, and Czech Republic. It was least important in Denmark, Ireland, and Slovenia. That forests have a negative impact on the local climate was perceived as moderately important in Ireland, Croatia, and Slovenia, but it was least important in Ukraine, Romania, and Russia. Respondents that attributed it as moderately important that forests

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pose a threat to homes and properties (safety hazard) were from Portugal, Latvia, and Norway. In contrast, this was least important in Hungary, Turkey, and Romania. When looking at the EDS that forests are the cause of environmental issues (e.g., through the spread of invasive species), respondents in Lithuania, Denmark and Ireland perceived this as moderately important, whereas respondents from Germany, Czech Republic, and Romania perceived it as not important. From all countries, the respondents in Albania, Sweden, and Finland perceived it as moderately important that that forests are a foregone land use opportunity compared to respondents in Spain, Bosnia and Herzegovina, and Bulgaria. Damage from forests to public infrastructure were perceived as moderately important in Ireland, Denmark, and Norway and not important in Turkey, Germany, and Russia. That forests are obscuring views (aesthetic issues) was moderately important in Portugal, Denmark, and Albania and considered not important in Greece, Russia, and Bulgaria. In Slovenia, Latvia, and Portugal, respondents perceived it as moderately important that forests are unsafe because of uncontrolled pet dogs, risk of crime, and falling branches (Security issues). It was of low importance in Austria, Turkey, and Czech Republic. That forests could be a source of health risks was perceived as moderately important in Slovenia, Denmark, and Portugal, but not important in Czech Republic, Turkey and Romania.

Table 27: Importance of EDS of forests at country level in Europe. Responses to the questions: How important are the following disbenefits of this forest to you? (N=1,058)

Country	Air pollution	Local climate	Safety hazard	Environmental issues	Landuse issues	Infrastructure issues	Aesthetic issues	Security issues	Health issues	Economic issues
Albania	35,5	29,5	39,0	38,5	51,5	42,5	52,5	39,5	40,0	31,5
Austria	12,5	14,0	17,0	17,0	27,5	20,5	50,5	18,0	11,5	13,0
Belgium	22,0	18,0	27,0	27,0	18,0	20,0	39,0	29,0	25,0	25,0
Bosnia and Herzegovina	30,0	15,0	24,0	22,0	8,0	18,0	40,0	26,0	28,0	18,0
Bulgaria	5,0	6,0	13,0	10,0	5,0	20,0	5,0	26,0	8,0	11,0
Croatia	26,0	35,0	34,0	30,0	28,0	26,0	35,0	30,0	41,0	30,0
Czech Republic	1,0	10,0	12,0	4,0	15,0	15,0	11,0	6,0	7,0	10,0
Denmark	47,0	22,5	27,0	46,5	44,0	50,0	52,5	39,5	50,0	31,5
Estonia	21,5	19,5	33,0	21,5	25,0	40,0	49,0	23,0	22,5	19,0
Finland	34,0	30,0	22,0	27,0	50,0	40,0	50,0	30,0	26,0	32,0
France	34,0	25,0	38,5	36,5	32,0	34,0	42,5	35,0	37,0	28,0
Germany	3,0	5,0	13,0	4,0	33,0	7,0	40,0	23,0	10,0	6,0
Greece	14,0	14,0	19,0	11,0	11,0	15,0	9,0	20,0	13,0	7,0
Hungary	11,0	11,5	11,5	15,0	11,0	15,0	28,5	23,0	15,0	13,0
Ireland	42,0	36,0	39,0	45,0	48,0	50,0	41,0	47,0	34,0	28,0
Italy	21,0	21,0	32,0	30,0	48,0	37,0	30,0	36,0	27,0	24,0
Latvia	5,5	15,0	46,0	28,5	12,5	21,0	48,0	53,0	30,5	48,0
Lithuania	24,5	23,5	34,5	47,5	27,5	43,5	35,0	25,5	43,0	33,0
Netherlands	10,0	11,0	17,0	20,0	17,0	19,0	15,0	21,0	10,0	12,0
Norway	23,0	32,0	43,0	35,0	28,0	45,0	46,0	25,0	34,0	30,0
Poland	8,0	20,0	33,5	37,5	46,5	39,0	35,5	30,0	40,5	30,5
Portugal	35,0	27,0	56,5	43,0	15,0	28,0	55,5	49,5	48,5	35,0
Romania	4,0	4,0	3,0	4,0	20,0	27,0	15,0	30,0	2,0	2,0
Russia	4,5	2,5	15,5	26,5	33,5	6,0	7,5	20,5	13,5	11,0
Serbia	29,0	20,0	40,0	41,0	31,0	44,0	52,0	35,0	34,0	21,0
Slovakia	16,0	17,5	20,0	34,0	31,5	15,0	48,5	29,5	18,0	15,0

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Slovenia	41,0	32,5	27,5	30,5	29,5	29,5	38,0	53,5	56,5	27,0
Spain	15,0	9,0	20,0	19,0	10,0	20,0	40,0	21,0	25,0	19,0
Sweden	28,0	28,0	30,0	27,0	51,0	35,0	50,0	43,0	33,0	29,0
Switzerland	18,0	17,5	29,0	23,0	24,0	20,5	43,5	39,0	24,5	24,5
Turkey	7,0	7,0	6,0	7,0	12,0	8,0	12,0	9,0	3,0	5,0
UK	31,0	30,5	37,5	36,0	40,0	37,0	39,5	34,5	35,0	32,5
Ukraine	15,0	4,0	28,0	45,0	14,0	44,0	12,0	27,0	43,0	21,0

Lastly, respondents perceived that forests are a cost to society (economic issues) as moderately important in Latvia, Portugal, and Lithuania but not as important in Germany, Turkey, and Romania.

3.1.14.2 Importance of ES and EDS gender

To compare the difference in importance of ES and EDS between female and male respondents, we used Mann-Whitney U test with $p<0.05$, showing the results in Figure 34 and Figure 35. Figure 34 shows that female respondents perceived most ES as significantly more important than male respondents. The exceptions are water quality and erosion and firewood. Male respondents valued hunting game, timber, and employment as more important than female respondents, however, the only statistically significant difference occurred in hunting game.

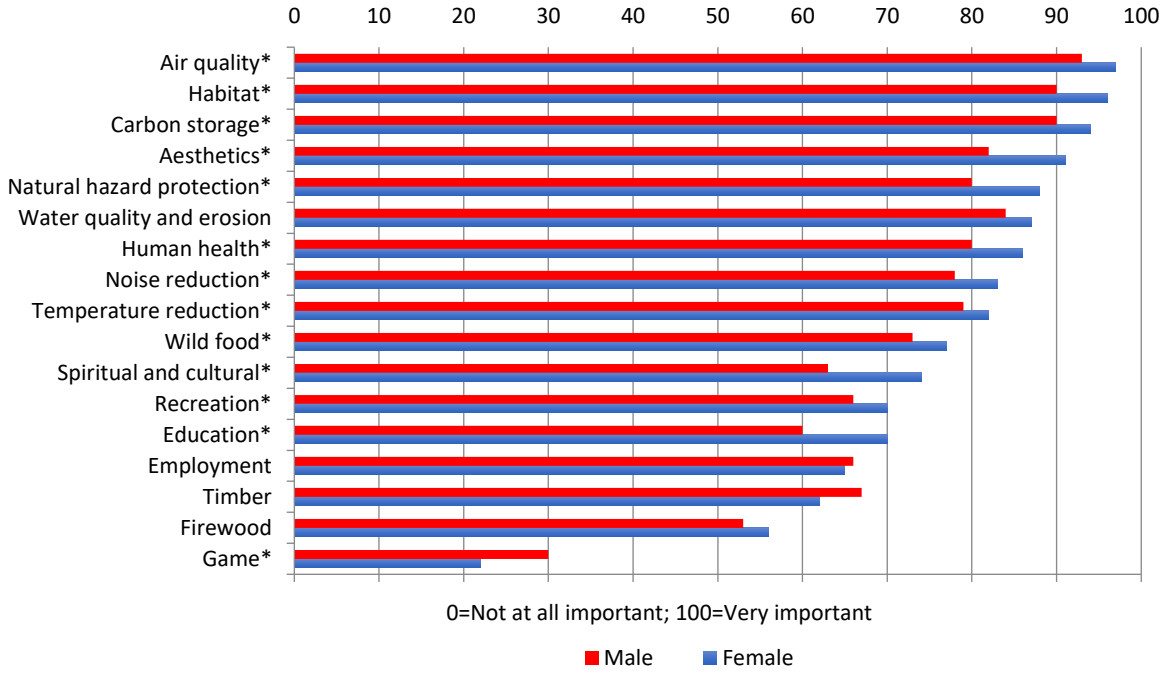

Figure 34: Importance of ES by gender of forests in Europe. The * denotes significant differences (Mann-Whitney U test, $p<0.05$). Responses to the questions: How important are the following benefits of forests to you?

Figure 35 below shows the results for EDS by gender for forests in Europe. There are some differences between the genders with female respondents valuing most EDS as more important than male respondents. The only exception is land use issues (Indirect costs caused by land use restrictions, especially if the forested or park area is protected) which male respondents value as more important. Both genders were tied over the importance of local climate issues – so that forests are having a negative impact on local climate.

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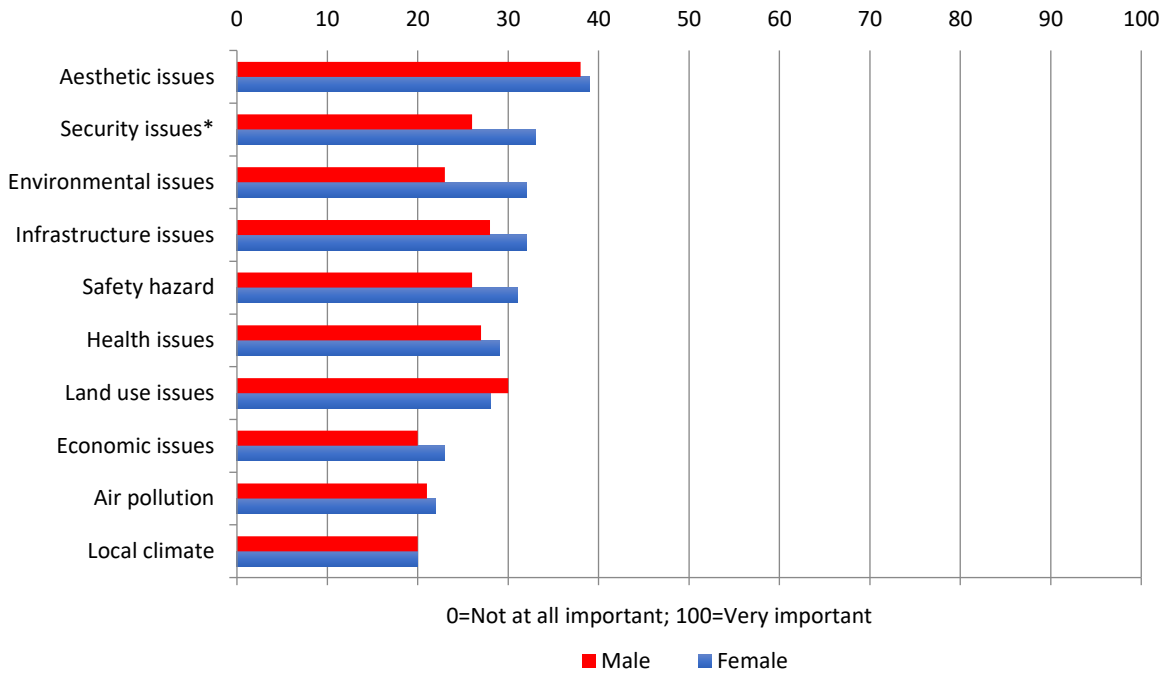

Figure 35: Importance of EDS by gender of forests in Europe. The * denotes significant differences (Mann-Whitney U test, p<0.05). Responses to the questions: How important are the following benefits of forests to you?

3.1.14.3 Importance of ES and EDS by age groups

As shown in Figure 36, some main characteristics in age groups are the statistically significant differences for the ES air quality, carbon storage, aesthetics, noise reduction, and hunting game. While air quality and hunting game are perceived as more important by younger age groups (18-30), the ES carbon storage, aesthetics, and noise reduction are perceived as more important by older age groups: 51-65 and +66.

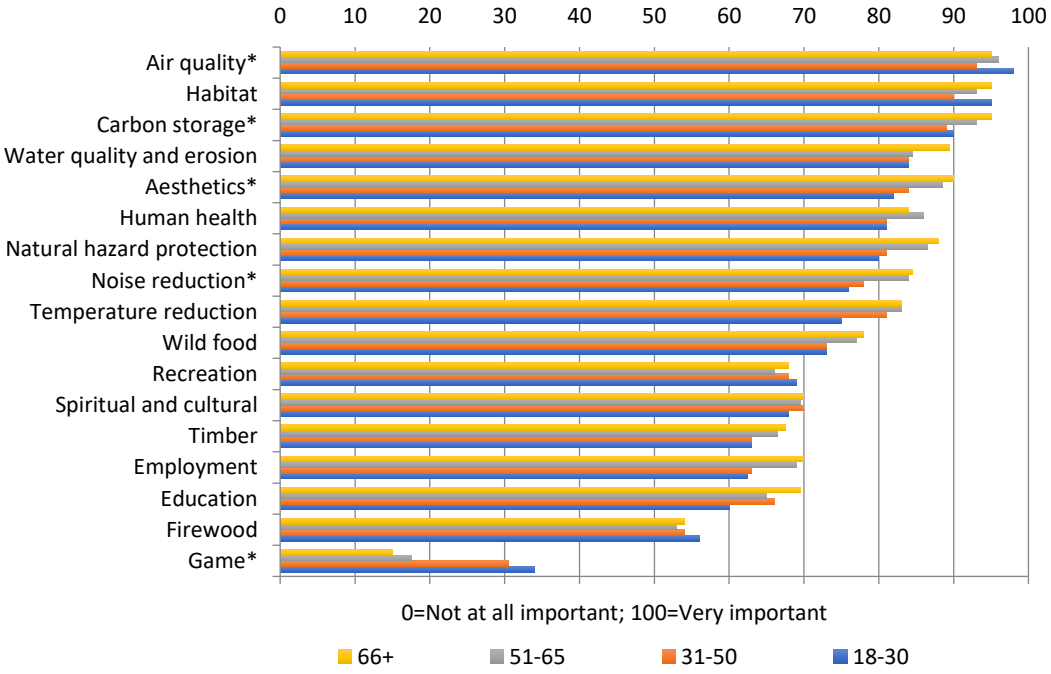

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Figure 36: Importance of ES by age group of forests in Europe. The * denotes significant differences (Kruskal-Wallis test, p<0.05). Responses to the questions: How important are the following benefits of forests to you?

What stands out in Figure 37 is that there is significant difference between the age groups for all EDS, but for environmental issues such as the spread of invasive species. All EDS were perceived to be more important by respondents of age 18-30 and 31-50.

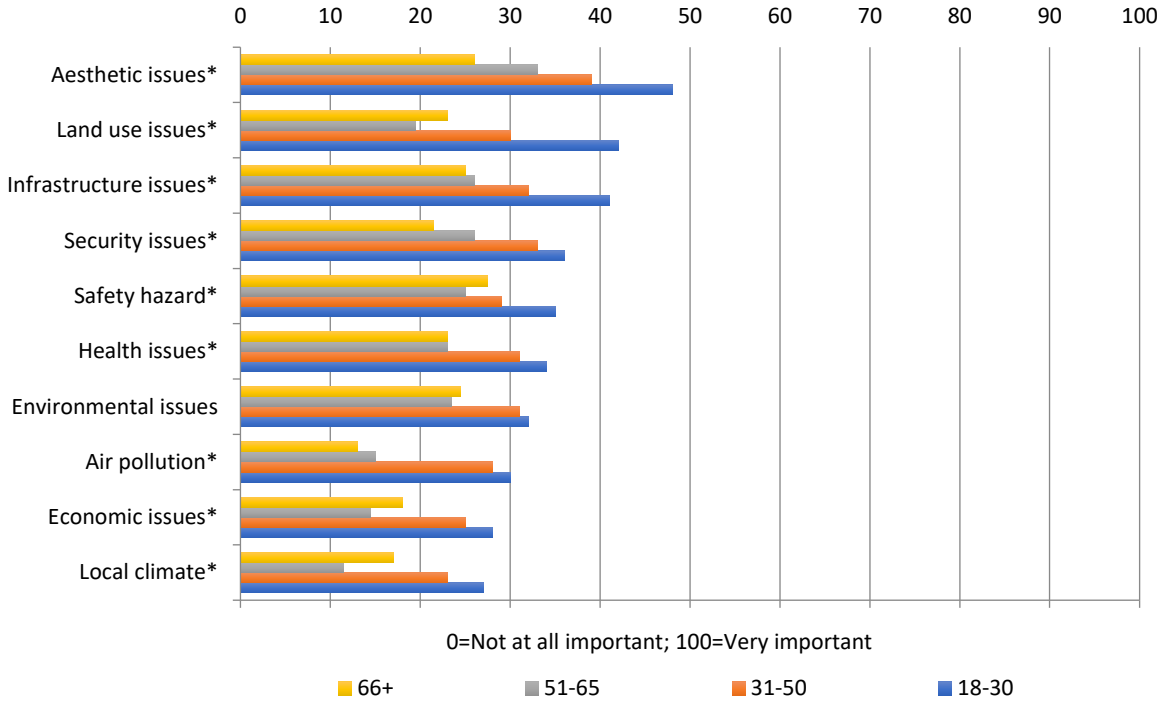

Figure 37: Importance of EDS by age group of forests in Europe. The * denotes significant differences (Kruskal-Wallis test, p<0.05). Responses to the questions: How important are the following benefits of forests to you?

3.1.14.4 Importance of ES and EDS by levels of education

As Figure 38 shows, there is a significant difference between respondents with different levels of education for the ES aesthetics. For all other ES differences can be reported but not on a significant level. Aesthetics was perceived as most important by respondents with the highest education of leaving school between age 17-19 years of age.

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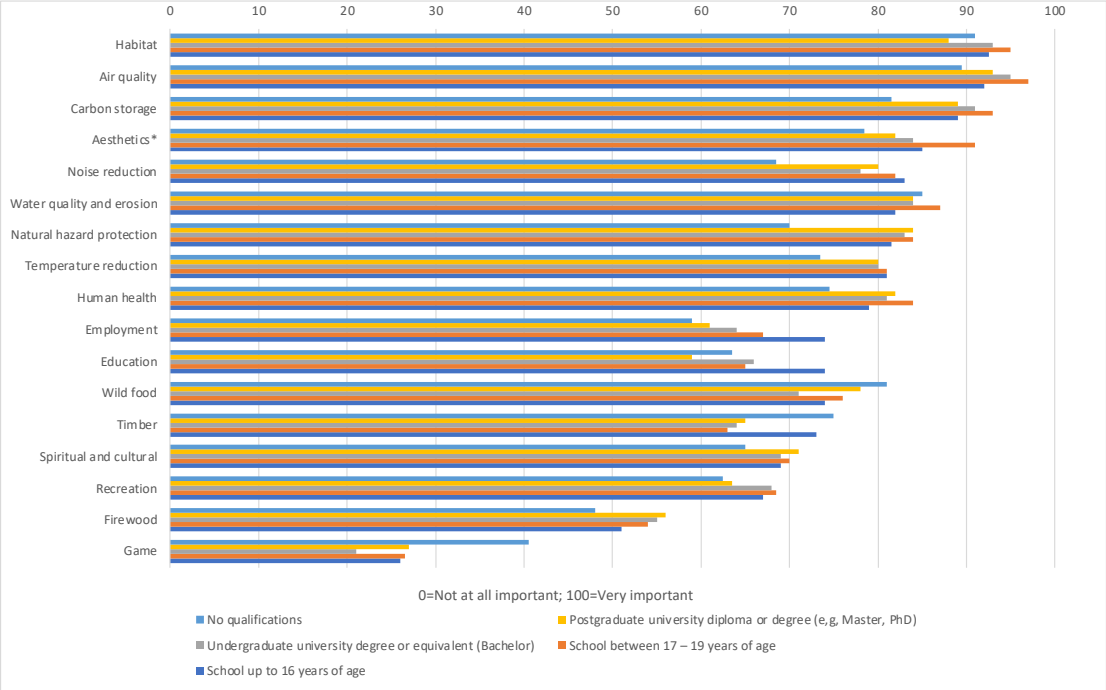

Figure 38: Importance of ES by highest education of forests in Europe. The * denotes significant differences (Kruskal-Wallis test, $p<0.05$). Responses to the questions: How important are the following benefits of forests to you?

From Figure 39, we can see that Kruskal-Wallis test determined significant differences between respondents` highest level of education for safety hazards, meaning that forests pose a threat to homes and properties (e.g., forest fires, storms). Here, respondents with no formal school qualification and respondents who left school by the age of 16 (the two lowest categories in this study) perceived safety hazards as more important compared to respondents with higher levels of education (e.g., university degree, high school degrees).

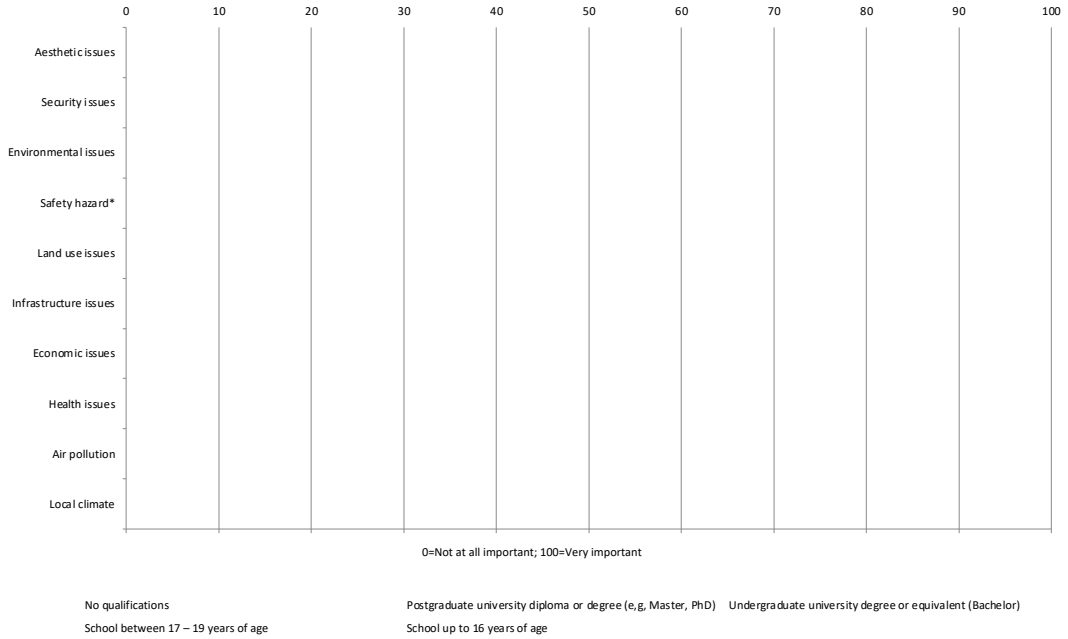

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Figure 39: Importance of EDS by highest education of forests in Europe. The * denotes significant differences (Kruskal-Wallis test, p<0.05). Responses to the questions: How important are the following benefits of forests to you?

3.1.15 Public perceptions and demands towards trees

In this section, we report the results for trees outside of forests and parks. The results cover different locations of trees as we gave respondents the opportunity to respond for trees in private gardens, public gardens, public squares, commercial areas, and along streets. The question about trees outside of forests and parks was asked to all respondents.

3.1.15.1 Overall satisfaction with trees in peoples` municipality

The purpose of this chapter is to present the results on overall satisfaction with trees where people live. It includes the results to the question: "Overall, do you think your municipality has too many or too few trees?" Figure 40 shows that respondents are rather content with the number of trees in their municipality (x̃=3). Around 17% of the respondents were of the opinion that there were too few trees in their municipality compared to 3.5 % of the respondents who were of the opinion that there were too many trees.

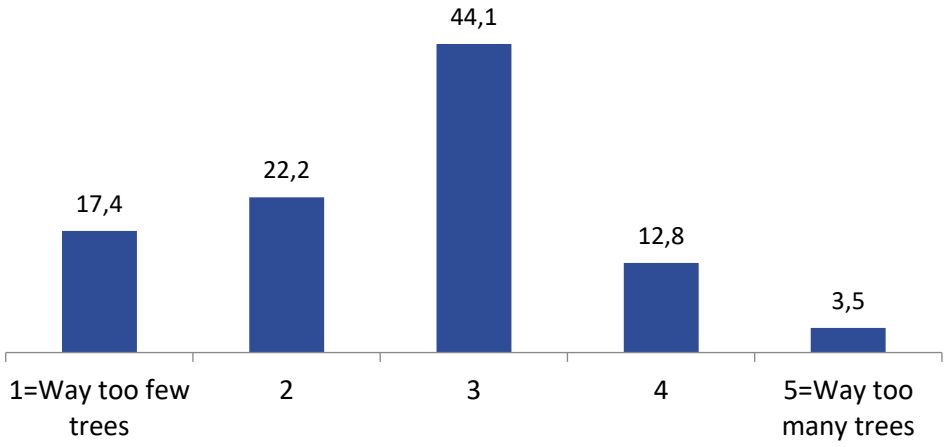

Figure 40: Satisfaction with number of trees in municipality (N=10,391; x̃=3; IQR=1)

Figure 41 shows the most important tree ES which in our study are aesthetics, air quality and carbon storage. Least important were recreational uses, wild food, and firewood.

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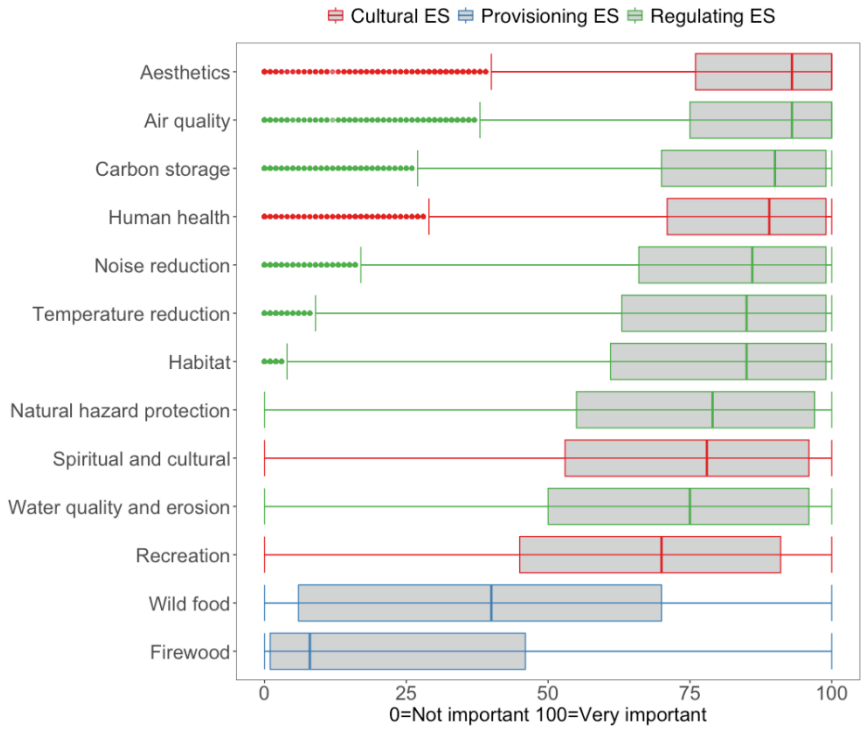

Figure 41: Importance of tree ES. Responses to the questions: How important are the following benefits of trees to you?

In Figure 42, we present the most important tree EDS. The most important EDS are aesthetic (Trees obscuring views), security (falling branches), and infrastructure issues (Trees causing damage to public infrastructure from for example falling on electricity lines).

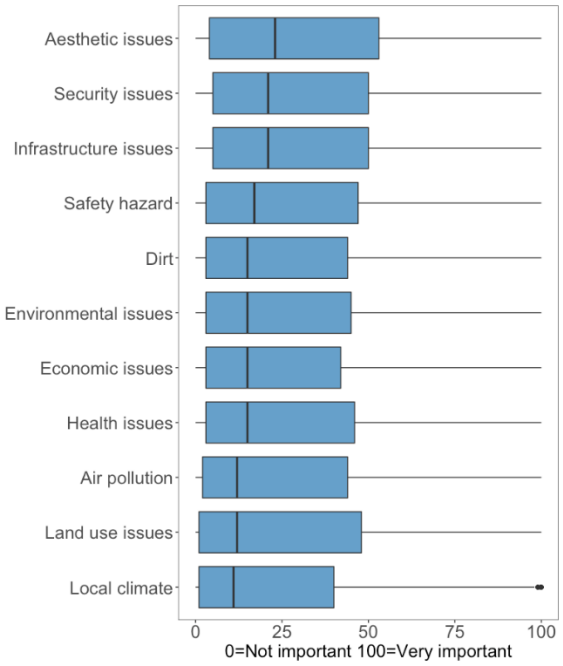

Figure 42: Importance of tree EDS. Responses to the questions: How important are the following benefits of trees to you?

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Moreover, respondents rated 12 statements on street trees, as shown in Table 28. A lot of agreement was attached to "I would like new trees planted in parks, green spaces and forests in my city or town." (x̃=5) with an IQR=1. This indicates that the responses were close together as the IQR contains 50% of the data. In contrast, respondents mildly disagreed that they are involved in the decision-making on trees and that trees along streets are a security risk.

Table 28: Opinions on trees in Europe (Scale: 1=Strongly disagree; 2=Mildly disagree; 3=Unsure; 4=Mildly agree; 5=Strongly agree)

	Median	**IQR**
I would like new trees planted close to my house.	4	1
I would like new trees planted in parks, green spaces and forests in my city or town.	5	1
There should be more information on trees for residents.	4	1
I consider trees when selecting a place to live.	4	2
Tree removal should be prohibited by law.	4	2
More public funding should be available for managing existing trees.	4	1
There should be more engagement to plant new trees from the private sector (investors, businesses).	4	1
The trees in my city/town are well managed.	4	1
I feel that I am involved in the decision-making on trees in my city/town.	2	2
Trees along streets are a security risk.	2	1
New infrastructure (e.g., roads) and developments (e.g., housing) should give space to trees.	4	1
Car parks should be removed to plant more trees.	3	2

3.1.15.2 Importance of ES and EDS in different countries

The responses to the question: "How important are the following benefits of trees to you?" were analysed on country-level for Europe. Looking at Table 29, we can compare for the ES firewood and wild food. Firewood was particularly important in Spain (x̃=51) and Sweden compared to all other countries in this study where it was not important at all. That trees provide products other than wood (e.g., nuts) was considered moderately important in Hungary (x̃=57), Turkey, Bosnia and Herzegovina, and Spain. On the other hand, among others, it was not important in Serbia, Greece, Russia, and Latvia (x̃=11).

Table 29: Importance of provisioning ES of street trees at country level in Europe. Responses to the questions: How important are the following benefits of trees to you?

Country	**Firewood**	**Wild food**
Albania	3,0	30,0
Austria	10,0	49,0
Belgium	6,0	39,0
Bosnia and Herzegovina	13,0	52,0
Bulgaria	2,0	20,0
Croatia	5,0	42,0
Czech Republic	3,0	43,0
Denmark	11,0	45,0
Estonia	2,0	26,0
Finland	10,5	43,0

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France	8,0	32,0
Germany	11,0	49,0
Greece	13,0	16,0
Hungary	8,0	57,0
Ireland	22,0	48,0
Italy	8,0	37,0
Latvia	2,0	11,0
Lithuania	5,0	20,5
Netherlands	10,0	44,0
Norway	23,5	37,0
Poland	14,0	47,0
Portugal	6,0	39,0
Romania	2,0	38,0
Russia	3,0	13,0
Serbia	2,0	17,0
Slovakia	4,0	40,0
Slovenia	19,0	46,0
Spain	51,0	51,0
Sweden	36,0	48,0
Switzerland	10,5	37,0
Turkey	6,5	55,5
UK	15,0	43,0
Ukraine	2,0	30,0

Next was to compare the perceptions of the public for all regulating ES of trees in Europe, which are shown in Table 30. It can be seen that the improvement of air quality was seen as very important in most Eastern European states, particularly Albania (x̃=100), Ukraine, and Serbia. Still considered important but slightly less, it was viewed in Norway and Finland (x̃=79). Similar results were obtained for carbon storage, which was perceived as important in Norway (x̃=76), but even more so in Albania (x̃=98) and for example Romania. Analogous to air quality and carbon storage looks the map for temperature reduction. It was seen as very important in for example Serbia and Romania (both x̃=97), but less so in Scandinavia (Denmark, Norway (x̃=60)). That trees provide the living space for animals and other plants was perceived as very important in Turkey (x̃=95), Hungary, and Bosnia. It was considered to be less important in Latvia, Norway, and Finland (x̃=75). All three ES - Water quality and erosion (x̃=95), natural hazard protection (x̃=95), and noise reduction (x̃=96) – were perceived as most important in Turkey. Particularly, noise reduction was perceived to be very important in many Eastern European countries, for example Serbia, Russia, and Ukraine, in comparison to some Western European countries such as the UK (x̃=66.5).

Table 30: Importance of regulating ES of trees at country level in Europe. Responses to the questions: How important are the following benefits of trees to you?

Country	Air quality	Carbon storage	Temperature reduction	Habitat	Water quality and erosion	Natural hazard protection	Noise reduction
Albania	100,0	98,0	79,0	88,0	90,0	87,0	90,0
Austria	95,0	91,0	87,5	90,0	77,0	78,0	85,0
Belgium	84,0	82,0	78,0	79,0	71,0	73,0	75,0
Bosnia and Herzegovina	97,0	95,0	94,0	92,0	89,5	91,0	94,0
Bulgaria	98,0	97,0	94,0	88,0	81,0	85,0	95,0
Croatia	93,0	88,0	84,0	81,0	70,0	78,5	87,0

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Czech Republic	93,0	84,0	83,0	80,0	70,0	73,0	88,0
Denmark	82,0	79,0	65,0	82,0	68,0	69,0	73,0
Estonia	91,0	84,0	78,0	81,0	62,0	69,0	90,0
Finland	79,0	79,0	79,0	75,0	65,0	66,0	81,0
France	83,0	82,0	77,0	79,0	70,0	72,0	76,5
Germany	95,0	92,0	82,0	91,0	79,0	76,0	85,5
Greece	95,0	93,0	93,0	91,0	82,0	91,0	89,0
Hungary	98,0	91,0	94,0	93,0	83,0	86,0	94,0
Ireland	90,0	87,0	75,0	87,0	74,0	79,0	81,0
Italy	88,0	90,0	87,0	81,5	74,0	80,0	83,0
Latvia	96,0	90,0	80,0	77,0	59,5	71,0	92,0
Lithuania	96,5	96,0	81,0	83,0	72,0	77,0	90,0
Netherlands	84,0	80,0	80,0	78,0	72,0	71,0	75,0
Norway	80,0	76,0	60,0	76,0	69,0	67,0	77,0
Poland	94,0	95,0	91,0	89,0	81,0	81,0	92,0
Portugal	96,0	93,0	85,0	81,0	80,0	82,0	84,0
Romania	98,0	98,0	97,0	85,0	89,0	93,5	95,0
Russia	98,0	97,0	96,0	91,0	80,0	81,0	96,0
Serbia	99,0	97,0	97,0	89,0	77,0	90,0	96,0
Slovakia	95,0	90,0	93,0	87,0	77,0	80,0	91,0
Slovenia	96,0	90,0	92,0	84,0	81,5	83,0	90,0
Spain	92,0	89,0	87,0	85,0	77,0	83,0	84,0
Sweden	86,0	84,0	75,0	85,0	69,0	73,0	84,0
Switzerland	90,0	85,5	81,0	83,0	70,0	72,0	81,0
Turkey	98,0	97,0	94,0	95,0	95,0	95,0	96,0
UK	82,0	79,0	64,5	80,0	66,0	72,0	66,5
Ukraine	99,0	97,0	94,0	86,0	80,0	86,0	95,0

When turning to Table 31 below, it shows the public perceptions of cultural ES across Europe. In more detail, aesthetics for example was perceived to be very important in Albania (x̃=99), Turkey, Romania, Serbia, Ukraine, and Hungary, Bulgaria (all x̃=98), but less so in Norway, France, and the UK (x̃=80). That trees offer cultural, emotional, and spiritual value was considered as very important in Albania and Lithuania (both x̃=93), but only moderately important in the Netherlands, Austria, and Belgium (x̃=56). That trees provide recreation and sports opportunities was rather important in Romania (x̃=88), Russia and Turkey. On the other hand, it was perceived as moderately important in Switzerland, Belgium, and the UK (x̃=51). Looking at the map for human health, we can observe that this was regarded of higher importance in mostly Eastern European countries – Albania (x̃=99), Romania, Russia, and Serbia – as compared to Finland, Denmark, and the UK (x̃=76).

Table 31: Importance of cultural ES of trees at country level in Europe. Responses to the questions: How important are the following benefits of trees to you?

Country	Aesthetics	Spiritual and cultural	Recreation	Human health
Albania	99,0	93,0	80,0	99,0
Austria	96,0	68,0	58,0	92,0
Belgium	85,0	56,0	52,0	80,0
Bosnia and Herzegovina	97,0	80,5	82,5	94,0
Bulgaria	98,0	75,0	81,5	97,0
Croatia	95,0	72,0	74,0	90,0
Czech Republic	96,0	76,5	67,0	88,0
Denmark	85,0	78,0	56,0	78,0

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Estonia	94,0	76,0	60,0	89,0
Finland	90,0	70,0	75,0	79,0
France	84,0	71,0	59,0	80,0
Germany	94,0	68,5	55,5	88,0
Greece	97,0	89,0	81,0	94,0
Hungary	98,0	83,0	78,0	93,0
Ireland	93,0	80,0	59,0	86,0
Italy	88,0	79,0	72,5	85,0
Latvia	97,0	87,0	70,0	92,0
Lithuania	93,0	93,0	80,0	93,0
Netherlands	85,0	66,0	62,0	80,0
Norway	85,0	71,0	66,0	80,0
Poland	96,0	79,0	78,0	93,0
Portugal	91,0	76,0	72,0	90,0
Romania	98,0	77,5	88,0	98,0
Russia	97,0	89,0	86,5	98,0
Serbia	98,0	89,0	78,0	98,0
Slovakia	97,0	81,0	70,0	89,0
Slovenia	93,0	76,0	74,0	92,0
Spain	86,0	79,0	69,0	88,0
Sweden	90,0	70,0	67,0	85,0
Switzerland	88,0	73,0	53,0	84,0
Turkey	98,0	90,5	86,0	96,0
UK	80,0	69,0	51,0	76,0
Ukraine	98,0	87,0	74,0	97,0

Having analysed the public respondents' views on EDS, we summarized these Table 32 below. Most of the EDS were perceived as moderately important by respondents in the UK. This was the case for air pollution (x̃=34), local climate (x̃=31.5), safety hazard (x̃=40), environmental issues (x̃=40.5), infrastructure issues (x̃=43), security issues (x̃=41), health issues (x̃=32.5), economic issues (x̃=34), and dirt and debris issues (x̃=33). Aesthetic issues (x̃=62) and land use issues (x̃=58) were perceived to be moderately important in Italy. In most other countries, the EDS were perceived to be not important. For an explanation for each EDS, please refer to Table 2.

Table 32: Importance of EDS of trees at country level in Europe. Responses to the questions: How important are the following benefits of trees to you?

Country	Air pollution	Local climate issues	Safety hazard	Environmental issues	Land use issues	Infrastructure issues	Aesthetic issues	Security issues	Health issues	Economic issues	Dirt
Albania	7,0	7,0	11,0	9,0	14,0	17,0	21,0	19,5	12,0	13,0	12,0
Austria	8,0	7,0	17,0	11,0	13,0	17,0	37,0	18,0	10,5	12,5	14,0
Belgium	16,0	13,5	20,0	17,0	11,0	20,0	22,0	21,0	15,0	15,0	18,0
Bosnia and Herzegovina	11,0	6,5	12,5	12,0	4,0	10,0	21,0	12,0	16,0	6,0	9,0
Bulgaria	2,0	3,5	5,0	4,0	3,0	13,0	4,0	19,0	6,0	4,0	6,0
Croatia	11,0	10,0	15,0	14,0	3,0	14,0	23,0	18,0	15,5	10,0	9,0
Czech Republic	8,0	7,5	16,0	12,0	6,0	17,0	16,0	22,0	11,0	14,0	12,5
Denmark	13,0	13,0	14,0	15,0	11,0	20,0	30,0	15,0	13,0	16,0	16,0

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Estonia	18,0	8,0	18,5	12,0	11,5	28,0	32,5	23,0	14,0	14,0	17,0
Finland	12,5	10,0	11,0	13,0	14,0	20,0	24,0	10,0	13,0	13,5	15,0
France	17,0	14,0	23,0	20,0	10,0	20,0	29,0	26,0	18,0	20,5	20,0
Germany	7,0	7,0	14,0	10,0	10,0	16,0	37,5	18,0	9,0	14,0	14,0
Greece	13,0	9,0	18,5	13,0	13,0	21,0	16,0	23,0	18,0	13,0	13,0
Hungary	13,0	8,0	14,0	15,0	6,0	14,5	13,0	16,5	15,0	14,0	11,0
Ireland	27,0	19,0	28,0	29,5	24,5	35,5	29,0	34,5	26,0	24,0	22,0
Italy	16,0	19,0	24,0	20,0	58,0	42,0	62,0	34,0	21,0	24,0	25,0
Latvia	12,0	13,0	25,0	18,0	10,0	27,5	32,5	26,0	16,0	17,5	22,0
Lithuania	22,0	19,0	27,0	25,0	20,0	33,0	22,0	18,0	23,0	23,0	23,0
Netherlands	17,0	17,0	29,0	21,0	15,0	22,0	25,0	28,0	21,5	19,0	21,0
Norway	17,0	16,0	20,5	20,0	17,0	27,5	34,0	25,0	20,0	20,0	23,0
Poland	12,5	13,0	18,0	15,0	19,0	25,5	23,0	22,0	16,0	16,0	15,5
Portugal	9,0	7,0	18,0	12,0	4,0	19,0	18,0	30,0	14,0	11,5	15,0
Romania	4,0	4,0	9,0	7,0	8,5	17,0	20,0	15,0	6,0	10,0	6,5
Russia	7,0	6,0	14,5	10,0	11,0	17,5	9,0	23,0	15,5	14,0	9,0
Serbia	7,0	5,0	8,0	7,0	3,5	16,0	6,0	19,0	9,0	5,0	9,0
Slovakia	11,0	9,0	14,0	12,0	18,0	20,0	27,0	19,0	11,0	14,0	13,0
Slovenia	12,0	11,0	16,5	16,0	13,0	21,0	24,0	23,0	21,0	14,0	11,0
Spain	14,0	13,0	17,0	15,0	12,0	22,0	23,0	18,0	16,0	16,0	20,5
Sweden	27,0	22,0	27,0	27,0	31,0	33,0	38,0	31,0	22,0	22,0	19,0
Switzerland	12,0	10,0	19,0	19,0	14,0	18,5	24,0	19,0	16,0	17,0	14,0
Turkey	17,0	15,5	14,0	14,0	12,0	16,0	9,0	17,0	15,0	10,5	11,0
UK	34,0	31,5	40,0	40,5	32,0	43,0	35,0	41,0	32,5	34,0	33,0
Ukraine	6,0	4,0	9,0	6,0	6,0	15,0	5,0	25,0	12,0	7,0	9,0

3.1.15.3 Importance of ES and EDS by gender

From Figure 43, it can be seen that by far the greatest importance was attached to the aesthetics of street trees by female respondents. Female respondents perceived all ES to be statistically significantly more important compared to male respondents, with the only exception being firewood. Firewood was still considered more important by females than males but not at a significant level.

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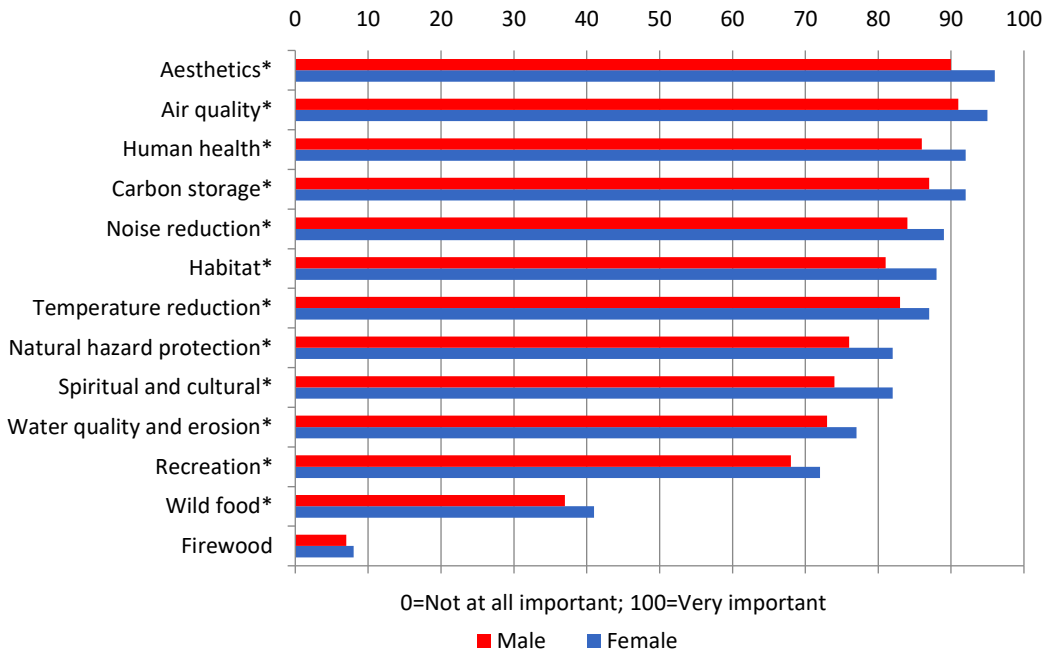

Figure 43: Importance of ES by gender of trees in Europe. The * denotes significant differences (Mann-Whitney U test, $p<0.05$). Responses to the questions: How important are the following benefits of trees to you?

From the data in Figure 44, it is apparent that security issues – trees being unsafe from e.g., falling branches on people - were perceived as most important by female respondents. Overall, female respondents perceived almost all ES as more important compared to their male counterparts, the exception being land use issues – trees being a foregone land use opportunity (e.g., less land for industry and businesses). Most of the dissimilarities were different on significant level, however, for aesthetic issues and dirt – trees creating dirt and debris (e.g., from falling leaves and fruit) – it was not significant.

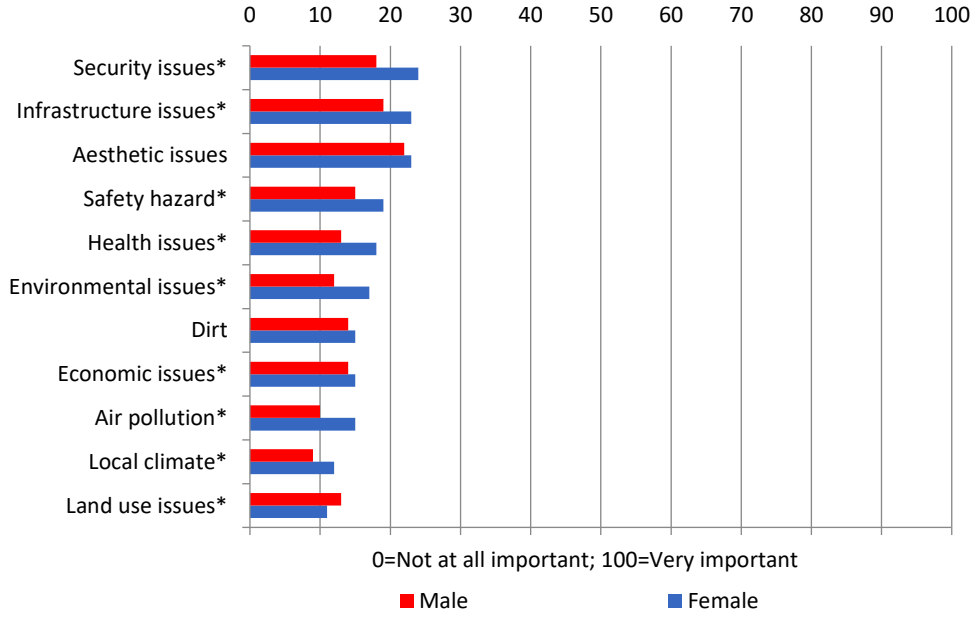

Figure 44: Importance of EDS by gender of trees in Europe. The * denotes significant differences (Kruskal-Wallis test, $p<0.05$). Responses to the questions: How important are the following benefits of trees to you?

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3.1.15.4 Importance of ES and EDS by age groups

The results from determining the differences between certain age groups in how they perceive tree ES are shown in Figure 45. Between the age groups were significant differences in how they perceived every tree ES. Mostly, the age group of 51-65 year olds perceived the different ES as most important. Only for wild food and firewood, both provisioning ES, were perceived as more important by younger respondents (18-30 years of age) compared to the other age groups.

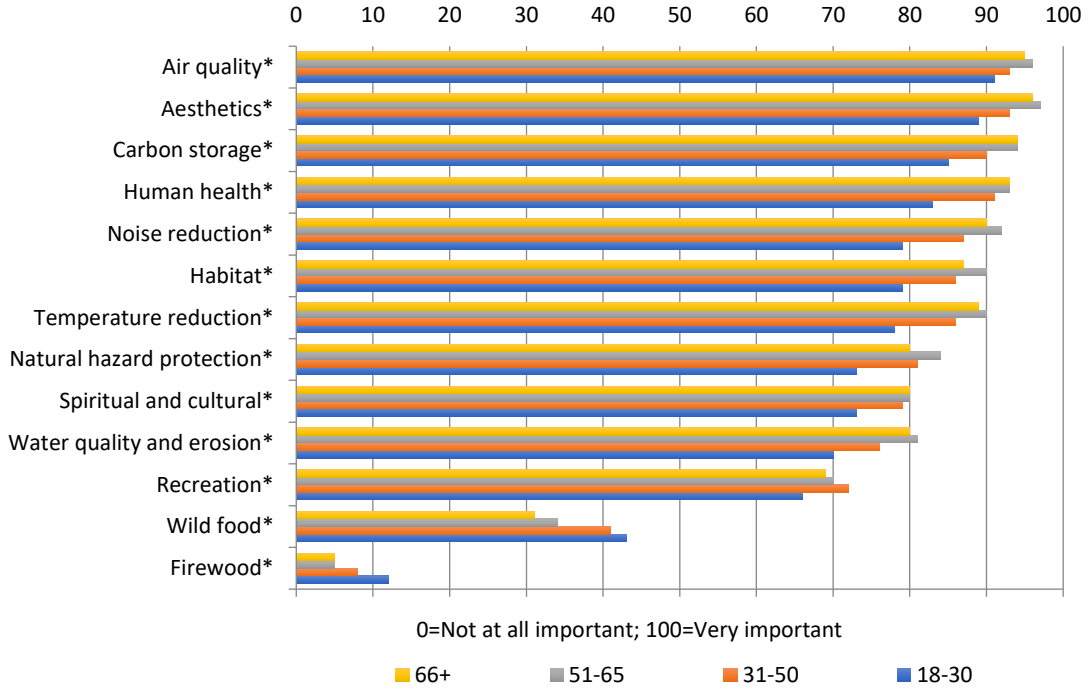

Figure 45: Importance of ES by age group of trees in Europe. The * denotes significant differences (Kruskal-Wallis test, $p<0.05$). Responses to the questions: How important are the following benefits of trees to you?

Similarly, to the tree ES, the tree EDS were also perceived statistically significantly different by the four different age groups. As shown in Figure 46, younger respondents – aged 18-30 as well as aged 31-50 - perceived all tree EDS as more important compared to the older age groups 51-65 and 66+.

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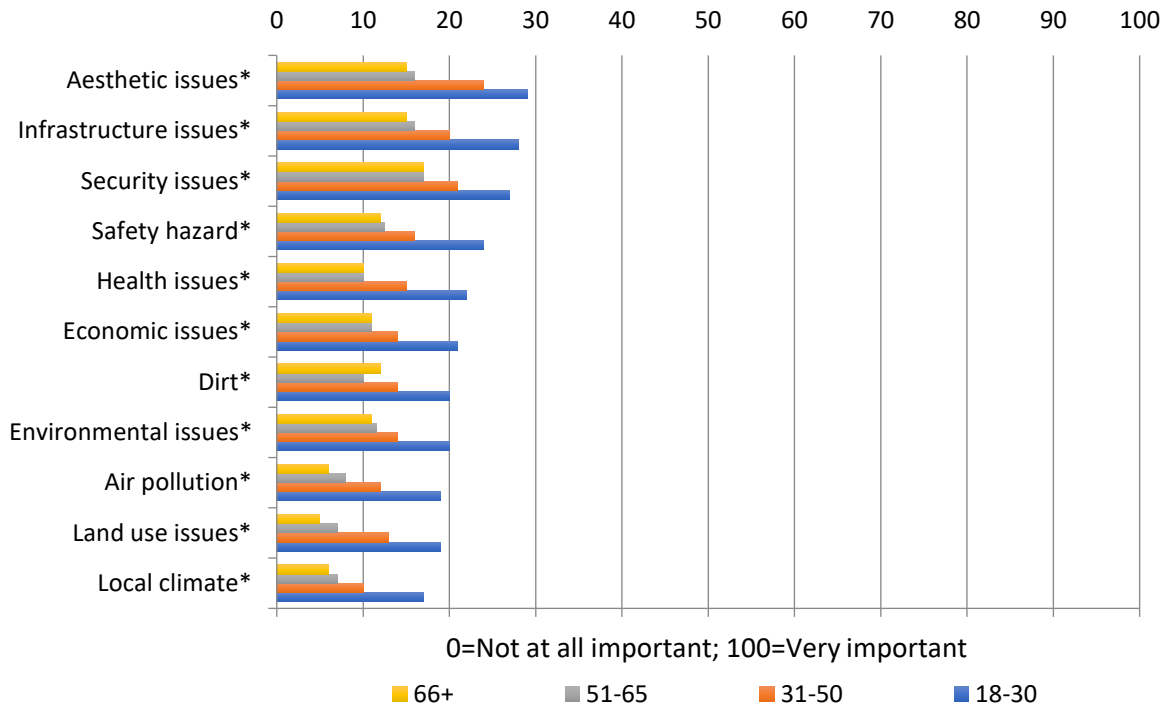

Figure 46: Importance of EDS by age group of trees in Europe. The * denotes significant differences (Kruskal-Wallis test, $p<0.05$). Responses to the questions: How important are the following benefits of trees to you?

3.1.15.4 Importance of ES and EDS by levels of education

In Figure 47 it is a clear that aesthetics and air quality were perceived as most important by respondents with a formal qualification. Respondents without formal school qualification perceived firewood as most important compared to respondents with education qualification. Differences in perceptions of ES carbon storage, habitat, noise and temperature reduction, as well as firewood, wild food, recreation and spiritual and cultural value were statistically significant. The detailed differences can be seen in the figure below.

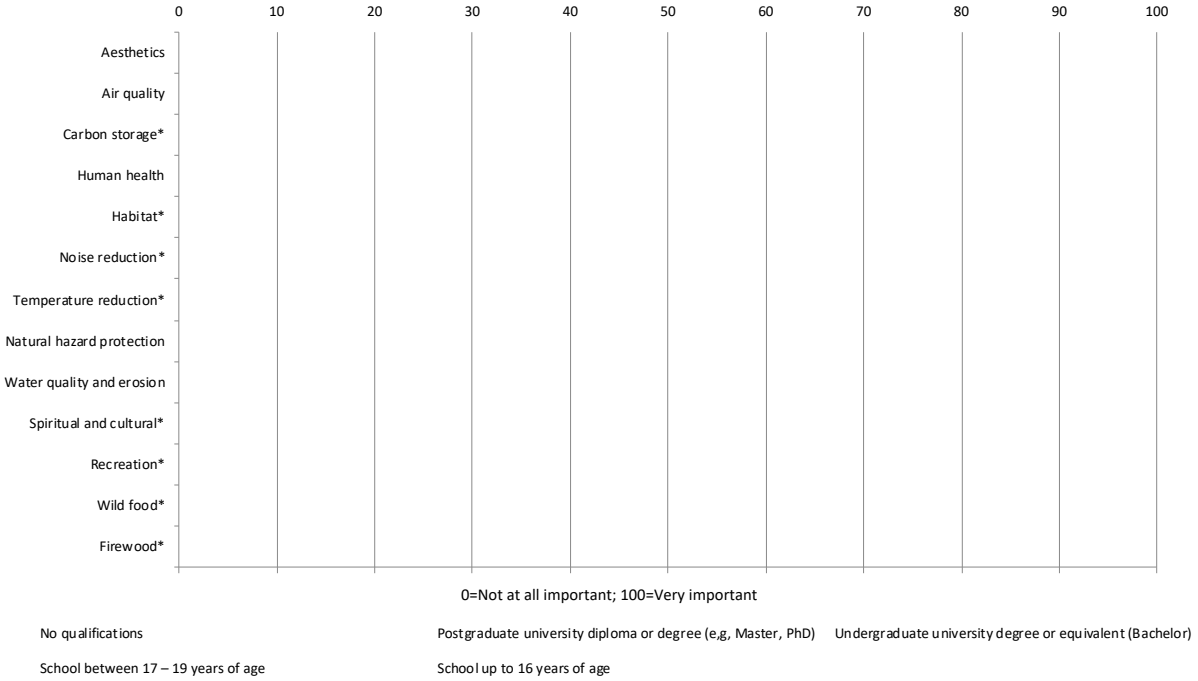

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Figure 47: Importance of ES by highest education of trees in Europe. The * denotes significant differences (Kruskal-Wallis test, p<0.05). Responses to the questions: How important are the following benefits of trees to you?

As Figure 48 shows, there is a significant difference between the four groups for each EDS. Across all EDS, respondents with no qualification perceived them to be more important compared to respondents with formal school or university qualification.

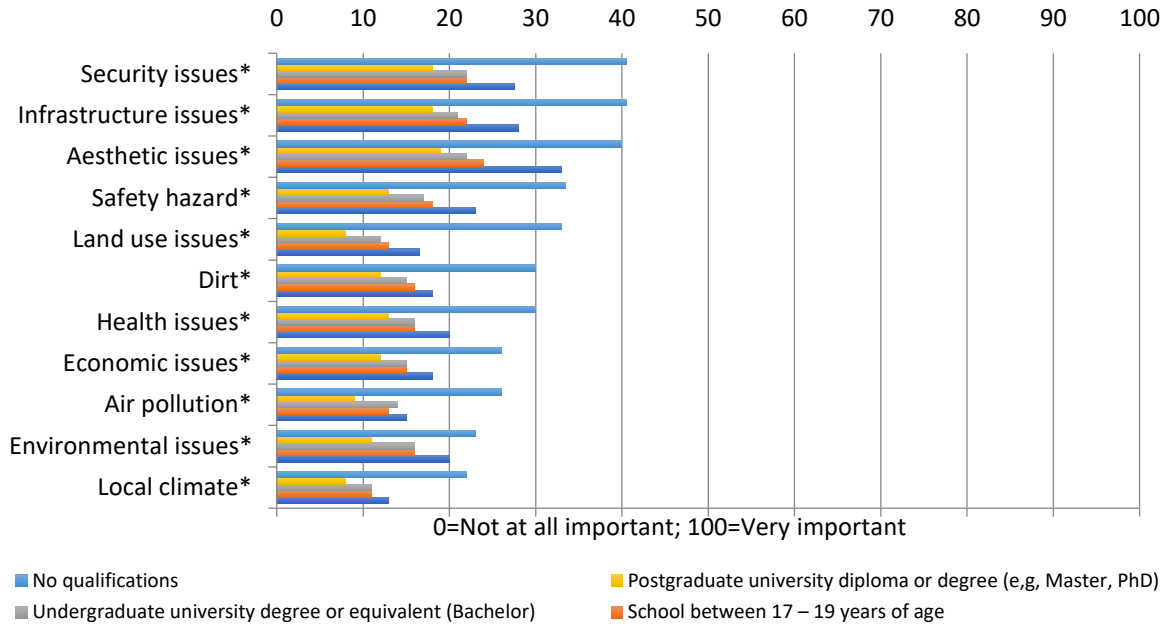

Figure 48: Importance of EDS by highest education of trees in Europe. The * denotes significant differences (Kruskal-Wallis test, p<0.05). Responses to the questions: How important are the following benefits of trees to you?

3.1.15.5 Public perceptions of trees in different locations

Having analysed the responses for trees generally, we here report on the public perceptions of trees in different locations. These locations are Trees in private gardens, Trees in public gardens, Trees in public squares, Trees in commercial areas, and Trees along streets.

Table 33 illustrates the results for the importance of different tree ES in different locations. The majority of respondents answered for trees along streets, followed by answers for trees in public gardens and trees in public squares. The most important ES was perceived to be air quality and aesthetics across all the different locations.

Table 33: Importance of tree ES in different locations (N=10,391)

ES Items	**Trees in private gardens**		**Trees in public gardens**		**Trees in public squares**		**Trees in commercial areas**		**Trees along streets**	
	N=1,215 (11.7%)		N=2,798 (26.9%)		N=2,178 (21.0%)		N=986 (9.5%)		N=3,214 (30.9%)	
	Median	IQR	Median	IQR	Median	IQR	Median	IQR	Median	IQR
Firewood	18.00	52	14.00	50	7.00	38	7.00	40	3.00	24
Wild food	61.00	57	46.00	59	36.00	60	37.00	66	22.00	56
Water quality and erosion	73.50	46	75.00	41	74.00	47	78.00	47	76.00	53

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Air quality	87.00	30	90.00	26	93.00	23	95.00	19	97.00	18
Carbon storage	84.00	36	87.00	31	90.00	28	93.00	23	94.00	25
Habitat	84.00	35	85.00	32	84.00	35	86.00	36	84.00	45
Spiritual and cultural	72.00	46	77.00	40	80.00	39	79.00	40	77.00	47
Recreation	62.00	52	77.00	39	75.00	46	70.00	47	58.00	65
Human health	85.00	31	87.00	27	90.00	25	91.00	24	92.00	27
Natural hazard protection	74.00	45	78.00	38	78.00	42	80.00	43	81.00	46
Aesthetics	92.00	24	89.00	26	93.00	23	95.00	18	96.00	19
Noise reduction	82.00	35	82.00	34	86.00	32	89.00	26	90.00	29
Temperature reduction	81.00	40	81.00	37	85.00	33	88.00	29	89.50	32

Table 34 illustrates the results for the importance of different tree EDS in different locations. Trees obscuring views (aesthetic issues) was considered the most important ES in trees in private gardens and trees in public garden, while in trees in public squares it was a concern that trees are unsafe potentially because of falling branches. For trees along streets, the two most important ES were that trees cause damage to public infrastructure and that they are security issues because of falling branches.

Table 34: Importance of trees EDS in different locations (N=10,391)

ES Items	**Trees in private gardens**		**Trees in public gardens**		**Trees in public squares**		**Trees in commercial areas**		**Trees along streets**	
	N=1,215 (11.7%)		N=2,798 (26.9%)		N=2,178 (21.0%)		N=986 (9.5%)		N=3,214 (30.9%)	
	Median	IQR	Median	IQR	Median	IQR	Median	IQR	Median	IQR
Aesthetic issues	41.00	56	26.00	52	21.00	46	21.00	49	17.00	46
Land use issues	17.00	46	17.00	52	15.00	47	11.00	43	7.00	28
Infrastructure issues	25.00	45	21.00	47	20.00	45	21.00	44	20.00	43
Local climate	15.00	40	14.00	46	12.00	37	11.00	33	7.00	24
Security issues	23.00	45	22.00	47	22.00	43	22.00	45	20.00	42
Air pollution	15.00	40	15.00	48	14.00	42	14.00	38	9.00	30
Health issues	18.00	41	18.00	48	17.00	41	16.00	38	11.00	30
Economic issues	15.00	36	17.00	44	17.00	38	16.00	39	11.00	29
Safety hazard	24.00	44	19.00	47	18.00	42	17.00	41	13.00	35
Environmental issues	19.00	43	18.00	47	17.00	41	15.50	37	10.00	30
Cleanliness issues (dirt)	20.00	44	16.00	45	15.00	38	15.00	37	12.00	32

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3.2 Results from China

3.2.1 Characteristics of the sample population in China

The second section of analysis assessed the sample composition for the Chinese part of the survey. The overall number of responses to our survey after data cleaning is 7,323. The sample population can be compared to the parent population on demographic characteristics – which are age, gender, and education. It is quite challenging to compare the income structures across all provinces as the ages of some responses appears to not match their incomes.

Overall, from the sampled data in 18 provinces, the largest number of valid responses (after data cleaning) came from Shanghai (n=468), Beijing (n=463) and Henan (n=426) whereas the lowest number of responses came from Hebei and Jiangxi (n=390), Hubei and Hunan (n=391). An overview of the distribution of responses can be seen in Table 35. The detailed information of responses can be found in Appendix XVI.

Table 35: The number of valid responses in 18 sample provinces in China

Name	Geography	Valid responses (N)
Anhui	East China	399
Beijing	North China	463
Fujian	East China	396
Guangdong	South Central China	417
Guangxi	South Central China	392
Hebei	North China	390
Henan	South Central China	426
Hubei	South Central China	391
Hunan	South Central China	391
Jiangsu	East China	398
Jiangxi	East China	390
Shandong	East China	406
Shanxi	North China	402
Shaanxi	North West China	394
Shanghai	East China	468
Tianjing	North China	406
Zhejiang	East China	402
Chongqing	South West China	392

The average age for the sample population is 30.14 years, which is within the largest age group (16-59) according to the national annual statistics in 2019 (National Bureau of Statistics, 2022). As our survey was conducted online, the target respondents are also mainly in the 16-59 age group. Most respondents belong in the age group 18-30 (56.51%) and about 39.60% of the respondents belong in the age group 31-50 (Figure 49). As a result, age groups with frequent urban forest visitors (under 16s and over 60s) are underrepresented in the sample.

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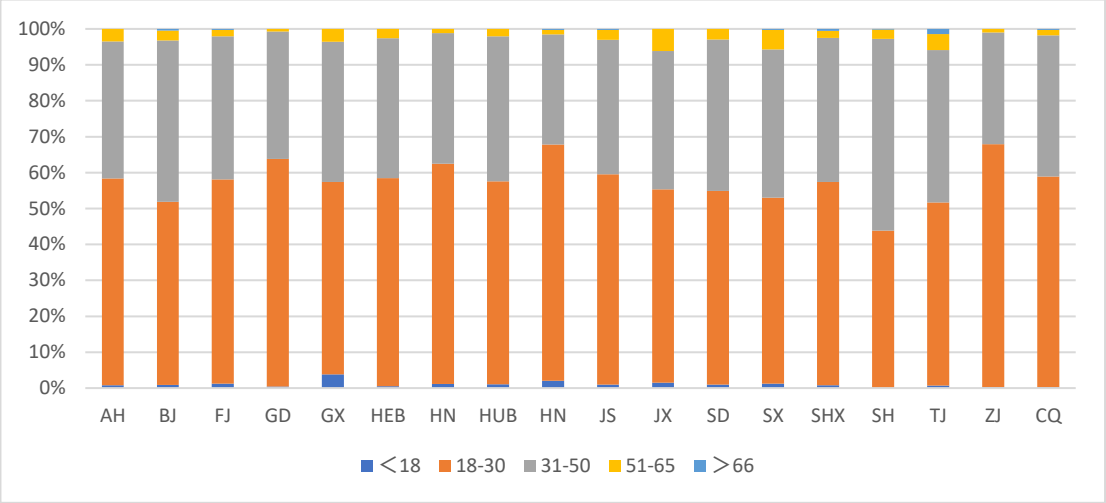

Figure 49: Age group distribution across provinces

The gender distribution is fairly evenly distributed, whereby 50.39% are female and 49.17% are male respondents. Only 0.22% identify their gender in the category "other" and another 0.22% preferred not to disclose their gender. Due to their very low responses rates of a combined 0.44%, the two categories "other" and "no answer" were not further included into the analysis (Figure 50).

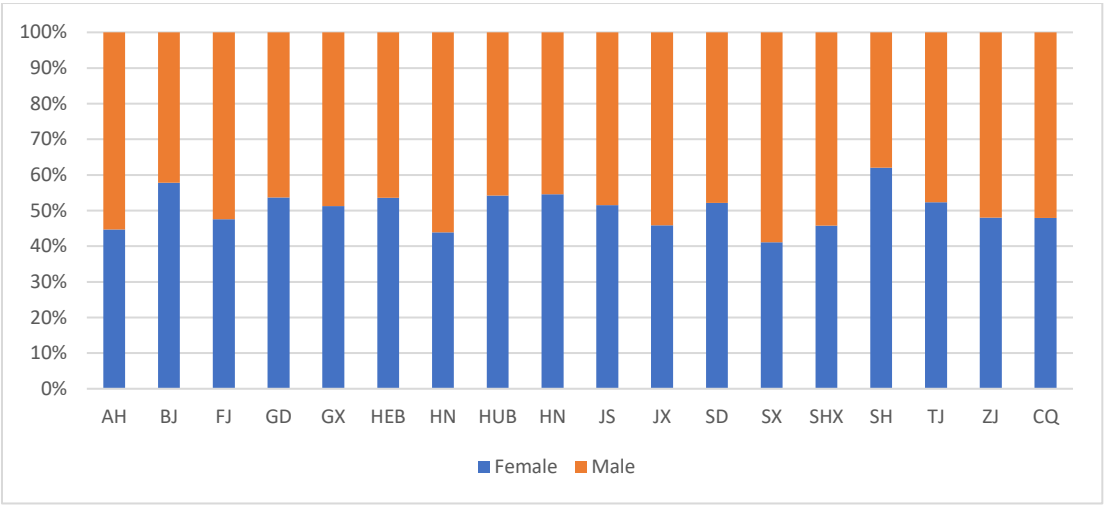

Figure 50: Gender distribution across provinces

The sample is characterised by over half of respondents who answered "Undergraduate degree (Bachelor)" (58.05%) as their highest school-leaving qualification. About 22.59% of respondents indicated as their highest school-leaving qualification "Technical college"[1]. Furthermore, only 8.89% of respondents who answered "School 17-19 years of age" as their highest school-leaving qualification and the sample is characterised by 8.34% of respondents that hold a postgraduate university degree like a Master's degree or PhD (Figure 51).

[1] Technical college: a school running mode with Chinese characteristics, which mainly focus on technical or vocational skills training, with no such degrees like master.

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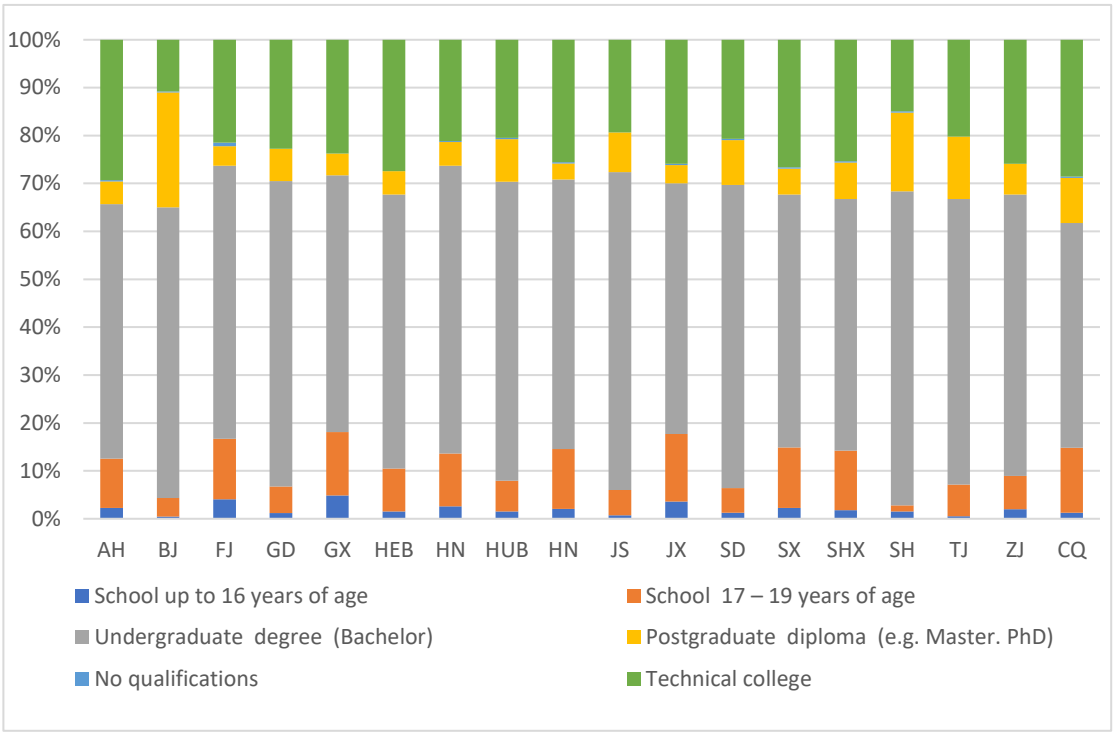

Figure 51: Highest levels of education across provinces

The income was classified into 13 categories according to the median number of the personal average income during 2017 and 2019. Across the 13 income classes in the questionnaire, the largest number of responses has an annual family income between 97,689-122,110 RMB (19.26%; 14,200 EUR – 17,750 EUR) followed by those who indicate their family income between 48,845-73,266 RMB (12.56%; 7,100 EUR – 10,650 EUR) (Figure 58). However, the family income shows big disparities when matched with the age of respondents (e.g., a 20-year-old respondent has 5.1 million RMB per year). Thus, income is challenging to sample and can be an uncertain question and it will not be the main factor in this analysis. The detailed results on socio-demographic and economic characteristics are shown in Appendix XVII.

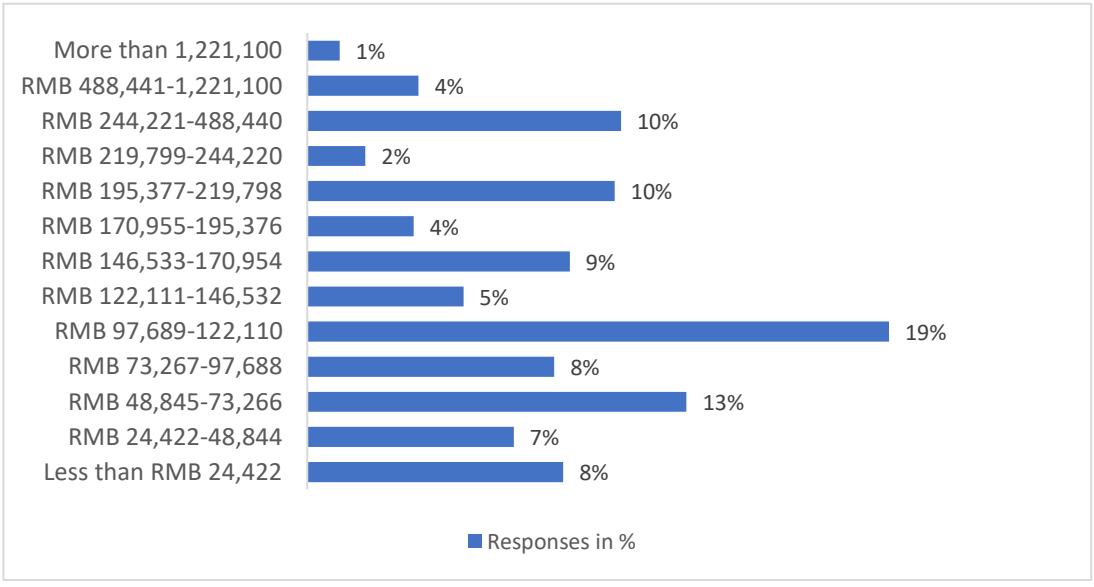

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Figure 52: Distribution of family income classes in Chinese sample

On top of the demographic and socio-economic characteristics, we also asked about other personal information and living conditions. For example, the majority of respondents (45.3%) have one child or young people (under 18 years of age) living in their household. More than half the respondents live in a city or town centre (63.50%) and just above a tenth (7.24%) live in a rural area. Furthermore, all the respondents have lived in the corresponding province for 16.50 years on average, which means their perception on the urban and peri-urban forests are based upon a relatively stable perspective.

3.2.2 General perceptions of ecosystem services and ecosystem disservices in China

This section presents the overall societal perceptions and demands for ES and EDS for all woodland types (forests and parks, both in rural and urban areas) Specifically, the number of respondents indicated that they visit forests and parks frequently is 6,520 (89.03 %), and those who do not visit a particular forest or park is 803 (10.97 %).

Ecosystem services (ES)

The boxplot in Figure 53 shows the importance of provisioning, regulating and cultural ecosystem services across all woodlands.

1. **Provisioning ES**

Across the entire data set, the demand for provisioning ecosystem services was low compared to regulating and cultural ES, as provisioning ES has the lowest three important median values under 50. Amongst them, the firewood has the least importance with a median 21 compared to the timber (median = 27) and wild food (median = 34). The detailed list can be found in Appendix XVII.

2. **Regulating ES**

The societal perceptions regarding the regulating ecosystem services indicated that all the benefits of regulating ES are considered important as their median values exceeded 50. Among the seven regulating benefits, the air quality (median=86) was considered to be the most important one, followed by the water quality (median=78) and erosion and temperature reduction (median=78). The least important was the natural hazard protection (median=70).

3. **Cultural ES**

When assessing the importance of cultural ES, Figure 53 showed that the human health (median=85) and aesthetics (median=80) gained the highest scores compared to other benefits. Spiritual and cultural (median=75), recreation (median=78) and education (median=68) were also relatively important whilst the employment (median=59) showed the least important from the six cultural ES.

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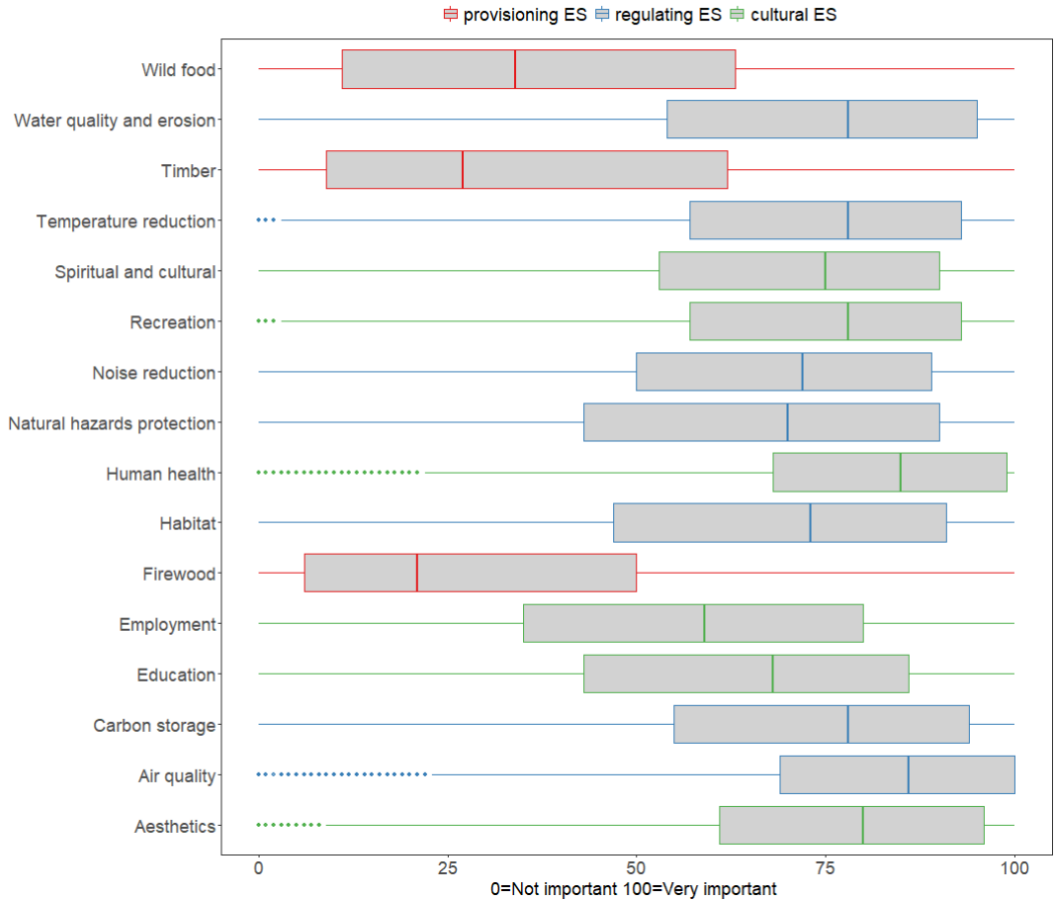

Figure 53: Boxplots showing the importance of provisioning, regulating and cultural ecosystem services across all woodlands. Responses to the questions: How important are the following benefits of forests to you? (n=803), and how important are the following benefits of this forest/park to you? (n=6,520) (Scale: 0=Not important, 100=Very important)

Ecosystems disservices (EDS)

When considering the importance of ecosystem disservices (EDS), 833 respondents (659 are frequently visiting forests and parks and 174 do not visit a particular forest or park) among the 7,323 responses had assessed the disbenefits of forest or park. The results are shown in Figure 54. The detailed list can be found in Appendix XVII.

All ten EDS have been regarded as relatively less important by the societal perception than the median score 50. Among the disbenefits, health issues (median=48), economic issues (median=45), safety hazard (median=44) and land use issues (median=40) were the four top issues of the forest or park disbenefits, while negative impacts on local climate (median=27) and air pollution (median=28) were rated least important.

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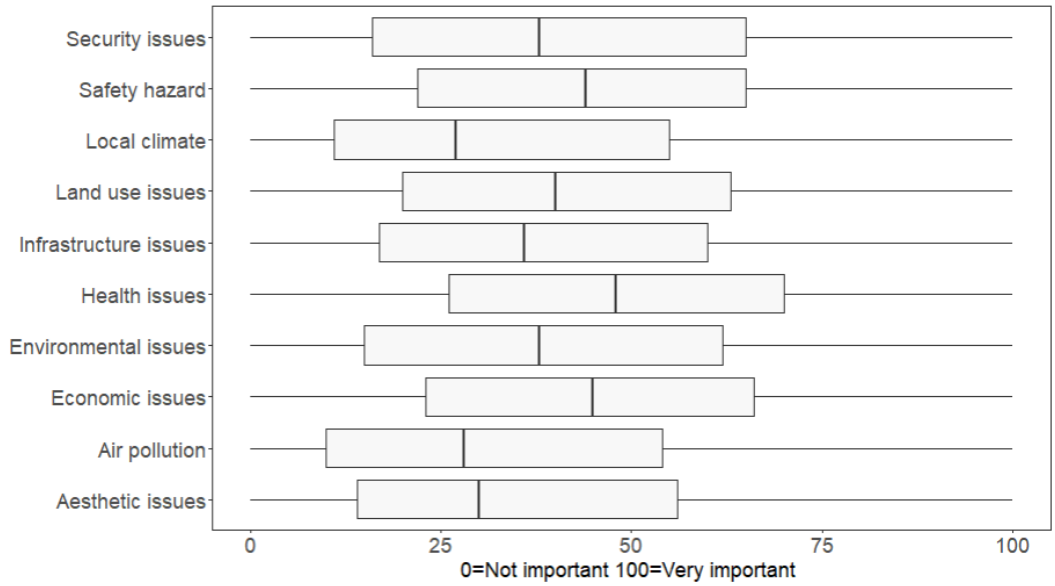

Figure 54: Boxplots showing the importance of EDS across all woodlands. Responses to the questions: How important are the following disbenefits of forests to you? (n=803), and how important are the following disbenefits of this forest/park to you? (n=6,520), only 833 in total thought of forest and park would provide disbenefits.

Ecosystem services and ecosystem disservices by provinces

The spatial distribution of the median important value for ES by provinces is shown in Table 36. It shows that firewood, timber and wild food provided by forest and trees were relatively unimportant compared to other ecosystem services. However, aesthetics, air quality and human health had been considered as being the most important ES in all provinces The median important value of employment (e.g., green jobs) is around 50, which indicates that people think the forest and trees have economic values, and Guangxi province in the south China has the highest median value compared to other 17 provinces.

The spatial distribution of the median important value for EDS by provinces is shown in Table 37. The aesthetic issues, air pollution and local climate had been regarded as the least important EDS created by forests and trees (median<40). The societal perception on economic issues, environmental issues, health issues, land use issues, safety hazards and security issues caused by urban forests varied in 18 provinces. More specifically, people in Jiangxi Province held a directly opposite perception regarding the land use and security issues; the health issues brought by urban forest and trees were considered as an important EDS (median > 50).

The importance of entire provisioning, regulating and cultural ecosystem services across all woodlands significantly varied in provinces ($p<0.01$), except for the human health ($p>0.05$), while the importance of ecosystem disservices didn't show any significance difference among the provinces ($p>0.05$).

The detailed list can be found in Appendix XVIII.

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Table 36: Median value of importance ES provided by urban forest and trees by provinces (all woodland types)

Province	Timber	Firewood	Wild food	Water quality and erosion	Air quality	Carbon storage	Habitat	Spiritual	Education	Recreation	Human health	Natural hazard protection	Employment	Aesthestics	Noise reduction	Temperature reduction
AnHui	29	21	36	80	90	79	78	79	78	80	87	72	61	80	75	80
BeiJing	19	12	21	75	86	79	70	77	68	80	86	66	55	80	71	78
FuJian	32.5	21.5	37.5	80	87	81	79	79	72	80	82	79	60	81	74	80
GuangDong	32	22	30	74	84	76	69	69	63	73	82	70	55	73	66	76
GuangXi	41	29	45.5	79.5	90.5	79	79	75.5	69.5	77	84	78	64	81	72	79
HeBei	25	20	28	76	83	75	67	74	65	78	84	63	58	79	67	76
HeNan	25	20	33.5	78	85	78	70	74	65	80	83	70	59	80	69	75.5
HuBei	25	22	29	77	84	78	70	76	68	78	83	67	60	79	68	78
HuNan	24	21	35	79	88	78	78	78	64	76	85	75	59	80	77	79
JiangSu	26.5	21	34	78	86	74	73	73.5	65	78	85	69.5	61	80	73	77
JiangXi	40	24	39	80	89.5	79	78.5	78	71	79	86	79	60	81	77.5	81
ShanDong	25	20	33	80	86.5	78	71	76	69	77.5	86	70	59	81	71.5	77
ShanXi	23	20	34	79	88.5	80	78	78	69.5	80	85	74.5	60	82	77	80
ShaanXi	30.5	21	36	78	88	79	75.5	78	65.5	79	86	72	59	80	75.5	80
ShangHai	21	16.5	25	71	82	74	70	71.5	72	76.5	84	62.5	58	78	68	73
TianJing	27	20	31	79	89.5	79	70	77	66.5	79	87	69.5	56	80	75	78
Zhejiang	33	21	39.5	79	86	79	73	72.5	66	75	84	70	59	79	71	77
Chongqing	31	22	41	78	85	78	74	75	68	79	83	74	60	80	75	79

Table 37: Median value of importance EDS provided by urban forest and trees by provinces (all woodland types)

Province	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
AnHui	21	23	23	18	31	20	47	29	32	33
BeiJing	35	44.5	35.5	33	52	31	48	42.5	38	39.5
FuJian	27	39	35	31	42	28	46	41	22	33
GuangDong	28.5	37	33.5	24.5	38.5	28	47.5	42	38	43
GuangXi	25	36	42	26	49	29	54	45	45	40
HeBei	25.5	43.5	39.5	26	45	27.5	43.5	47	36	33.5
HeNan	33	40.5	41.5	34	40	34.5	41.5	36	39	42
HuBei	38.5	40.5	43	28	52	24	62	49.5	51	40
HuNan	31	38.5	34	20	49.5	19.5	50	33.5	40	17
JiangSu	24	38	25	25	44	26	46	39	32	39
JiangXi	35	53	40	42	61	39	57	58	55	46
ShanDong	40	43.5	37.5	30.5	44.5	28	45.5	51.5	32	47
ShanXi	31	46	36	31	39	36	47	45	43	39
ShaanXi	32	35	25	23	52	39	50	53	36	40
ShangHai	28.5	39	32.5	27	33	28.5	53.5	39	29	33.5
TianJing	30	35	31	22	40	22	41	32	25	30
Zhejiang	28.5	40.5	39.5	22	48.5	22	49.5	50	34	30
Chongqing	40	43	40	22	50	22	48	51	46	34

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3.2.3 Effects of socio-demographic factors on ecosystem services and disservices

Ecosystem services

The socio-demographic factors (i.e., gender, age, education, income, rurality, and the duration of time people live within a city) are associated with the perception of ecosystem services. Our results show that the region and income are significant predictors for a reduced importance of provisioning ecosystem services such as timber, firewood and wild food ($p<0.05$). Respondents with higher income assign a lower importance of provisioning ES.

Income can directly predict the increasing importance of regulating ES, except for air quality, whilst rurality would predict increasing importance of regulating ES, except for water quality and erosion. In addition, education has significance impacts on increasing the importance of habitats and natural hazard protection.

For cultural ES, region and rurality were the major predictors. Rurality significantly reduced the importance of cultural benefits. Meanwhile, age was a good predictor for the increase of the education, recreation and human health importance, whilst income predicts the increased importance of cultural ES such as spiritual, employment and aesthetics. Moreover, education and the age group only significant affected spiritual and recreation, respectively. The results of the multiple linear regression analysis for ecosystem services can be found in Appendix XIX.

Ecosystem disservices

Contrary to ES, the socio-demographic factors failed to predict the perceptions of ecosystem disservices properly. Specifically, only education, region, and rurality were found the significantly impacting the importance of infrastructure issues in forests or parks. The results of the multiple linear regression analysis for ecosystem services can be found in Appendix XIX.

3.2.4 Visual preferences towards landscape aesthetics

Considering the most attractive landscape close to residential areas, our results indicated that the cultivated urban forest landscape has been selected by most respondents (52%), whilst the wild landscape has the least percentage of selection (8%). (Figure 55).

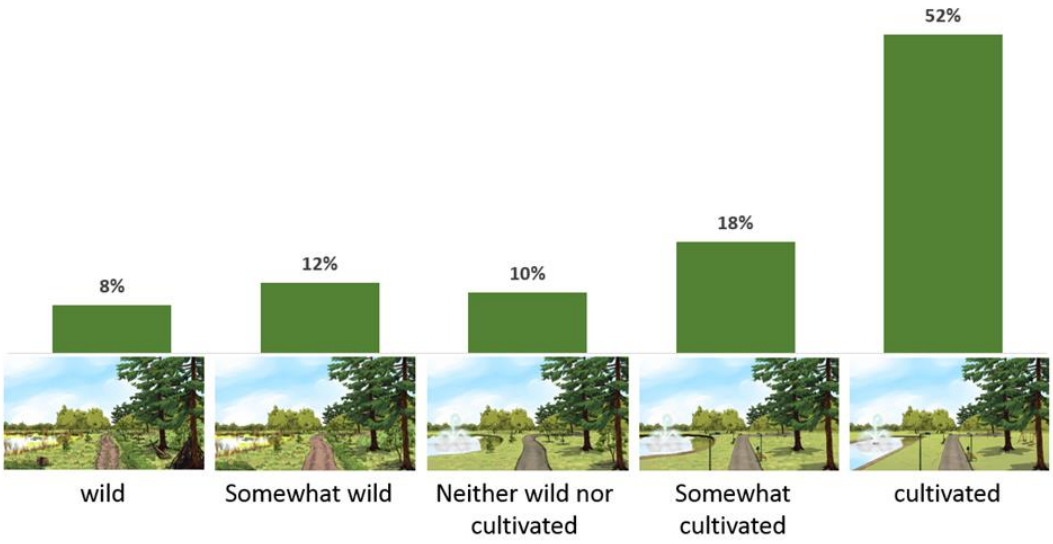

Figure 55: The percentage of selection for most attractive landscape

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Moreover, the views of most attractive landscape were significantly different among gender ($\chi2=59.304$, $p<0.01$), however it showed no significant correlation with the rurality ($\chi2=11.707$, $p=0.470$) and age ($\chi2=25.858$, $p=0.052$) (Table 38).

Table 38: View of the most attractive landscape in China (N=7,323)

	Wild	Somewhat wild	Neither wild nor cultivated	Somewhat cultivated	Cultivated
***Gender**					
Female	7.4 %	10.3 %	9.2 %	17.4 %	55.7 %
Male	8.4 %	12.8 %	10.7 %	19.2 %	48.9 %
Rurality					
City or town centre	8 %	11.7 %	9.8 %	18.2 %	52.3 %
Suburb of a city or town	8.3 %	11.8 %	10.7 %	19.9 %	49.2 %
Rural area nearby a city or town	6.7 %	11.2 %	9.9 %	18.2 %	53.9 %
Rural area/countryside	9.4 %	11.7 %	9.4 %	15.3 %	54.2 %
Age [2]					
18-30	7.2 %	11.3 %	9.8 %	19.1 %	52.7 %
31-50	8.6 %	11.8 %	10.3 %	16.9 %	52.4 %
51-65	13.3 %	14.3 %	10.2 %	17.9 %	44.4 %

Notes: a) 1 the two gender categories “other” and “no answer” were not included into this table. b) 2 the two age categories “<18” and “>65” were not included into this table. c) this table only showed the percentage of selection. d) * means the significance by chi-square test, $p<0.05$.

3.2.5 Visual preferences towards landscapes with the most ecological value

The cultivated scenery close to a living space was regarded as the most beneficial landscape offered by nature for most citizens (40%), whilst the, neither wild nor cultivated landscape, has the lowest selection (11%) (Figure 56).

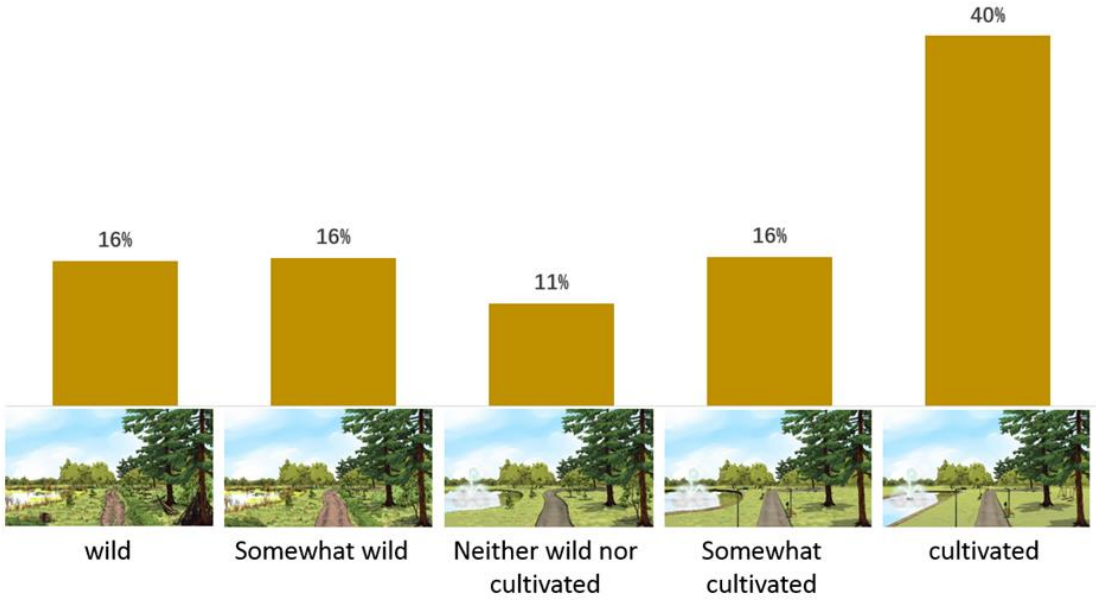

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Figure 56: The percentage of selection for the landscape offering the greatest benefits provided by nature to society.

Furthermore, the views of most beneficial landscape were significantly varied according to rurality ($\chi2=28.305$, $p<0.01$) and age ($\chi2=31.454$, $p=0.011$). The female and male results did not show an obvious difference between the five benefits offered by the landscape ($\chi2=12.979$, $p=0.320$) (Table 39).

Table 39: View of the landscape offering the most benefits provided by nature to society in China (N=7,323)

	Wild	**Somewhat wild**	**Neither wild nor cultivated**	**Somewhat cultivated**	**Cultivated**
Gender [1]					
Female	15.9%	15.7%	11%	16%	41.3%
Male	15.8%	16.7%	11.3%	16.5%	39.7%
***Rurality**					
City or town centre	15.6%	16.6 %	11.2 %	16.2 %	40.5 %
Suburb of a city or town	16.9%	17.2 %	11.6 %	17.2 %	37.2 %
Rural area nearby a city or town	18.2%	15.3 %	10.8 %	16.2 %	39.4 %
Rural area/countryside	11.9%	13.2 %	11.1 %	14.9 %	48.9 %
***Age** [2]					
18-30	17.1%	16.5 %	11.3 %	16.6 %	38.5 %
31-50	14.1%	16.1 %	10.9 %	15.6 %	43.3 %
51-65	16.8%	13.3 %	12.8 %	16.3 %	40.8 %

Notes: a) [1] the two gender categories "other" and "no answer" were not included into this table. b) [2] the two age categories "< 18" and "> 65" were not included into this table. c) this table only showed the percentage of selection. d) * means the significance by c hi-square test, $p<0.05$.

3.2.6 Most frequently visited landscape types

Across the entire data set (n=7,323) (Table 40), 11.0% respondents (n=803) did not go to a forest/park at all, whilst the 12.6% (n=925), 45.4% (n=3,333) and 30.9% (n=2,262) respondents mostly visited forests in the countryside, the forest in or nearby a city, and parks in a city or town, respectively.

Table 40: Most frequently visited woodland types in China (Responses to the question: "what do you visit most frequently?" (n=7,323))

Items	**Frequency (n)**	**Percent(%)**
Forest in the countryside	925	12.6
Forest in, or nearby a city	3,333	45.5
Parks in a city or town	2,262	30.9
I do not go to a forest/ park at all	803	11.0

The selections of most frequently visited landscape types were significantly varied in gender ($\chi2=30.906$, $p<0.01$), age ($\chi2=99.274$, $p<0.01$) and the number of children ($\chi2=156.143$, $p<0.01$). Forest in or nearby a city was considered as the most frequently used type by all respondents.

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Table 41: Characteristic of the visitors to different landscape types in China (n=7323)

	Forest in the countryside	Forest in or nearby a city	Park	Non-frequent visitor
***Gender** [1]				
Female	11.7 %	46.1%	32.4 %	9.8 %
Male	13.6 %	45.1 %	29.4 %	12 %
Age [2]				
18-30	13 %	43.5 %	30.7 %	12.7 %
31-50	12.6 %	48.4 %	31.1 %	7.9 %
51-65	7.7 %	52 %	31.1 %	9.2 %
Number of Children				
No children	11.1 %	39.1 %	34.1 %	15.7 %
1 child	12.5 %	50 %	29.9 %	7.6 %
2 children	13.9 %	47.2 %	28.7 %	10.2 %
>2 children	18.5 %	43.6 %	26.1 %	11.8 %

Notes: a) [1] the two gender categories "other" and "no answer" were not included in this table. b) [2] the two age categories "<18" and ">65" were not included into this table. c) this table only showed the percentage of selected responses. d) * means the significance by chi-square test, $p<0.05$.

3.2.7 Frequency of visits to a woodland and greenspace

The frequency of visits to different landscape types, i.e., forest in the countryside (n=925), the forest in or nearby a city (n=3,333) and parks in a city or town (n=2,262) were analysed to explore which types of landscape were most frequently visited by citizens. Our result in Figure 57 showed that forests or parks near to cities were considered as having the most relative high frequency of visits, compared to rural forests and city parks.

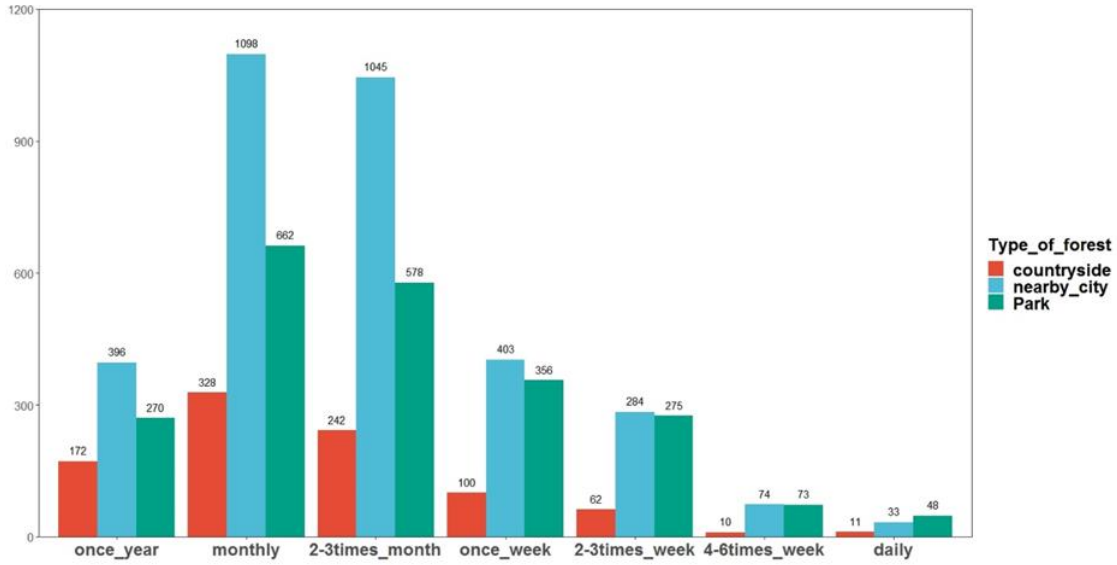

Figure 57: Frequency of visits to a forest or park (response to the question: On average, how often do you visit this forest/park?)

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3.2.8 Means of transport and travel time to reach a woodland and greenspace

When considering the transportation for visiting the different landscape types, it was found that the car was the most common method used to reach forests or parks in the countryside and nearby cities, whilst walking was the main way reaching the city parks (Figure 58).

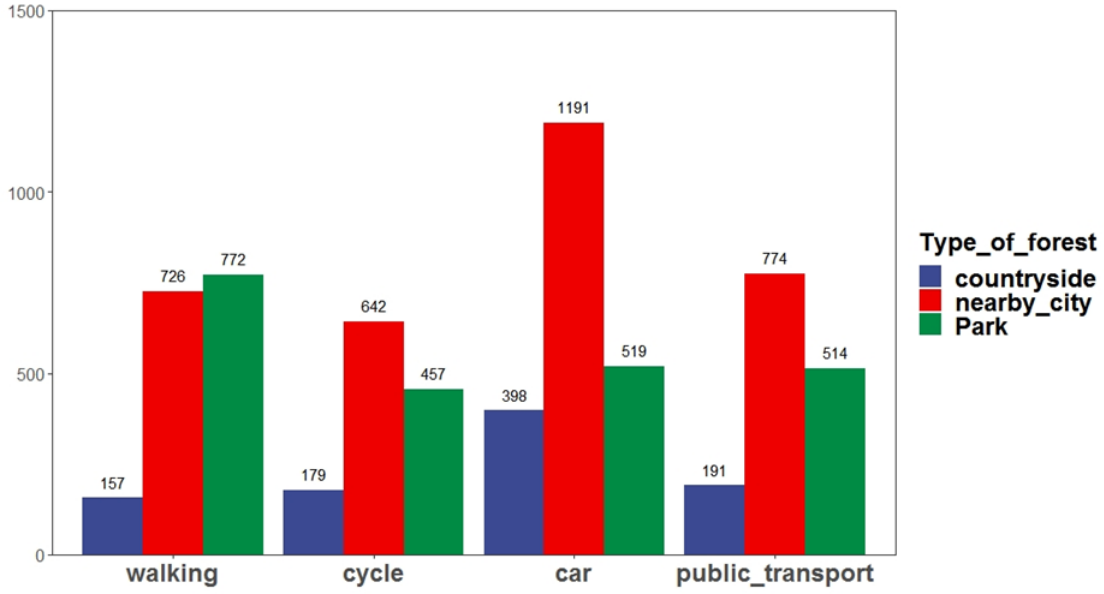

Figure 58: Choice of transport to reach a forest or park (response to the questions: how do you typically get to this forest/park?)

Regarding the responses for travel time to visit the different landscape types (Figure 59), the results showed that the travel time exceeding 30mins (including 31-45mins, 46-60mins and >60mins travel time category) were selected by respondents when they visited forest near a city. Less than 30mins travel time (including 1-15mins and 16-30mins travel time category) was selected more by those who visited the city parks. Furthermore, respondents were unwilling to travel 16-30min to the forests near the city.

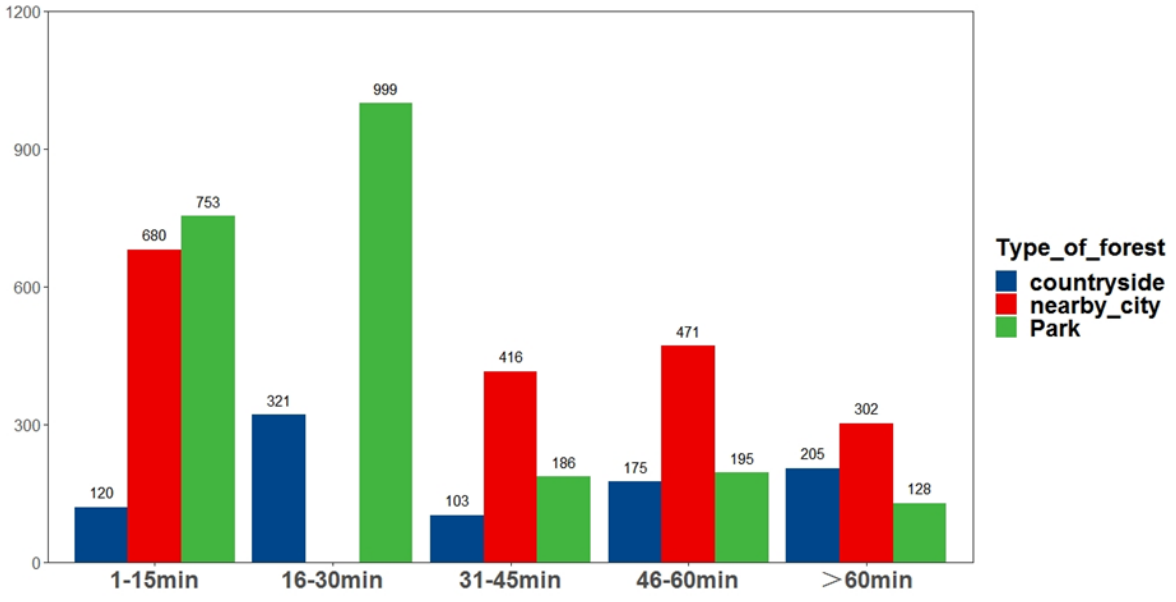

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Figure 59: Travel time to a forest or park (In response to the question: How long do you need to travel to this forest/park?)

3.2.9 Main reasons for not visiting a woodland or greenspace

The limitations of time (n=282, 35.07%), the distance (n=209, 26%) and lack of interest (n=146, 18%) were the three main reasons for infrequent visits (n=803) (Figure 60). In addition, access limitations (n=40, 4.98%) were another clear reason which prevented people from visiting a forest or park (Figure 65). However, reasons such as a lack of parking space (n=4,0.50%), untidiness (n=2, 0.25%), fear of illness (n=5, 0.62%), lack of safety (n=13, 1.62%), allergies (n=12, 1.49%), fear of domestic animals (n=2, 0.25%), fear of wild animals (n=8, 1.00%), fear of falling trees (n=2, 0.25%), fear of getting lost (n=15, 1.87%) and physical reasons (n=13, 1.62%) were hardly considered by people.

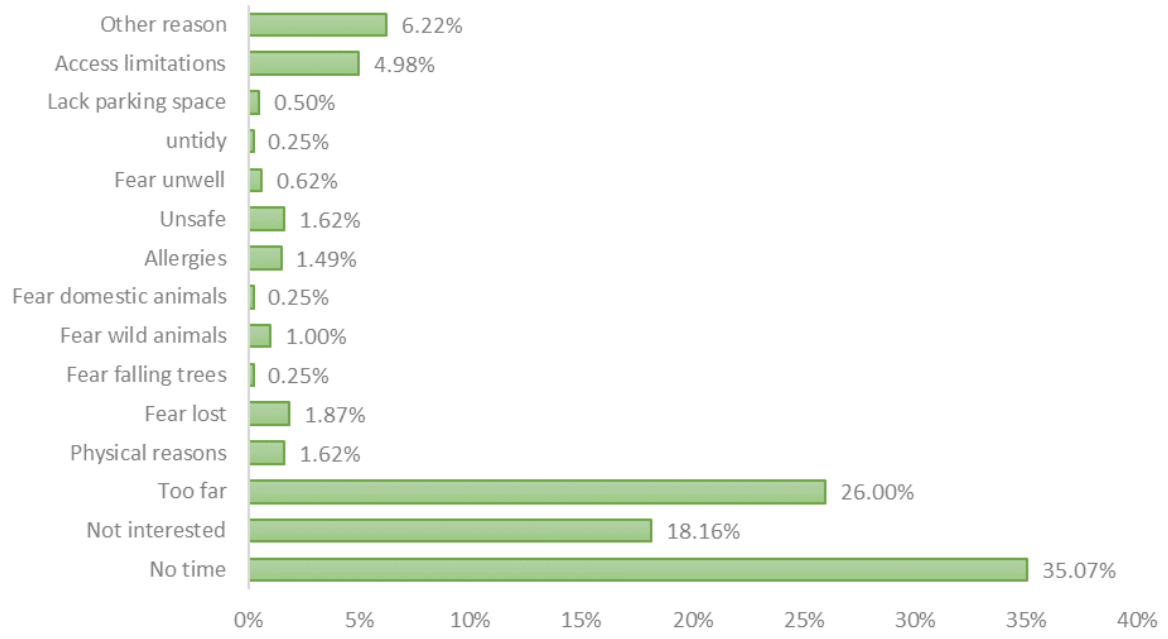

Figure 60: Most frequent answers on the main reason for not going to a forest or park. Infrequent visitors (n=803) were surveyed.

3.2.10 Overall satisfaction with a woodland and greenspace

The overall satisfaction with forest and greenness was evaluated by 803 respondents who didn't go to a forest or park (Figure 66). The proportion of their perceptions for: only benefits, more benefits and benefits equal dis-benefits were 27% (n=213), 62% (n=499) and 9% (n=71) respectively.

Regarding the evaluation on the proportion of benefits and dis-benefits that forests provide, there were 925 respondents who selected the category: most frequently visited rural forest, which showed a high overall satisfaction with the ES rural forest provided (Figure 66). There were 32% respondents (n=292) who insisted that forests only provide benefits while 1% respondents (n=5) indicated that forests only provide dis-benefits, respectively. More than half the respondents (56%, n=516) believed that the forests provide benefits which exceed the dis-benefits.

When considering evaluation on the proportion of benefits and dis-benefits that the forests provided, all the 3333 respondents who most frequently visited peri-urban forests, thought that forests don't only provide dis-benefits (Figure 66). In fact, 60% of them (n=1,997) indicated that forests could provide greater benefits than dis-benefits, while 34% (n=1,121) respondents thought forests only brought benefits.

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The majority of the 2,262 respondents that most frequently visited parks in a city or town thought that forests do provide more benefits than disbenefits (Figure 66). In fact, 57% (n=1,283) of them thought forests could provide more benefits and 37% (n=831) respondents considered that forests only provide benefits.

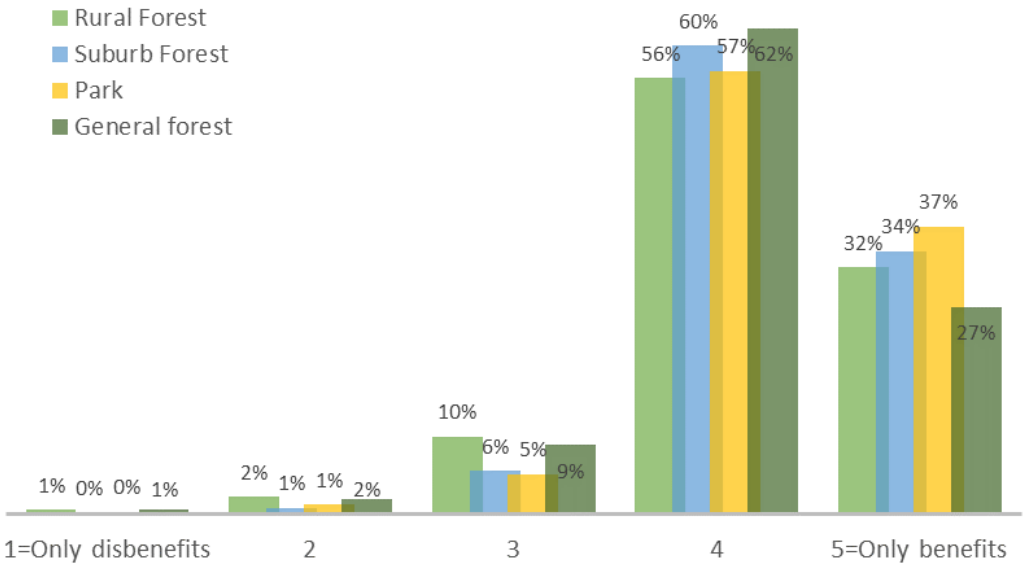

Figure 61: Overall satisfaction with forests and greenness. Responses to the questions: evaluate the proportion of benefits and dis-benefits which forests, in general, provide to you. 1=only dis-benefits, 2=more dis-benefits, 3=benefits equals dis-benefits, 4=more benefits, 5=only benefits.

3.2.11 Public perceptions of ecosystem services and disservices by landscape types

The median importance value of ecosystem services (ES) of different woodland types, i.e., forest in the countryside (n=925), forest in or nearby a city (n=3,333), park in a city (n=2,262), forest in general (n=803) were analysed in this part and the results are shown in Table 42.

Table 13 indicated that improving air quality was considered as the most important benefit of forest in the countryside (median=85), forest in or nearby a city (median=86) and forest in general (median=98). The benefit of providing human health and well-being (median=86) had the greatest importance in the city parks.

Table 42: Importance of ES according to different woodland types in China

Items	**Forest in the countryside**	**Forest in or nearby a city**	**Park in a city**	**Forest in general**
	N=925	N=3333	N=2262	N=803*
Timber	39.00	24.00	20.00	72.00
Firewood	30.00	20.00	14.00	40.00
Wild food	44.00	31.00	20.50	64.00
Water quality and erosion	78.00	78.00	72.50	93.00
Air quality	85.00	86.00	83.00	98.00
Carbon storage	76.00	79.00	75.00	90.00
Habitat	74.00	73.00	66.00	89.00
Spiritual and cultural	72.00	75.00	78.00	71.00

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Education	68.00	70.00	65.00	66.00
Recreation	72.00	79.00	80.00	62.00
Human health	82.00	85.00	86.00	80.00
Natural hazard protection	73.00	70.00	62.00	89.00
Employment	62.00	59.00	56.00	66.00
Aesthetics	80.00	80.00	80.00	79.00
Noise reduction	76.00	71.00	70.00	78.00
Temperature reduction	78.00	78.00	76.00	84.00

Notes: 1) *means those respondents who indicated that they did not go to the forest; 2) numbers in this table were the median of importance value for ecosystem services (ES); 3) more information of IQR see Appendix XX.

The median importance value of ecosystem disservices (EDS) of different woodland types, i.e., forest in the countryside (n=925), forest in or nearby a city (n=3,333), park in a city (n=2,262), forest in general (n=803) were showed in the Table 43.

The disbenefits of associated health risks, e.g., wildlife or insect bites, allergies (median=54) were considered as being the most serious issue for forest in the countryside. The economic issue, e.g., costs for planting, maintaining, removal (median=45) was considered as the most important ecosystem disservice of park in a city. In addition, the safety hazard, e.g., uncontrolled pet dogs, risk of crime, falling branches was the most concerning issue for the forest nearby a city (median=53.25) and forest in general (median=48.5).

Table 43: Importance of EDS according to different woodland types in China

EDS	**Forest in the countryside**	**Forest in or nearby a city**	**Park in a city**	**Forest in general**
	N=925	N=3333	N=2262	N=803*
Aesthetic issues	40.00	39.50	37.75	44.50
Land use issues	49.00	40.00	45.50	44.25
Infrastructure issues	45.00	42.00	40.00	41.25
Local climate	38.50	45.00	44.00	39.25
Security issues	46.00	41.00	37.00	49.25
Air pollution	39.00	45.00	41.75	44.00
Health issues	54.00	36.00	45.50	47.25
Economic issues	51.00	41.50	43.75	46.25
Safety hazard	42.00	48.50	41.50	50.25
Environmental issues	42.50	45.00	41.00	53.00

Notes: 1) *means those respondents who indicated that they do not go to the forest; 2) numbers in this table were the median of importance value for ecosystem services (ES); 3) more information of IQR see Appendix XX.

3.2.12 Detailed perceptions of a rural forest (n=925)

A total of 925 samples who most frequently go to the forest in the countryside responded on the perceptions and demands towards the ES of rural forest. Among them, 154 samples responded on the EDS of this forest type as well. The distribution of the importance value for ES and EDS by provinces, as well as the demographic (gender, education and age) differences for the importance of ES and EDS, were analysed in this section.

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3.2.12.1 Importance of ES and EDS in different provinces

The spatial distribution of the median important value for ES by provinces is shown in Table 44. It shows that firewood, timber and wild food provided by rural forest and trees were moderately important compared with other ecosystem services in all provinces (the median important values are less than 50). Compared to other provinces, the respondents in Shanxi have the lowest median value for the firewood provided by rural forests, which means this ES was not considered important. However, aesthetics, air quality and human health had been considered as the most important ES in all provinces. The median important values of employment (e.g., green jobs) and education are around 50 in most provinces, which indicates that people in these regions think the forest and trees have economic values. The detailed information for Ecosystem services (ES) differences by provinces is shown in Appendix XXI.

The spatial distribution of the median importance value for EDS by provinces is shown in Table 45. The importance value of EDS varied in 18 provinces. For example, the respondents in Shaanxi, Hunan and Guangxi thought that the aesthetic issues created by rural forests should be given more attention. The respondents in Guangxi also considered that the health issues, infrastructure issues and safety hazards caused by rural forests had been highlighted. The aesthetic issues and air pollution were the least important EDS in Hubei province, whilst the economic issues, environmental issues, infrastructure issues, air pollution and safety hazards were regarded as the least important EDS created by forests and trees (median<40) in Anhui province. Detailed information on Ecosystem Disservices (EDS) differences by provinces is shown in Appendix XXI.

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Table 44: Median value of importance ES provided by rural forest by provinces

Province	Timber	Firewood	Wild food	Water quality and erosion	Air quality	Carbon storage	Habitat	Spiritual	Education	Recreation	Human health	Natural hazard protection	Employment	Aesthestics	Noise reduction	Temperature reduction
AnHui	31.5	28	39.5	79.5	89	75	77	66.5	76	64.5	79.5	61.5	57.5	79	61	70.5
BeiJing	22	21.5	35.5	80	89.5	80	70	77.5	74.5	78	84	76	66.5	80.5	77	80
FuJian	48.5	41.5	61.5	80.5	86.5	79.5	82	67.5	73	79.5	91	80	71	85	80	80.5
GuangDong	49.5	36.5	48.5	71	87.5	73.5	67	66	71	78	81	73.5	55	76.5	75	76.5
GuangXi	48	49	58	74.5	85.5	73.5	75	67.5	61.5	66	80	82	77	73	75	74
HeBei	28.5	25	27.5	64	88.5	67.5	59.5	61	59	69	80	62	60	79.5	67.5	78.5
HeNan	34	30.5	49	85	87	78	80.5	75.5	63	73	84	75	63	77.5	74	78
HuBei	38	29	40	77	81	77	68	63	70	72	80	63	59	78	70	77
HuNan	39	30	50	79	88	73	79	74	60	68	84	76	67	80	79	79
JiangSu	42	26	49	71	81	66	72	73	61	69	81	63	64	77	71	72
JiangXi	61	49	55	82	86	79	79	77	74	75	81	73	68	83	77	85
ShanDong	41	22	53	77	84	72	72	67	73	68	83	74	63	76	75	70
ShanXi	23	22	35	73	80.5	71	70	78.5	63.5	73	79.5	68.5	62	79	72	77.5
ShaanXi	40	23	50	79	84	78	70	75	71	75	88	75	60	81	79	81
ShangHai	28	21	40	78	88	83	76	75	78	74	89	74	65	78	79	76
TianJing	33	22	41	78.5	92	80.5	69	78.5	60.5	65	81.5	69.5	61	82.5	78.5	79
Zhejiang	39	40	60	76	86	74	80	66	65	75	83	77	67	81	80	80
Chongqing	44	42	51	67	81	62	73	74	66	63	80	60	75	79	77	79

Table 45: Median value of importance EDS provided by rural forest by provinces

Province	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
AnHui	33	38	23	27	21	23	39	25	29	17
BeiJing	40	34	47	40	44	38	45	50	43	43
FuJian	51	65	58.5	61	63	58	62	59.5	46	57.5
GuangDong	31.5	33	35	24	36	27	36	44	42	27.5
GuangXi	72	62	87	59	89	66	82	66	59	67
HeBei	57	46	60	51	46	45	46	58	49	41
HeNan	44	62	56	39	45	40	54	52	58	44
HuBei	22	54.5	36	35.5	41	24.5	67.5	40.5	44	36.5
HuNan	68	69	58	70.5	60	70	71.5	59.5	89.5	61
JiangSu	33	38	36	33	52	47	42	47	48	49
JiangXi	51	56	45	43	73	45	70	62	35	49
ShanDong	42	51.5	57	51.5	47.5	40.5	45.5	49.5	33.5	58
ShanXi	31	73	51	60	41	36	67	63	25	39
ShaanXi	68.5	48	48.5	54.5	67	42.5	42.5	61.5	40.5	57.5
ShangHai	24	58.5	27	17	44.5	20	50	50.5	24	16.5
TianJing	21	17	25	22.5	30	21.5	34.5	17.5	21.5	30
Zhejiang	36	48	40	21	46.5	53	62.5	61	37.5	51.5
Chongqing	55.5	81.5	47.5	32	70.5	29	59	51	42	51

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3.2.12.2 Importance of ES and EDS by gender

According to the responses to the question, "How important are the following benefits/dis-benefits of this forest to you?," relating to a specific forest in the countryside, no gender difference was identified regarding the importance of ecosystem services (Figure 62) or ecosystem disservices (Figure 63).

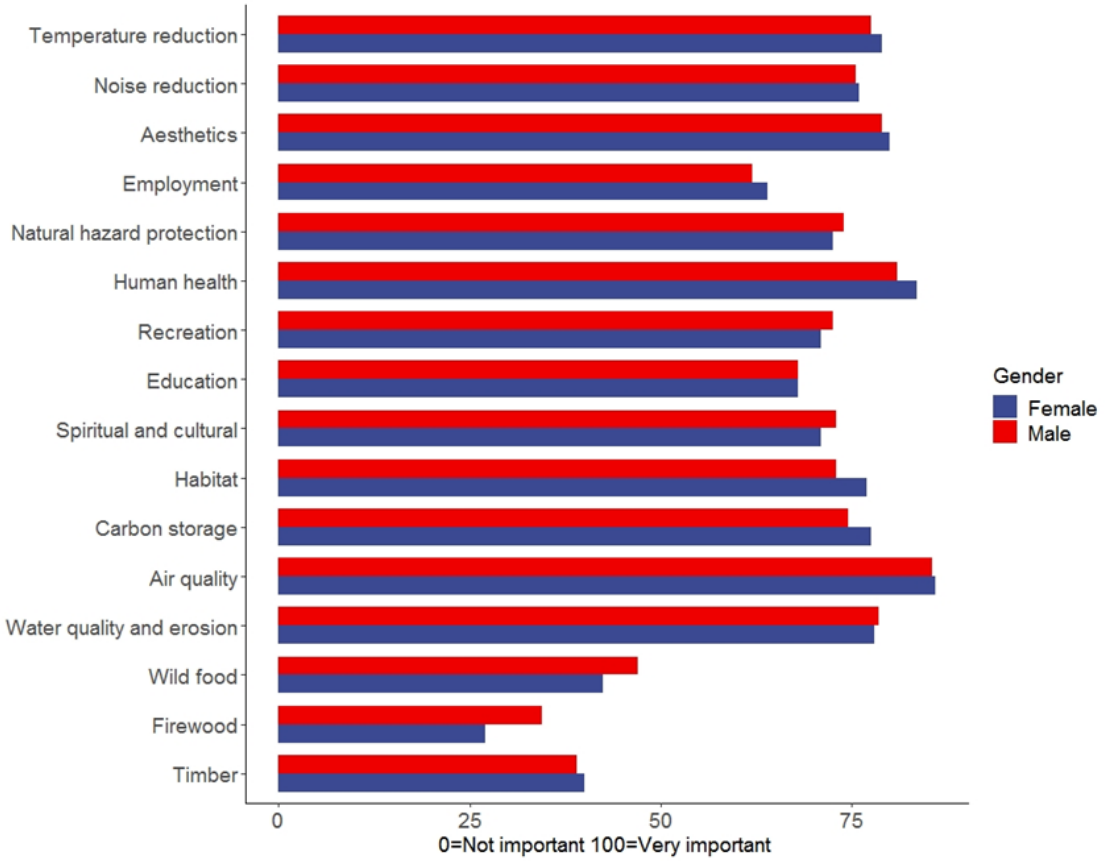

Figure 62: Gender differences for ecosystem services (ES) of a forest within the countryside. Responses to the question: How important are the following benefits of this forest to you? In relation to a specific forest in the countryside (n=925).

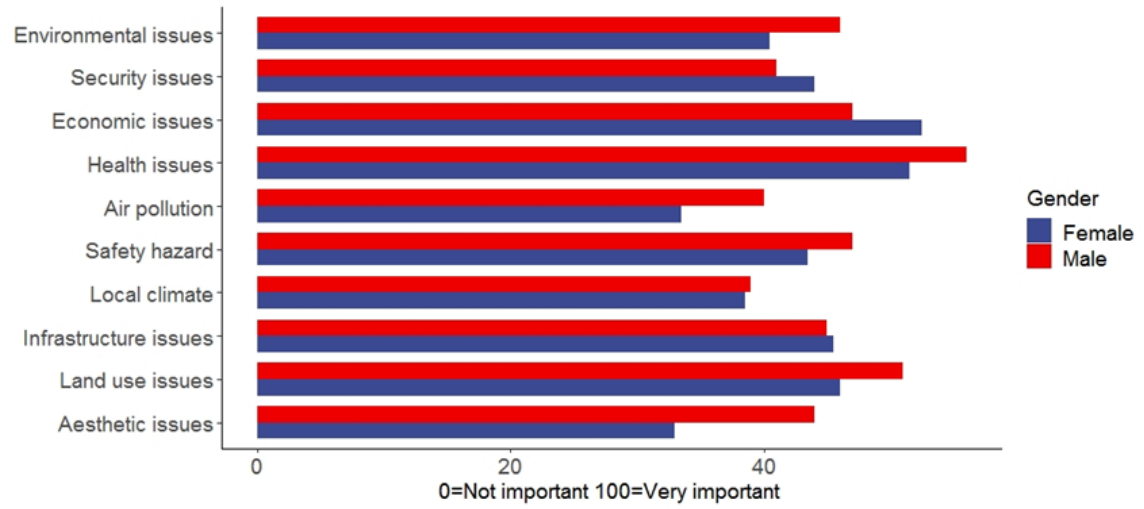

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Figure 63: Gender differences for ecosystem disservices (EDS) of a forest in the countryside. Responses to the question: How important are the following dis-benefits of this forest to you? In relation to a specific forest in the countryside (n=154).

3.2.12.3 Importance of ES and EDS by levels of education

Education differences were found to have a significant difference on ecosystem disservices, safety hazards (p=0.009) and aesthetic issues (p=0.029) (Figure 65). Respondents with a postgraduate diploma did not place importance upon aesthetic issues or safety hazards, whilst the technical college educated respondents, highly emphasised both aesthetic issues (median=62) and safety hazards (median=56) within rural forests.

However, there were no obvious differences related to education, from a perspective of ecosystem services within a specific forest in countryside. (Figure 64).

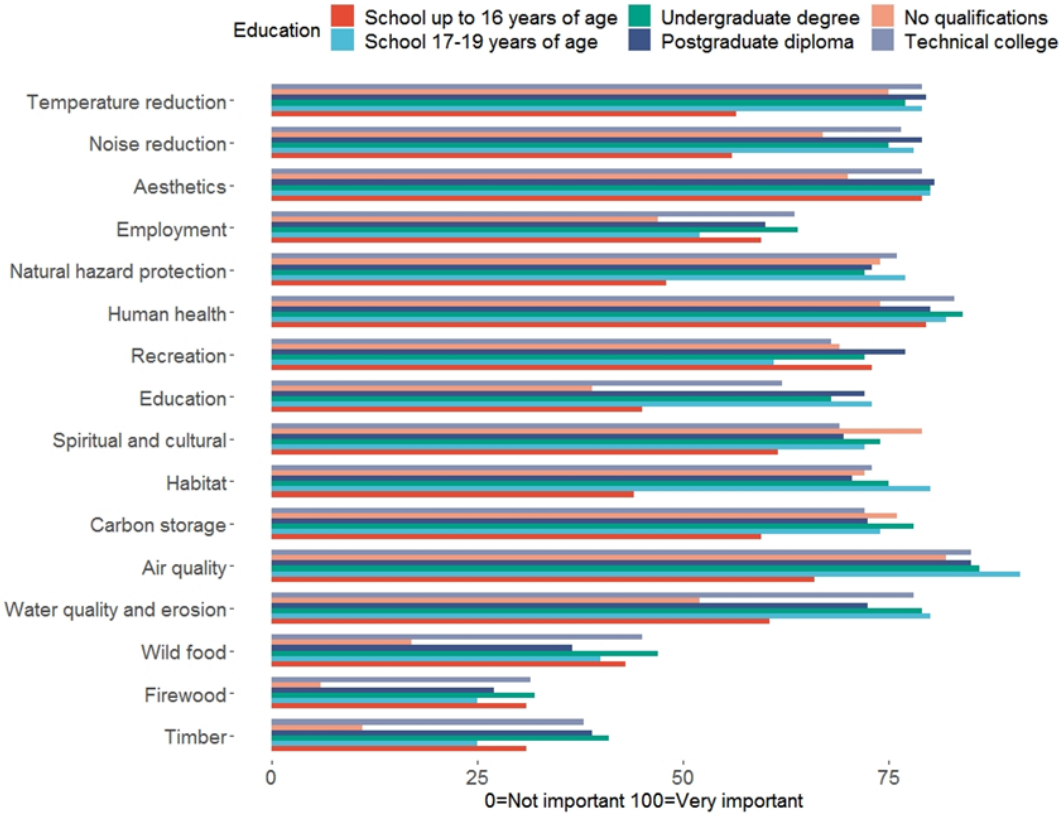

Figure 64: Education differences for ecosystem services (ES) of a forest in the countryside. Responses to the question: "How important are the following benefits of this forest to you?," in relation to a specific forest in the countryside (n=925).

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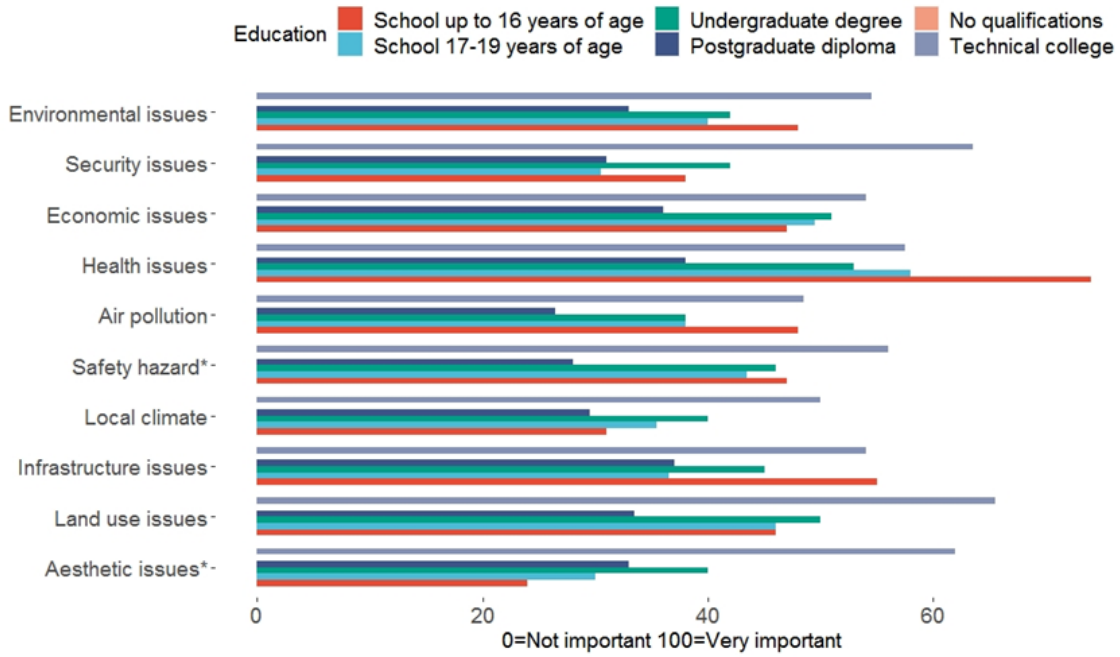

Figure 65: Education differences for ecosystem disservices (EDS) of a forest in the countryside. The * denotes significant differences. Responses to the question: "How important are the following dis-benefits of this forest to you?," In relation to a specific forest in the countryside (n=154). Scale: 0=Not at all important; 100=Very important.

3.2.12.4 Importance of ES and EDS by age groups

When considering the age differences in median ES ratings across the three age groups (i.e., 18-30 years of age, 31-50 years of age, 51-65 years of age group, samples with years of age <18 or >65 age were not included because of the small number of respondents, see Appendix XVI). Our results indicated that no significant differences in the importance of ES except for the recreation (p=0.039) and education (p=0.008) benefits. Compared to the younger (18-30 years of age) and elder (51-65 years of age) age group, the respondents in the age group of 31-50 years old thought that both recreation benefit (median=78) and education benefit (median=73) were provided by the rural forest.

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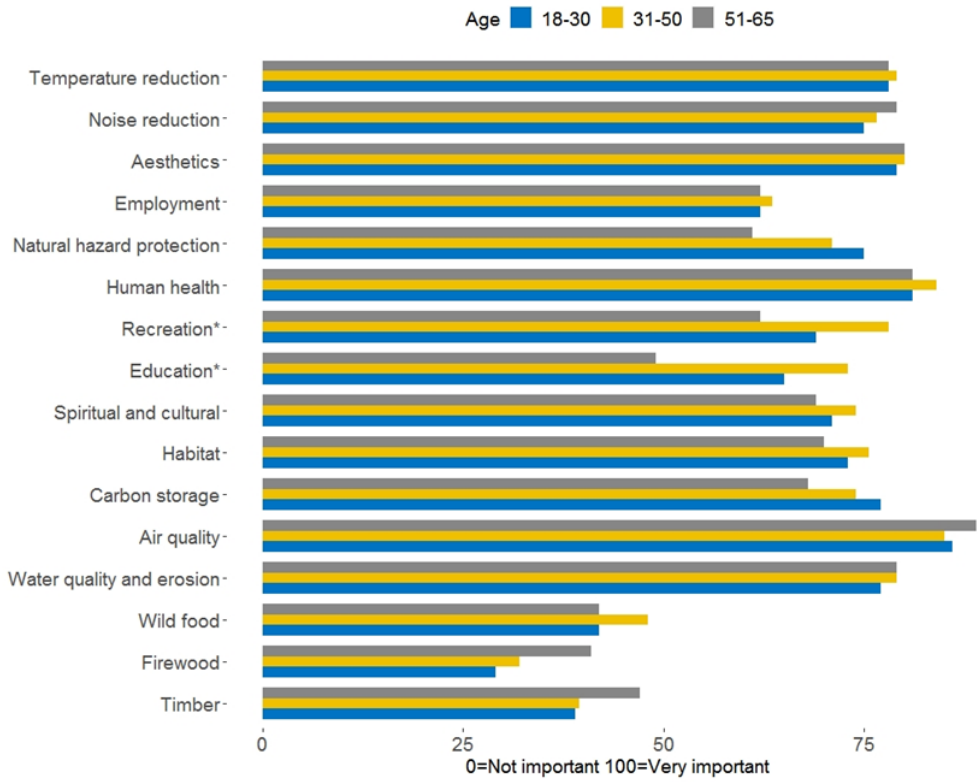

Figure 66: Age differences for ecosystem services (ES) of a forest in the countryside. The * denotes significant differences. Responses to the questions: How important are the following benefits of this forest to you? In relation to a specific forest in the countryside (N=925). Scale: 0=Not at all important; 100=Very important.

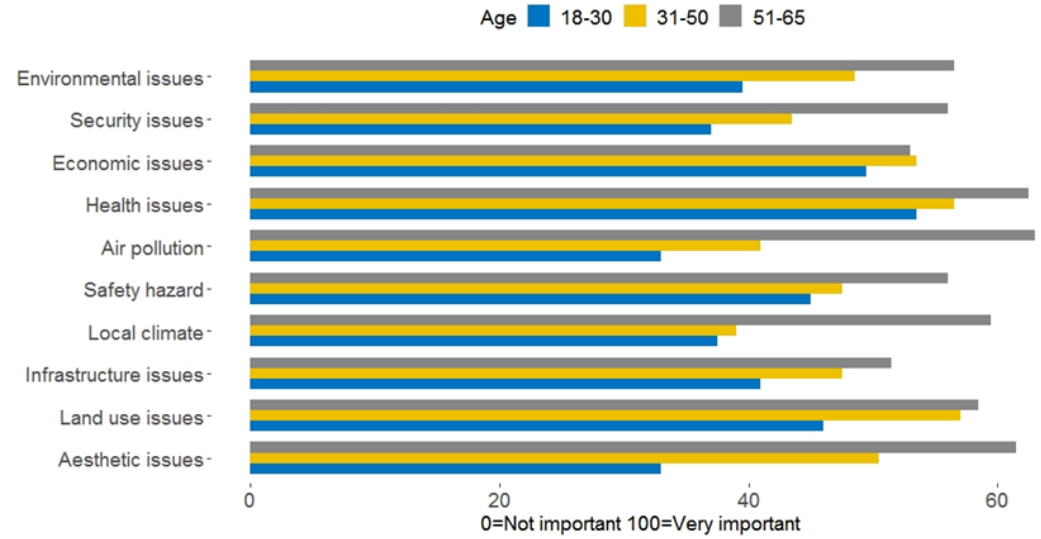

Figure 67: Age differences for ecosystem disservices (EDS) of a forest in the countryside. The * denotes significant differences. Responses to the questions: How important are the following dis-benefits of this forest to you? In relation to a specific forest in the countryside (N=154). Scale: 0=Not at all important; 100=Very important.

3.2.13 Detailed perceptions of an urban and peri-urban forest (n=3,333)

A total of 3,333 answers were received by respondents who most frequently go to the forest in or nearby a city. Among them, 337 respondents replied to the EDS of this specific forest as well. The

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distribution of the important value for ES and EDS by provinces, as well as the demographic (gender, education, and age) differences for the importance of ES and EDS were analysed in this section.

3.2.13.1 Importance of ES and EDS in different provinces

The spatial distribution of the median important value for ES by provinces is shown in Table 46. It shows that firewood, timber and wild food provided by urban and peri-urban forest and trees were relatively less important compared to other ecosystem services in all provinces (the median important values are less than 50). The air quality, aesthetics and human health are very important as the median important values reach 80. The median important values of employment (e.g., green jobs) is around 50 in 16 provinces except in Shanxi and Guangxi. The detail information of Ecosystem services (ES) differences by provinces is shown in Appendix XXII.

The spatial distribution of the median important value for EDS by provinces is shown in Table 47. The importance value of all types of EDS varied in 18 provinces. For example, the respondents in Beijing thought that the aesthetic issues created by urban and peri-urban forests should be given more attention. The respondents in Jiangxi considered the local climate changes caused by urban and peri-urban forests should be highlighted. The economic issues in Anhui (median>50) were viewed as the most important while it is the least importance EDS for the respondents in Hunan (median<30). The detail information of Ecosystem services (EDS) differences by provinces is shown in Appendix XXII.

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Table 46: Median value of importance ES provided by urban and peri-urban forest by provinces

Province	Timber	Firewood	Wild food	Water quality and erosion	Air quality	Carbon storage	Habitat	Spiritual	Education	Recreation	Human health	Natural hazard protection	Employment	Aesthestics	Noise reduction	Temperature reduction
AnHui	25	21	31	80	91	79	78	79	78	81	87	71	61	80	76	80
BeiJing	19	12.5	20	71.5	86	78	70	75.5	63.5	78	86	61.5	50	79.5	70	76
FuJian	23	21	29	80.5	89	81	79	79	68	79.5	80	78	59	82	72	81
GuangDong	28	20.5	30	73	81	77	69.5	69.5	64.5	73	80	70	55	73	67	76.5
GuangXi	35.5	23.5	41	80	92	82.5	80.5	79	74.5	76	84.5	78.5	68	85	71.5	80
HeBei	26	20	31	77	83	76	66	71	66	76	86	67	57	82	69	72
HeNan	21	18	30	74.5	83	74.5	67	72.5	65.5	80	82	66	58	78	65	73
HuBei	28.5	20	25	77	82.5	76.5	70	74.5	68.5	76	83	64.5	55.5	79	66	78
HuNan	22	20	35.5	79	88	78	77	79	67.5	78	86	71	55.5	78	74.5	78
JiangSu	33	22	35	80	88	77	76	73	68	77	88	72	63	81	74	80
JiangXi	28	21.5	36.5	80	91	80	78	77.5	73	80	86	79	60	82	78	81
ShanDong	24	20	30.5	80	86.5	79	72	75.5	70	77	87	69	57.5	81	71.5	79
ShanXi	28	20	40	79	87	80	77	78	76	81	87	73	64	84	79	81
ShaanXi	22.5	20	26	77	87	79	75	78	70	79	85.5	69	57.5	80	76	83.5
ShangHai	21.5	20	28.5	71	81.5	71	71	73	76.5	77.5	84	62	60	78	68	73
TianJing	23	20	28	79	93	79	68	78	72	79	89	67	54	80	74	79
Zhejiang	28	20	32	78	85	80	69	68	66	75	85	67	59	78	68	77
Chongqing	24	21	39	79	85	78	75	75	72	79	85	77	60	80	72	78

Table 47: Median value of importance EDS provided by urban and peri-urban forest by provinces

Province	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
AnHui	21	30	42	22	55	42	49	59	21	62
BeiJing	45.5	50	49.5	35.5	55.5	36	52.5	45	47	49
FuJian	21	34	35	33	27	29	40	37	20	38
GuangDong	24	36	29	28	36	29	47	38	39	41
GuangXi	25	34	42	26	47	29	54	45	44	37
HeBei	19	42.5	27	12	30.5	14.5	42.5	44.5	36	20
HeNan	36	38.5	36	32.5	34.5	45.5	43.5	40.5	32	43
HuBei	36.5	27	43	28	47	32.5	48	50	46	47.5
HuNan	35	53.5	33	17.5	54.5	18.5	35.5	44	32	11
JiangSu	23.5	42	22	17	34	24.5	44.5	33.5	27	31.5
JiangXi	29.5	51	44	43.5	63	41.5	54.5	64	55.5	52
ShanDong	27	43.5	22	14	40.5	20.5	31	43.5	19.5	24.5
ShanXi	28	35	27	24	25	38	40	46	45	39
ShaanXi	34	32	21.5	20	44	39	46	55	26.5	39
ShangHai	37.5	39.5	34.5	48	32.5	34	54.5	40.5	38	42
TianJing	33	35	24	19	30	21	36	39	19	29
Zhejiang	29	48.5	45.5	29	58.5	28.5	43.5	52.5	37.5	30.5
Chongqing	33	37	38	32	41	22	35	49	37	23

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3.2.13.2 Importance of ES and EDS by gender

Gender differences varied in several median ecosystem services. The statistically significant differences were found in carbon storage (p=0.006), air quality (p=0.006) and water quality (p=0.049) and erosion (p=0.014) of suburban forest (Figure 68). When considering the benefit of climate change mitigation (carbon sequestration and storage), male (median=78) had the same value as female respondents (median =78). For the ES benefits of air quality regulation (median=88 and 85 for male and female, respectively), water and erosion control (median=79 and 77 for male and female, respectively), such gender differences still occurred. However, there were no significant gender differences found in any ecosystem disservices ratings (p>0.05).

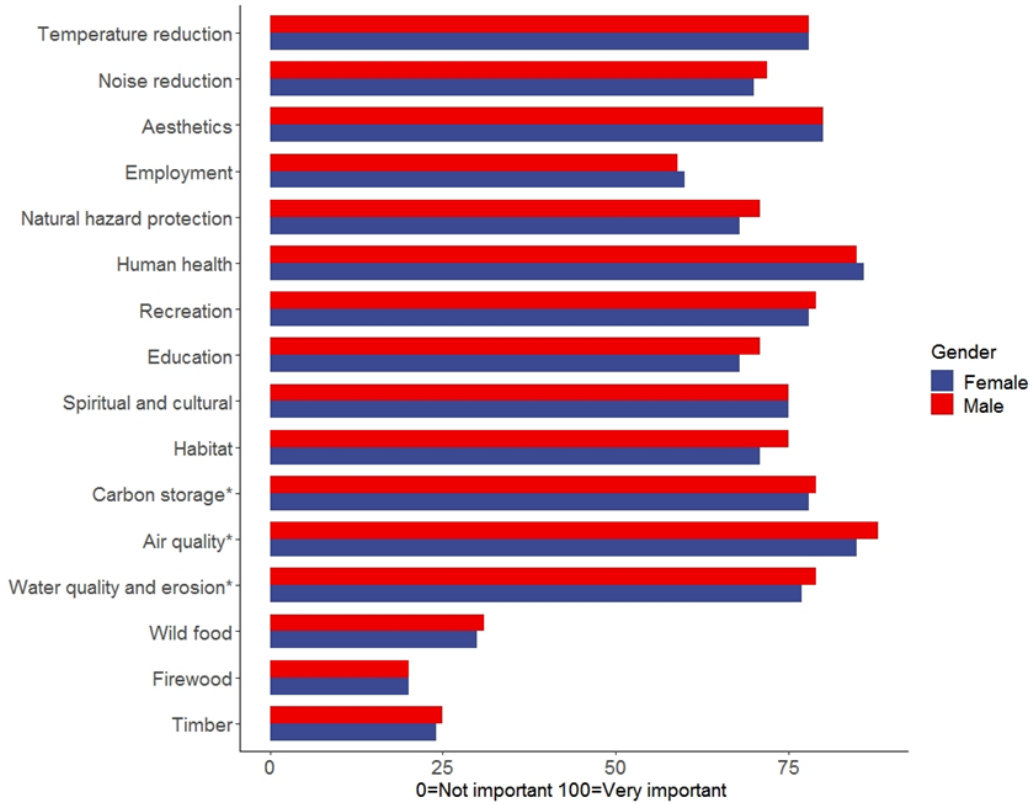

Figure 68: Gender differences for ecosystem services (ES) of a forest in or nearby a city. The * denotes significant differences. Responses to the questions: How important are the following benefits of this forest to you? In relation to a specific forest in or nearby a city (n=3333). Scale: 0=Not at all important; 100=Very important.

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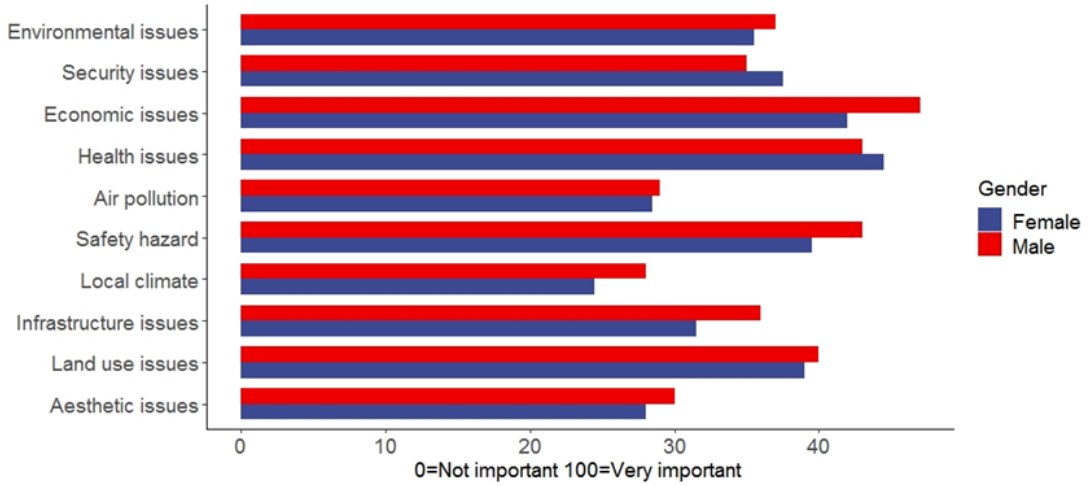

Figure 69: Gender differences for ecosystem disservices (EDS) of a forest in or nearby a city. Responses to the questions: How important are the following dis-benefits of this forest to you? In relation to a specific forest in or nearby a city (n=337). Scale: 0=Not at all important; 100=Very important.

3.2.13.3 Importance of ES and EDS by levels of education

The differences in the importance of ES by the highest level of education for the respondents were analysed in this part. Figure 70 and Figure 71 shows that there are statistically significant differences between people with different levels of education in natural hazard protection ($p=0.012$), firewood ($p<0.001$), timber ($p=0.029$), and land use issues ($p=0.041$). Respondents with the technical college education level (median=74) paid more attention to the benefit of lessening the negative impact of natural hazards. The benefit of suburban forests providing wood for timber and fuelwood has the lowest value. On the contrary, the respondents without qualifications put greater emphasis upon the timber (median=39) and fuelwood (median=36) that forests offered.

Furthermore, the potential disadvantage of losing land use development opportunities for industry, housing and businesses varied across six educational groups significantly. For example, the group, school up to 16 years, generally ignored this issue (median=6.5), while the group, school 17-19 years of age, highlighted the land use issues associated with forests (median=49).

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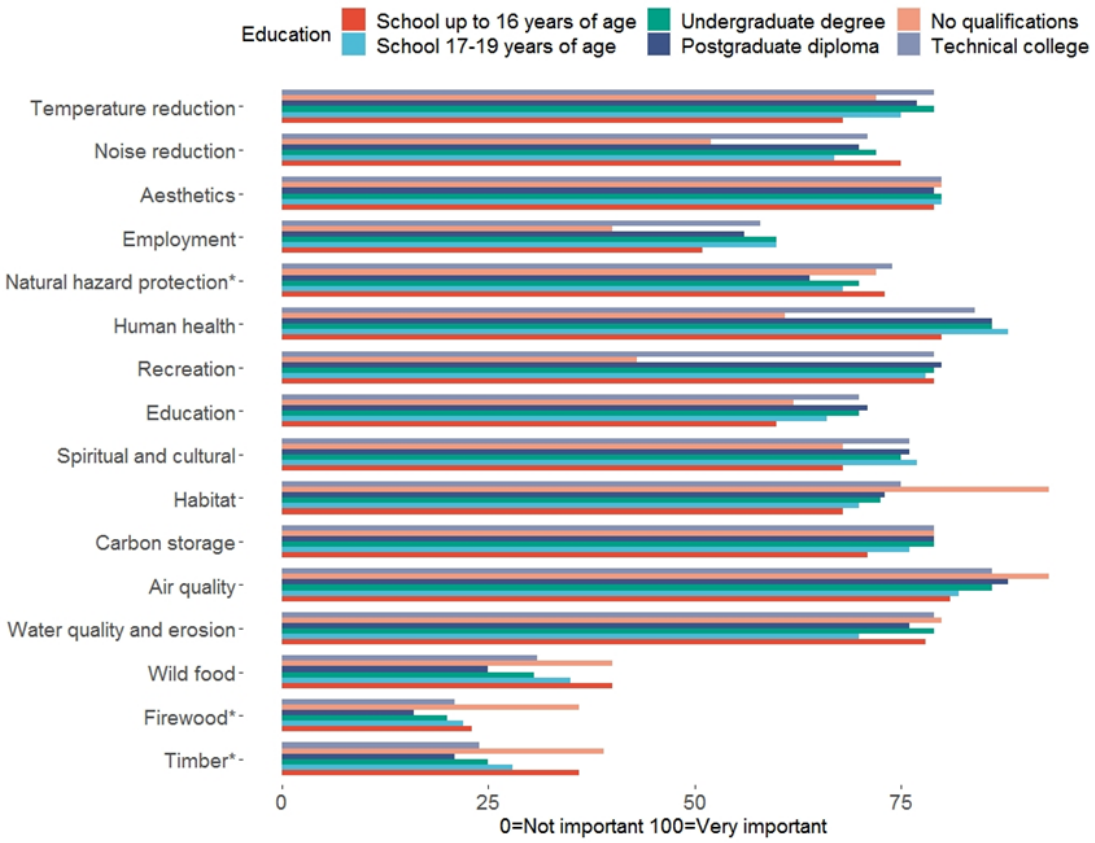

Figure 70: Education differences for ecosystem services (ES) of a forest in or nearby a city. The * denotes significant differences. Responses to the questions: "How important are the following benefits of this forest to you?," in relation to a specific forest in or nearby a city (n=3333). Scale: 0=Not at all important; 100=Very important.

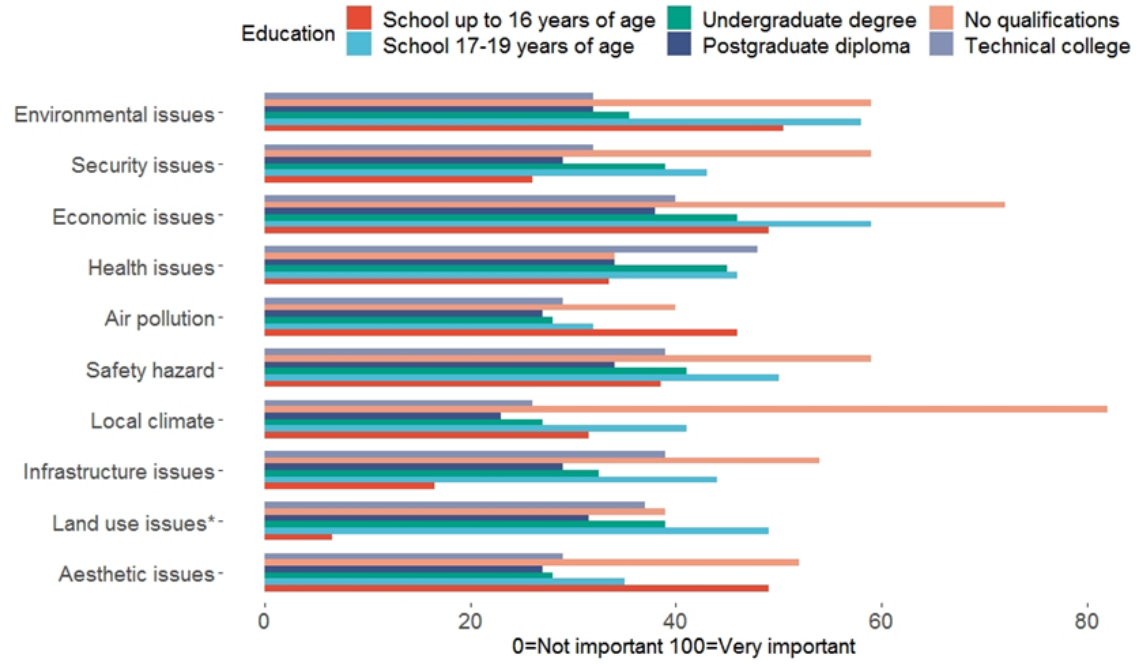

Figure 71: Education differences for ecosystem disservices (EDS) of a forest in or nearby a city. The * denotes significant differences. Responses to the questions: How important are the following dis-benefits of this forest

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to you? In relation to a specific forest in or nearby a city (n=337). Scale: 0=Not at all important; 100=Very important.

3.2.13.4 Importance of ES and EDS by age groups

When exploring the differences of ES in three age groups (i.e., 18-30 years of age, 31-50 years of age, 51-65 years of age group, samples with years of age <18 or >65 age are not included because of the small number of responses, see Appendix XVI), Figure 72 shows that the three age groups were significantly different in carbon storage (p=0.043), education (p=0.044), recreation (p<0.01) and noise reduction (p=0.009).

Among all benefits that suburban forest offered, the storing carbon and reducing climate change options were most highly favoured by the elder groups (31-51 years of age, 51-65 years of age). Meanwhile, the importance value placed upon other benefits such as providing opportunities for education, providing recreation opportunities, and reducing noise increased with the respondents' age.

Moreover, the statistically significant differences (p<0.05) were found in most EDS except for security issues, economic issues, health issues and safety hazards (Figure 73). Amongst them, only the median value of infrastructure issues, health issues, economic issues and environment issues exceeded 50, which showed the higher importance that respondents accorded. Besides, when considering the gender difference in the importance of EDS, the elder age group (51-65 years of age) focused upon the DES, such as the damage to public infrastructure (median=57.5) caused by suburban forest, being a source of health risks (median=54), increasing the cost to society (median=54.5) and creating environment issues (median=56.5).

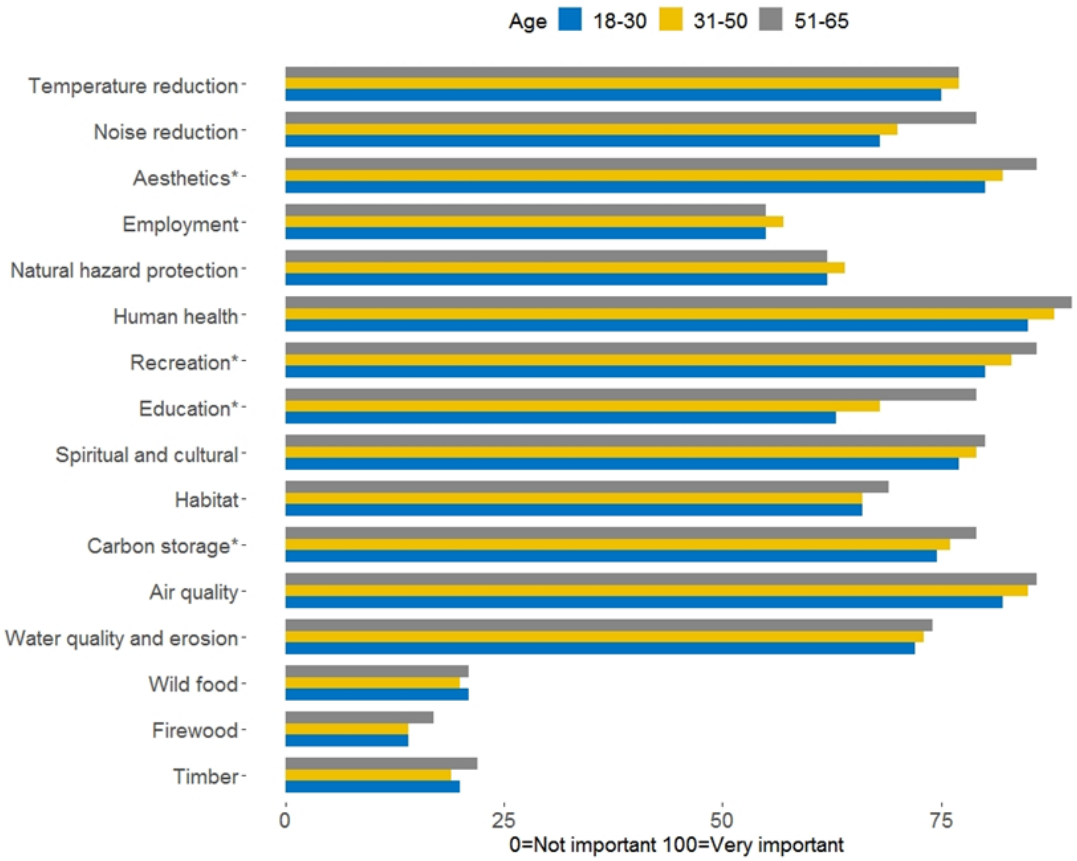

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Figure 72: Age differences for ecosystem services (ES) of a forest in or nearby a city. The * denotes significant differences. Responses to the questions: How important are the following benefits of this forest to you? In relation to a specific forest, in or nearby, a city (n=3,333).

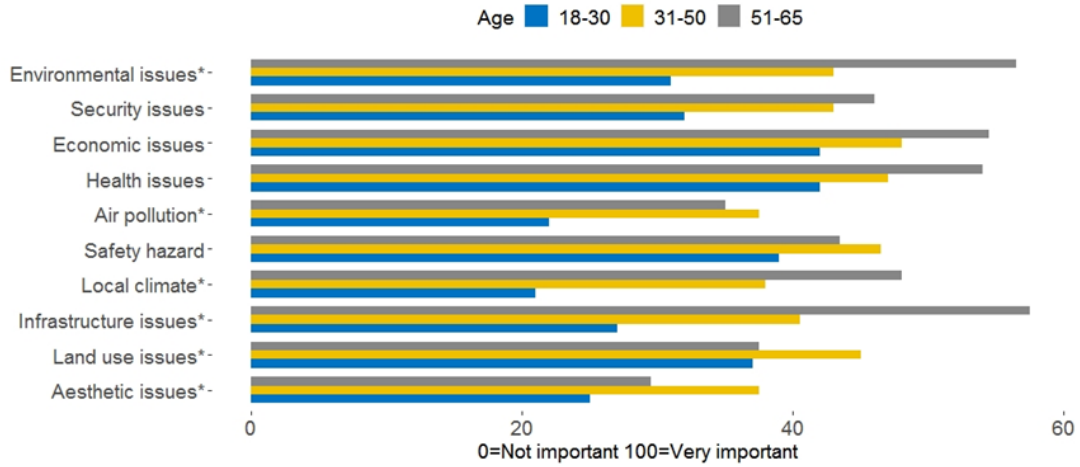

Figure 73: Age differences for ecosystem disservices (EDS) of a forest, in or nearby, a city. The * denotes significant differences. Responses to the questions: How important are the following dis-benefits of this forest to you? In relation to a specific forest in or nearby a city (n=337).

3.2.14 Detailed perception of a park (n=2,262)

A total of 2,262 samples who most frequently go to the park in a city or town, responded on perceptions and demands, towards the ES of parks. Amongst them, 168 samples replied to the EDS of this specific forest as well. The distribution of the importance value place upon ES and EDS by provinces, as well as the demographic (gender, education and age) differences for the importance of ES and EDS, were analysed in this section.

3.2.14.1 Importance of ES and EDS in different provinces

The spatial distribution of the median importance value for ES by provinces is shown in Table 48. It shows that firewood, timber and wild food provided by parks were the least important ES compared to other ecosystem services in all provinces (the median important values are less than 50). The air quality, aesthetics and human health are very important in all 18 provinces, as the median important values reach 80. The median importance values of employment (e.g., green jobs) is around 50 in Shangdong, Chongqing, Guangxi and Fujian, which indicates that people in these regions think the forest and trees have economic values. The detail information of Ecosystem services (ES) differences by provinces is shown in Appendix XXIII.

The spatial distribution of the median importance value for EDS by provinces is shown in Table 49. Compared to ES, the importance value of EDS indicates relatively lower importance and varied across detailed EDS types and provinces. For example, the respondents in Chongqing thought that the aesthetic issues created by parks were more important, while other provinces indicated lower imprtance. The respondents in Shangdong considered the air quality issues caused by parks should be highlighted. The environmental issues and safety issues in Shaaxi (median>60) were viewed as the most important compared to other provinces. The local climate changes caused by parks were regarded as the least important in all 18 provinces. The detail information of Ecosystem services (EDS) differences by provinces is shown in Appendix XXIII.

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Table 48: Median value of importance ES provided by a park by provinces

Province	Timber	Firewood	Wild food	Water quality and erosion	Air quality	Carbon storage	Habitat	Spiritual	Education	Recreation	Human health	Natural hazard protection	Employment	Aesthestics	Noise reduction	Temperature reduction
AnHui	22.5	19	25.5	78	84.5	79	72	85	78	82	89.5	72	60	81	73.5	80
BeiJing	10	5	12	70	83	79	70	81	70	88	87	64	57	82	73	79
FuJian	21	20	21	79	85	81	72	79	78	81	84	78	59	81	72	80
GuangDong	18	12.5	18.5	69.5	84	73.5	62	69.5	60	75	84.5	59	52.5	72.5	61.5	73
GuangXi	26	21	35	78	90	78	74	79	70	80	90	71	61	81	74	77
HeBei	19	12	20	61	80	65	60	75	60	81	86	54	46	78	58	70
HeNan	21	19	20	72	84	78	62	76	61	83	86	63	50	82	71	78
HuBei	19.5	20	21	74	83	74.5	63	79	65.5	80	84.5	61.5	60	81	68.5	76
HuNan	21	15	23	75	82	73	72	78	62	77	82	65	57	79	70	78
JiangSu	16	12	20	68	85	71	62	78	65	81	85	66	54	80	73	77
JiangXi	22	20	23	77	81	76	78	79	70	79	86	72	53	80	74	79
ShanDong	19.5	11.5	16.5	76	85.5	73	61.5	76	67	84	84	62	56	82.5	65.5	75
ShanXi	20	13.5	20	79	87.5	81	70.5	79	63.5	81.5	88.5	71	53	82.5	74	78
ShaanXi	21	19	24	72	87	74	66	78	60	83	87	62	54	80	63	73
ShangHai	9	7	10	60	80	70	60	71	62.5	80.5	85.5	50.5	49.5	79.5	67	70
TianJing	21	14	21	67.5	81.5	76	68	76.5	65	82.5	89	60	51	84	77.5	74
Zhejiang	20	13	22	74	81	75	69	79	62	78	87	62	55	80	63	71
Chongqing	21	18	23	70.5	79	72	61.5	77	65	80	83.5	63.5	59	80	73	79

Table 49: Median value of importance EDS provided by a park by provinces

Province	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
AnHui	19.5	16	15.5	10	28.5	12.5	36	39	29	27.5
BeiJing	25	48	22	21	30	27	32	42	25	12
FuJian	23	44.5	26.5	9.5	44	19.5	61.5	48.5	35	30
GuangDong	29	37	36	34	35	42	39	47	35	45
GuangXi	26.5	35.5	37	26	39	25	34	34	28.5	33.5
HeBei	24	42	35	26	50	27	36	47	22	23
HeNan	27	42	37	23	35	19	38	27	39	20
HuBei	39	37	47	28	56	42	48	28	63	51
HuNan	22	31	26	18.5	34	21	46	33.5	23.5	10.5
JiangSu	12	18	14	16	38	10	25	11	14	20
JiangXi	44.5	55	37	25.5	25	17	45	36	28	23
ShanDong	42	48	65	42	49	60	60	54	57	56
ShanXi	42.5	52.5	51	24	43	22.5	64	47	41.5	28.5
ShaanXi	32	46	42	22	83	21	71	50	31	72
ShangHai	22	28	26	26	28	18	53	25	23	24
TianJing	36	46	49	34	43	31	48	42	22	39
Zhejiang	24.5	33	33	20	34.5	21.5	46.5	57.5	29.5	25.5
Chongqing	55	47.5	41.5	26	42	18	38	56	32	14.5

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3.2.14.2 Importance of ES and EDS by gender

Regarding the ES of human health (p=0.028) there are significant differences between gender (p<0.05). The median value of importance for female and male exceeded 80 (median=89 for female, median=84 for male).

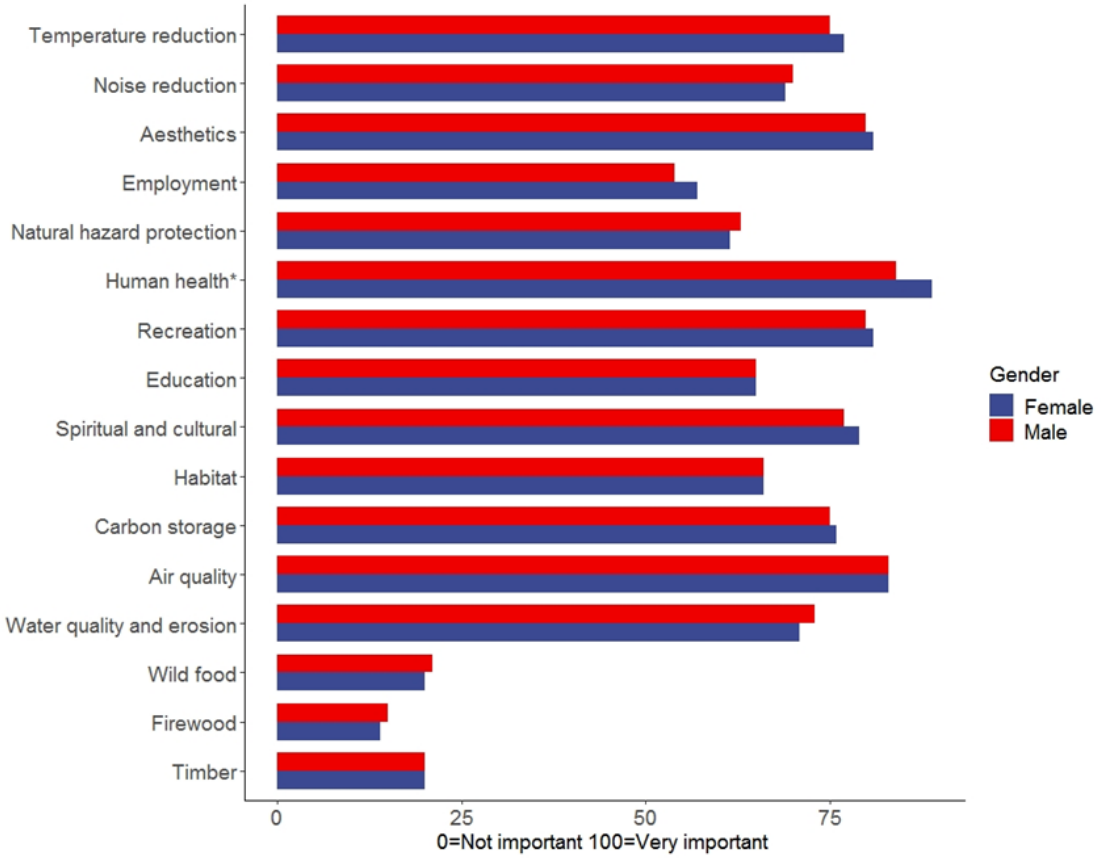

Figure 74: Gender differences for ecosystem services (ES) of parks in a city or town. The * denotes significant differences. Responses to the questions: How important are the following benefits of this forest to you? In relation to parks in a city or town (n=2262).

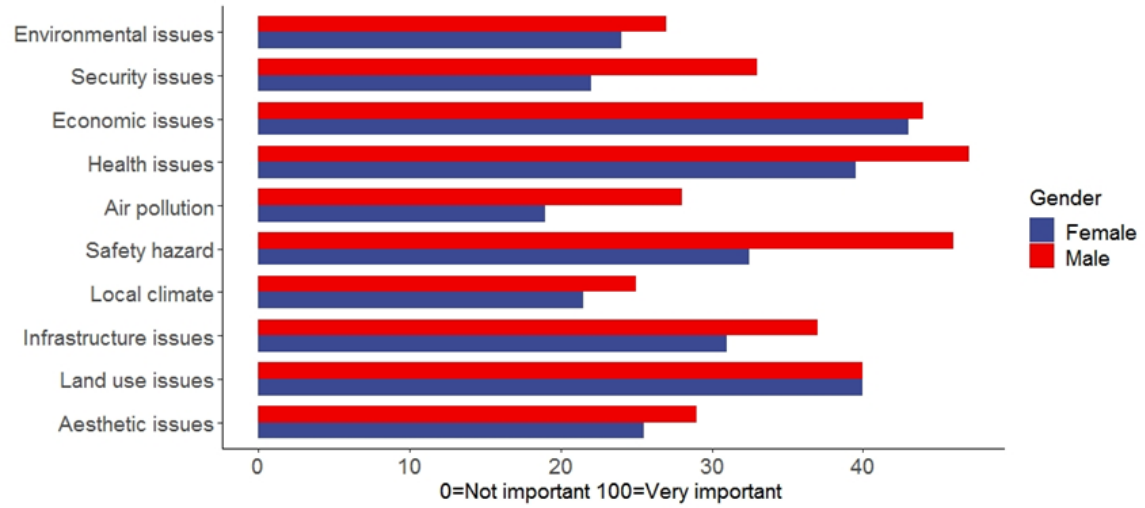

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Figure 75: Gender differences for ecosystem disservices (EDS) of parks in a city or town. Responses to the questions: How important are the following dis-benefits of this forest to you? In relation to parks in a city or town (n=168).

3.2.14.3 Importance of ES and EDS by levels of education

The significant difference by six education level ($p<0.05$) were found in the providing ES (wood, fuel and other products, $p<0.01$)) and natural hazard protection ($p=0.028$) (Figure 76). However, the median importance value of the three providing ecosystem services were less than 50, which indicates that public do not regard these as major ES of parks. The respondents without qualifications emphasized the importance of parks lessening the negative impact of natural hazards (e.g., storms, floods) compared to other education level groups (median=90).

Besides, several EDS such as safety hazard ($p=0.011$), local climate ($p=0.046$) and infrastructure ($p=0.021$) were found to show significant differences in education levels (Figure 77). Respondents who hold technical college educational level were more concerned about the negative impacts of parks such as the damage to public infrastructure (median=46.5) and lack of safety (median=50.5), while the, school up to 16 years of age group, focused more on local climate (median=37.5).

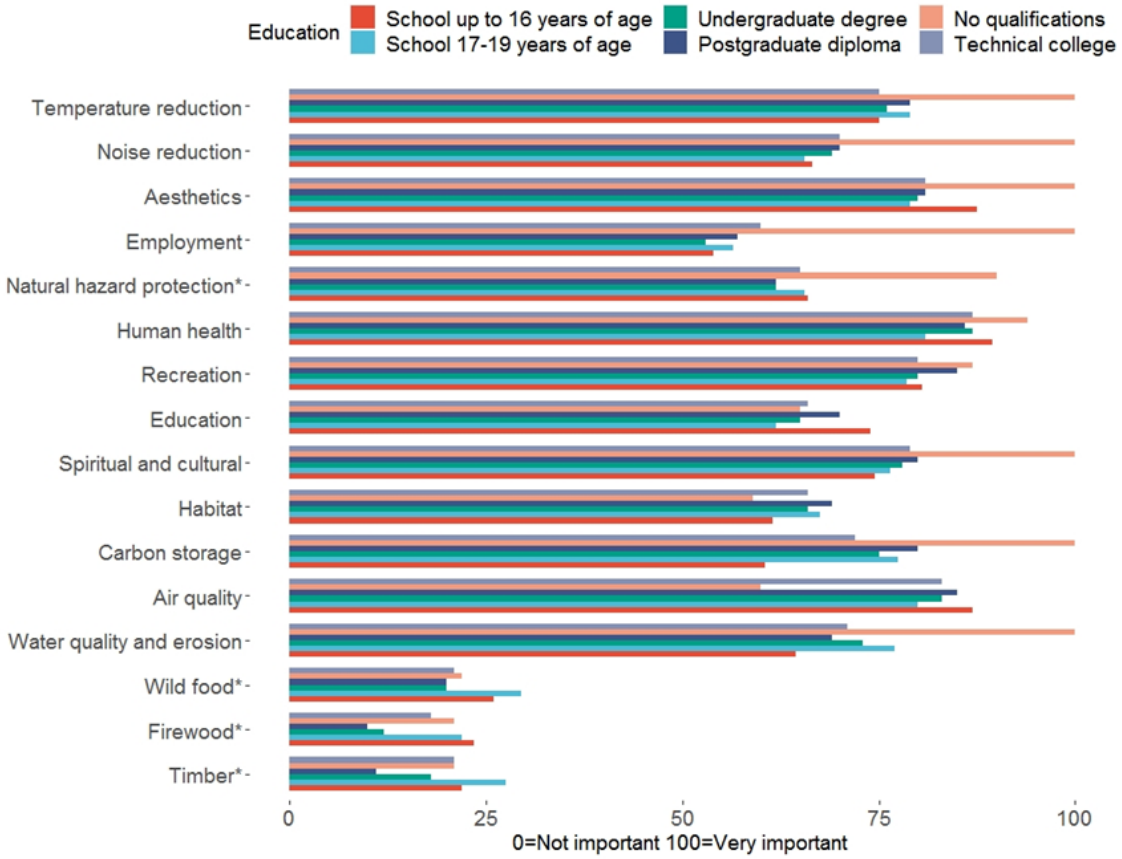

Figure 76: Education differences for ecosystem services (ES) of parks in a city or town. The * denotes significant differences. Responses to the questions: How important are the following benefits of this forest to you? In relation to parks in a city or town (n=2262). Scale: 0=Not at all important; 100=Very important.

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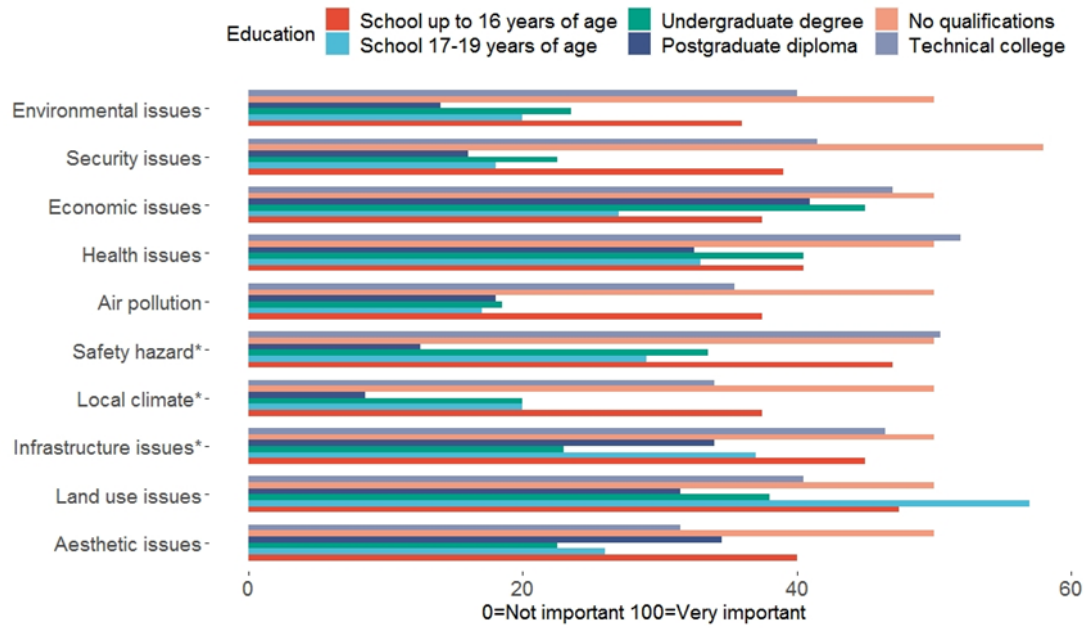

Figure 77: Gender differences for ecosystem disservices (EDS) of parks in a city or town. The * denotes significant differences. Responses to the questions: How important are the following dis-benefits of this forest to you? In relation to parks in a city or town (n=168). Scale: 0=Not at all important; 100=Very important.

3.2.14.4 Importance of ES and EDS by age groups

Several ecosystem services such as aesthetics (p=0.007), recreation (p=0.002) and education (p=0.035) showed significant differences across age groups (Figure 78). The median importance value of aesthetics, recreation and education benefits provided by city parks showed an increasing trend with 18-30 (aesthetics, recreation, and education median of 80, 80 and 63, respectively), 31-50 (aesthetics recreation and education median of 82, 83 and 68, respectively) and 51-65 (aesthetics, recreation and education median of 86, 86 and 79, respectively) years of age group. It means elderly people place more emphasis on these ES compared to younger people. However, DES doesn't show any statistically differences across three age groups (p>0.05).

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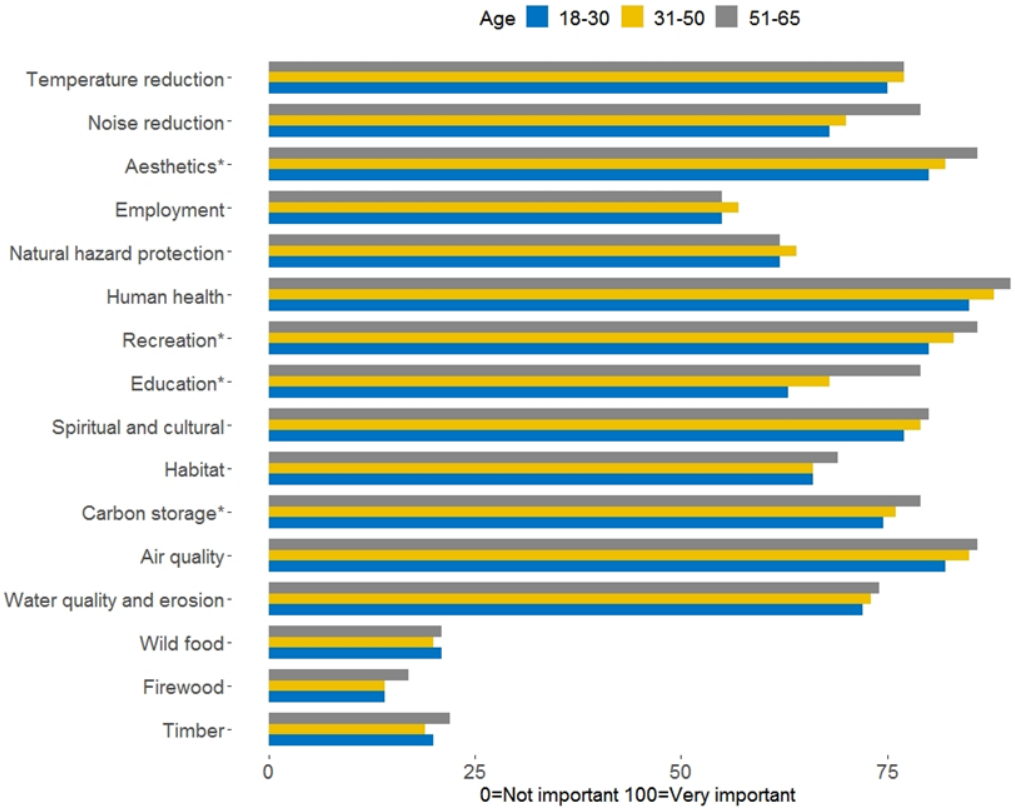

Figure 78: Age differences for ecosystem services (ES) of parks in a city or town. The * denotes significant differences. Responses to the questions: How important are the following benefits of this forest to you? In relation to parks in a city or town (n=2262).

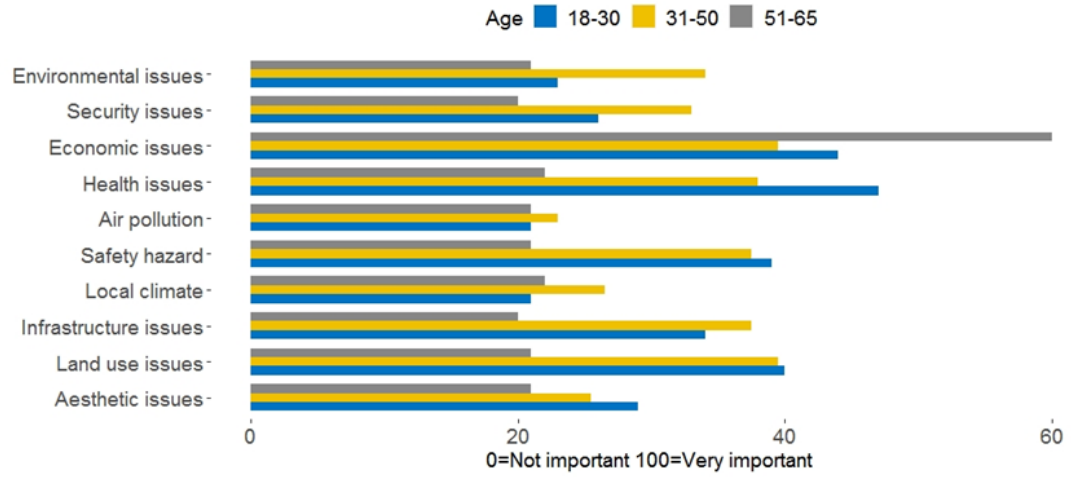

Figure 79: Age differences for ecosystem disservices (EDS) of parks in a city or town. Responses to the question: How important are the following benefits of this forest to you? In relation to parks in a city or town (n=168).

3.2.15 Detailed perceptions of forests by non-visitors (n=803)

A total of 803 samples who do not frequently go to forests or parks indicated perceptions and demands towards the ES of general forest. Amongst them, 174 samples replied favourably to the EDS of this specific forest as well. The distribution of the importance value for ES and EDS by provinces, as well as the demographic (gender, education and age) differences for the importance of ES and EDS were analysed in this section.

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3.2.15.1 Importance of ES and EDS in different provinces

The spatial distribution of the median importance value for ES by provinces is shown in Table 50. Compared to other ES, the firewood offered by forests was considered to be the least important ES (the median important value less than 50). The detailed information on ecosystem services (ES) differences by provinces can be found in Appendix XXIV.

The spatial distribution of the median important value for EDS by provinces is shown in Table 51. The health issues are very important by residents compared to other ES (except Fujian). The detailed information of ecosystem services (EDS) differences by provinces, can be found in Appendix XXIV.

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Table 50: Median value of importance ES provided by general forests by provinces

Province	Timber	Firewood	Wild food	Water quality and erosion	Air quality	Carbon storage	Habitat	Spiritual	Education	Recreation	Human health	Natural hazard protection	Employment	Aesthestics	Noise reduction	Temperature reduction
AnHui	60	36	60.5	94.5	99	96.5	96.5	75.5	77	66	78.5	93	69	74	82.5	89.5
BeiJing	62	21.5	54	89	93	85.5	80	56.5	60	65	80	81.5	60	66	67	85.5
FuJian	61	40	69	85	92	80	80	74	71	70	77	83	73	73	79	78
GuangDong	80	72	80	93	100	94	85	66	60	52	80	91	64	82	79	86
GuangXi	70	52	61	82	98	81	86	62	66	60	72	80	59	76	68	79
HeBei	70.5	37	61.5	83	94	84.5	82.5	58.5	50	59	76	73.5	57.5	74	60	81
HeNan	79	51	78	96	97	83	95	71	74	75	83	88	75	87	80	83
HuBei	76.5	62.5	78.5	100	100	98	98.5	78.5	76	68.5	79	99	81	78.5	77.5	93.5
HuNan	61	41	69	90	100	85	86	72	72	66	88	91	65	84	82	85
JiangSu	60	25	59	77	92	85	80	69	57	43	79	81	57	79	76	77
JiangXi	74.5	40.5	64	97.5	100	95.5	90	76	63.5	61.5	91	91	70	79.5	78.5	89.5
ShanDong	79	38	61	99	98	97	89	80	66	66	81	90	69	80	83	90
ShanXi	73	39	57	97	97	92	90	80	71	61	81	90	60	79	75	84
ShaanXi	60	36.5	61	93	99	89.5	86	76.5	77.5	68	85.5	94	70	80	81.5	92.5
ShangHai	74	29	60	84	93	84	79	50	60	45	72	85	59	74	70	81
TianJing	61	33	75	100	100	100	97	66	60	62	81	100	61	80	64	86
Zhejiang	79	49	77	100	98	93	91	66	77	60	79	98	75	80	79	89
Chongqing	60.5	40	71	98.5	100	97.5	97.5	67	63	65	79.5	95.5	68	79	81.5	88.5

Table 51: Median value of importance EDS provided by general forests by provinces

Province	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
AnHui	11.5	13	16.5	18	62.5	5.5	49	29	25	21
BeiJing	31.5	47.5	36	32.5	44	22	27	47	29	39
FuJian	22.5	44	31	20.5	63	9	72.5	60.5	52	62
GuangDong	18	36	30	21	50	22	55	39	44	40
GuangXi	38.5	60.5	41.5	27.5	54	45.5	74.5	64.5	56.5	59
HeBei	26	36.5	42	29	38.5	28.5	48.5	38	61.5	44
HeNan	40	42	43	27	60	21	78	61	60	36
HuBei	15.5	22	20.5	10.5	38.5	10	63	17	46.5	38
HuNan	32	59	47	25	79	20	67	55	55	61
JiangSu	23	56	30.5	41.5	68.5	38	52	53	59	41.5
JiangXi	60	28	30	42	45	20	68	52	40	73
ShanDong	39	48	36	26	55	41	47	27	56	42
ShanXi	18	17	27	19	48	19.5	57.5	36	36.5	25
ShaanXi	46	39	50	27	36	28	60	35	62	66
ShangHai	38	38	36	22	46	15	41	40	34	41
TianJing	41.5	37	35	13	61.5	8.5	64.5	20	57	19
Zhejiang	23	30	39.5	21.5	53	21	63	47.5	60.5	48.5
Chongqing	11.5	13	16.5	18	62.5	5.5	49	29	25	21

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3.2.15.2 Importance of ES and EDS by gender

Our results show that most ES doesn't show statistical differences by gender (p>0.05) except spiritual (p<0.05) and cultural (p=0.007) services (Figure 80). Females placed greater emphasis upon the importance in providing cultural, emotional and spiritual values (median=76) for general forests than that males (median=63). In addition, females and males presented similar perceptions for the EDS of general forest (Figure 81).

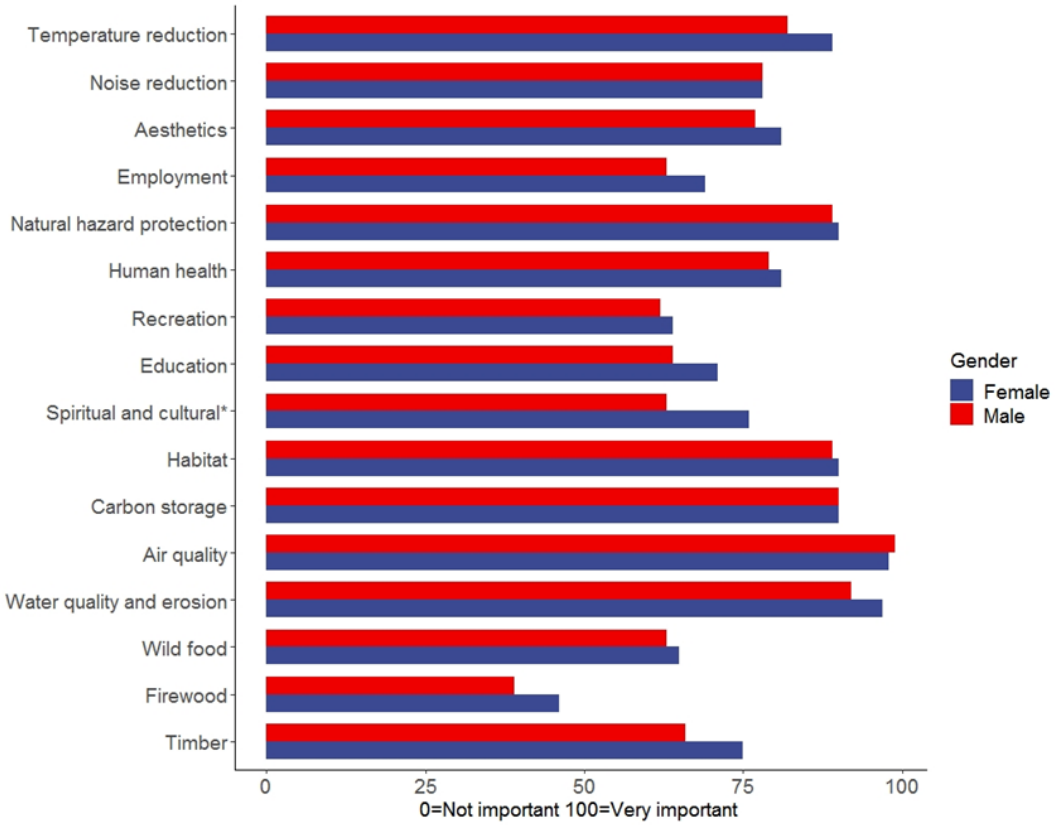

Figure 80: Gender differences for ecosystem services (ES) of a forest in general. The * denotes significant differences. Responses to the questions: How important are the following benefits of this forest to you? In relation to forests in general (n=803). Scale: 0=Not at all important; 100=Very important.

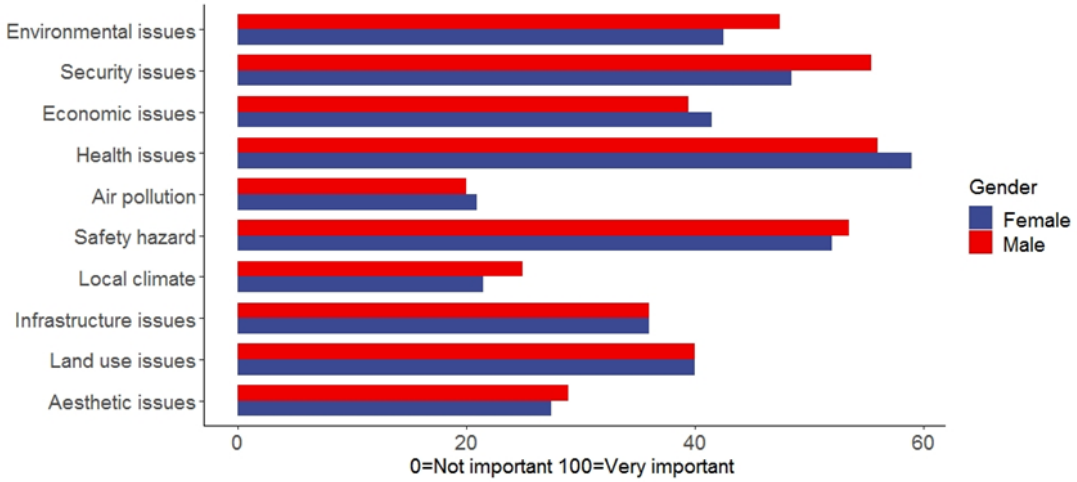

Figure 81: Gender differences for ecosystem disservices (EDS) of a forest in general. The * denotes significant differences. Responses to the questions: How important are the following dis-benefits of forest in general to you? In relation to forests in general (n=174). Scale: 0=Not at all important; 100=Very important.

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Importance of ES and EDS by levels of education

When considering the ES and DES of forests, the perceptions of population who did not go to any forest or park (n=803), it was found that only employment (p=0.025) (Figure 82) and economic issues (p=0.040) (Figure 83) showed statistically significant differences across six education levels. Respondents with no qualifications insisted that the jobs and economic activities provided by forests, were not relatively important (median=44), which is contrary to the school up to 16 years of age group (the median of important value was 80). Compared to other EDS, the no qualifications group had the greatest concern with the economic issues (median=50).

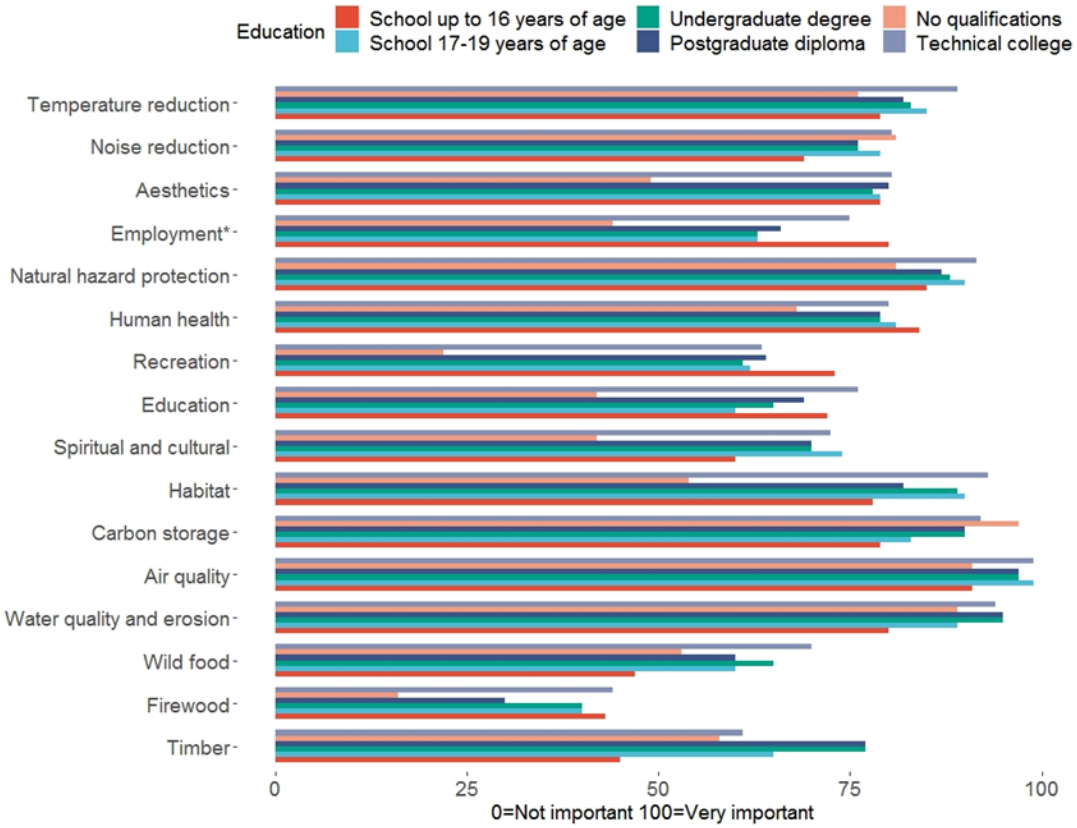

Figure 82: Education differences for ecosystem services (ES) of a forest in general. The * denotes significant differences. Responses to the questions: "How important are the following benefits of forest in general to you?," in relation to forests in general (n=803). Scale: 0=Not at all important; 100=Very important.

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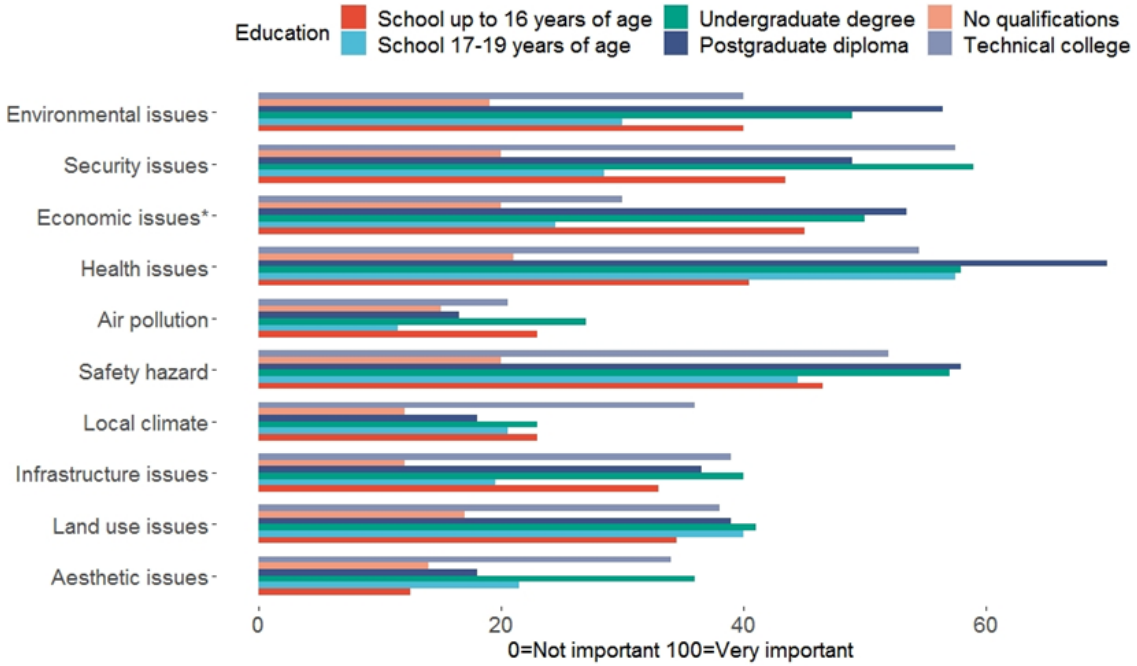

Figure 83: Education differences for ecosystem disservices (EDS) of a forest in general. The * denotes significant differences. Responses to the questions: How important are the following disbenefits of forest in general to you? In relation to forests in general (n=174). Scale: 0=Not at all important; 100=Very important.

3.2.15.3 Importance of ES and EDS by age groups

ES shows several significant differences across three age groups (i.e., 18-30 years of age, 31-50 years of age, 51-65 years of age group, samples with years of age <18 or >65 age are not included due to their small number, see Appendix XVI). Figure 84 shows that two provisioning ES (wild food and timber, $p<0.05$), as well as the air quality ($p=0.010$), the water quality and erosion ($p=0.043$) have significant differences in three age groups. The importance values of improving air quality (the median importance values equal to 99, 97 and 91 for 18-30, 31-50 and 51-65 years of age group, respectively), and protecting water quality (the median importance values equal to 97, 88.5 and 83 for 18-30, 31-50 and 51-65 years of age group, respectively) decreased with age.

However, Figure 100 demonstrates that the DES didn't show statistical differences in the three age groups ($p>0.05$).

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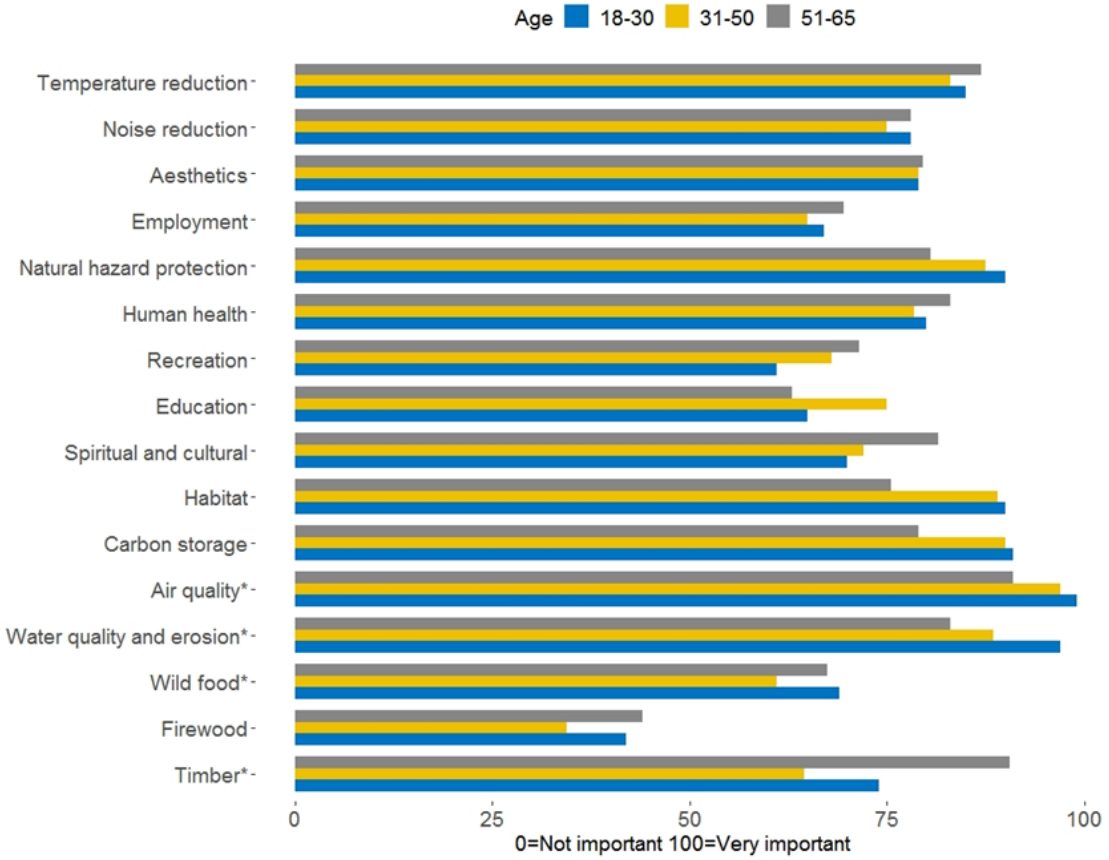

Figure 84: Age differences for ecosystem services (ES) of a forest in general. The * denotes significant differences. Responses to the questions: "How important are the following benefits of this forest to you?," In relation to forests in general (n=803). Scale: 0=Not at all important; 100=Very important.

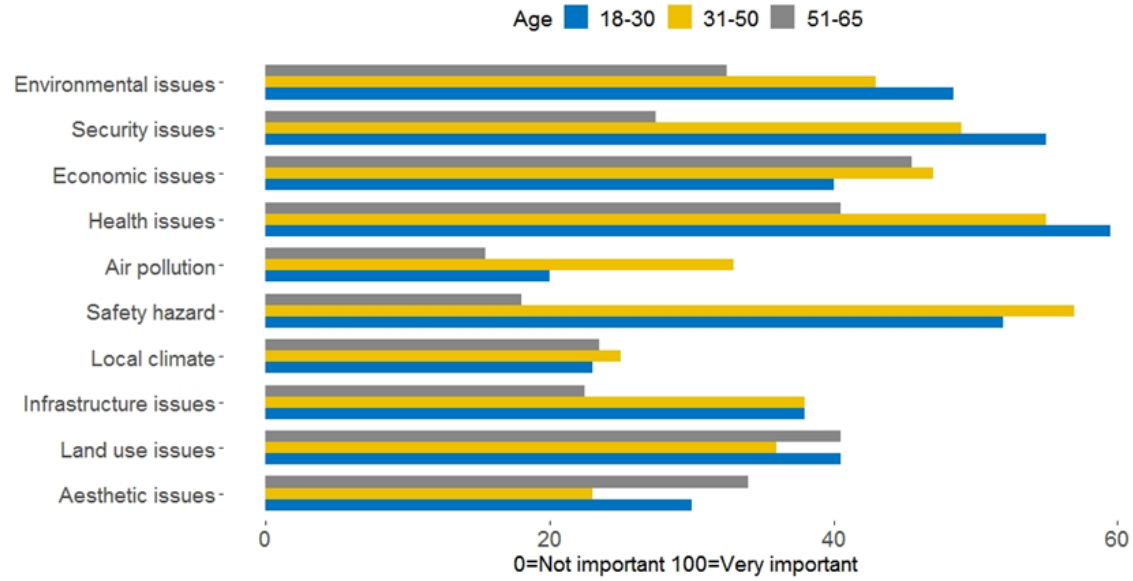

Figure 85: Age differences for ecosystem disservices (EDS) of a forest in general. Responses to the question: "How important are the following dis-benefits of this forest to you?" In relation to forests in general (n=174). Scale: 0=Not at all important; 100=Very important.

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3.2.16 Public perceptions and demands towards trees

3.2.16.1 Overall satisfaction with trees within peoples' municipality

Across the entire data set (n=7,323), more than half of respondents considered that their municipality don't have enough trees, 46.2% of respondents thought the municipality has few (n=3,383) trees, while only 10.7% people thought the trees in the city are too few (n=785). However, there were a very small group of people (n=121, 1.7%) who claimed that there were too many trees in their cities (Figure 86).

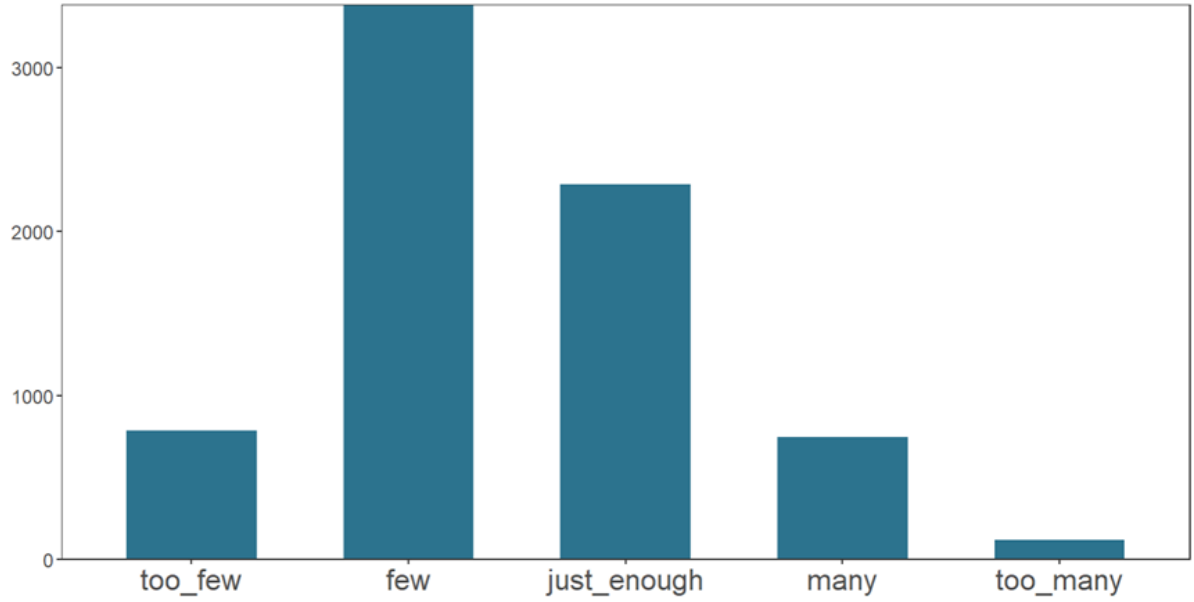

Figure 86: Perspective for quantity of trees in municipality. Responses to the question: do you think your municipality has too many or too few trees? (N=7323)

The level of agreement was divided across five categories, i.e., strongly disagree, mildly disagree, unsure, mildly agree and strongly agree. Figure 87 showed the agreement levels as proportions. When considering the agreement (including the mildly and strongly agree level), the items "I feel that I am involved in the decision-making on trees in my city/town" (36%), "Trees along streets are a security risk" (29%) and "Car parks should be removed to plant more trees" (28%); showed the lowest proportion of agreement level. While the item, "New infrastructure and developments should give space to trees" (88%) and "I would like new trees planted close to my house" (88%) showed the highest level of agreement. Additionally, the remaining statements showed mild to strong levels of agreement by more than 50% of dependents.

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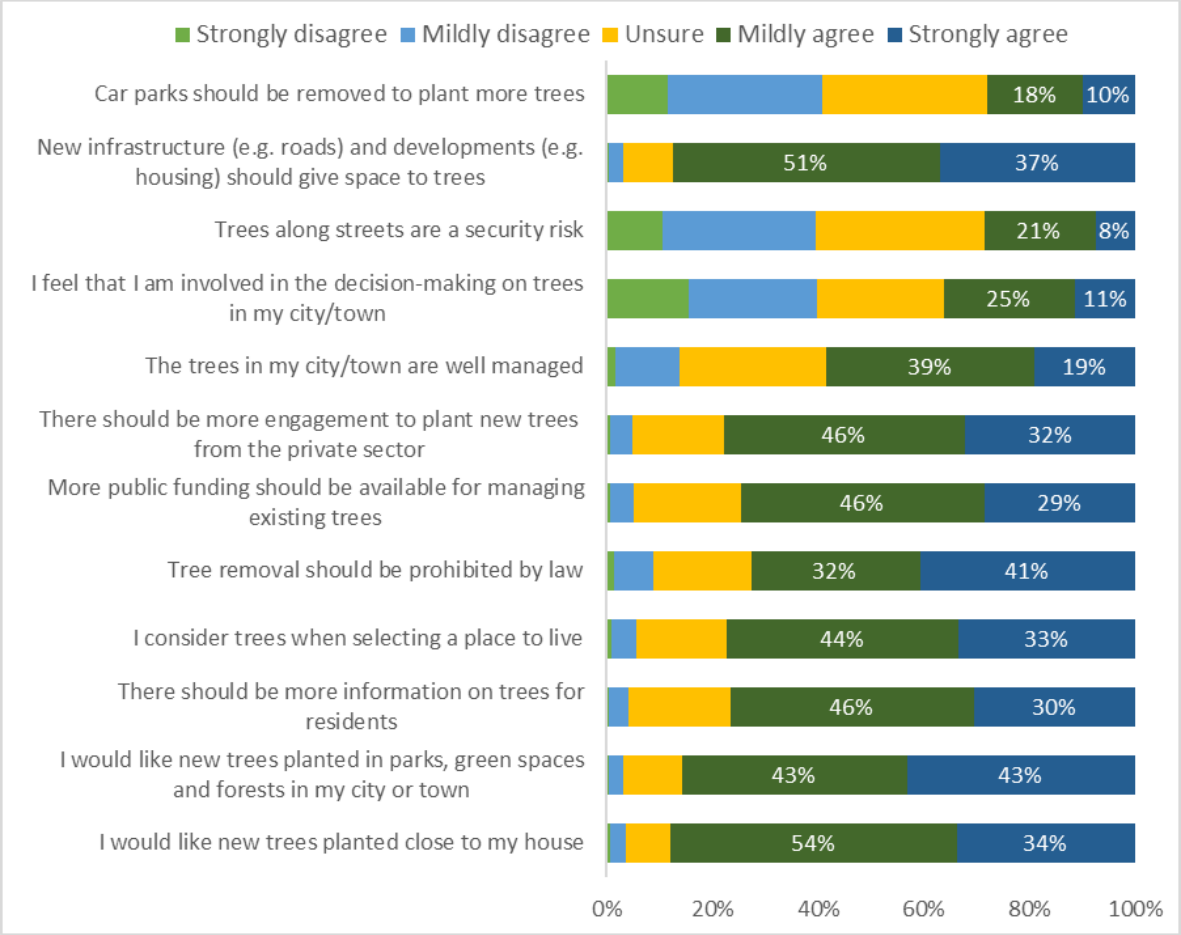

Figure 87: The agreement with statements on trees in the city. Responses to the question: How is your level of agreement with the statements (N=7232). Only the percentage of mildly agree and strongly agree level were shown in this figure.

3.2.16.2 Ecosystem services (ES) and Ecosystem disservices (EDS) of trees in all locations

We analysed the societal perceptions of ecosystem services and ecosystem disservices of trees across the entire data set (n=7,323), and the median importance values of each benefit (Figure 88) and disbenefit provided by trees (Figure 88) were assessed (more information see Appendix XXV).

Compared with the regulating and cultural ecosystem services, the provisioning ecosystem services of trees such as firewood (median=13) and wild food (median=20) had the lowest importance, whilst the median importance value of all the regulating and cultural ecosystem services items exceeded 50. Amongst these the air quality (median=85) and the aesthetic (median=83) were regarded as the most important regulating and cultural ecosystem services (ES) respectively.

Moreover, the ecosystem disservices (EDS) results showed that the median importance values of all the EDS were less than 50. Amongst the EDS, the economic issue (e.g., cost for planting, maintaining, removal, median=48) and cleanliness issues (e.g., falling leaves and fruits, median=43) of trees were considered by most respondents.

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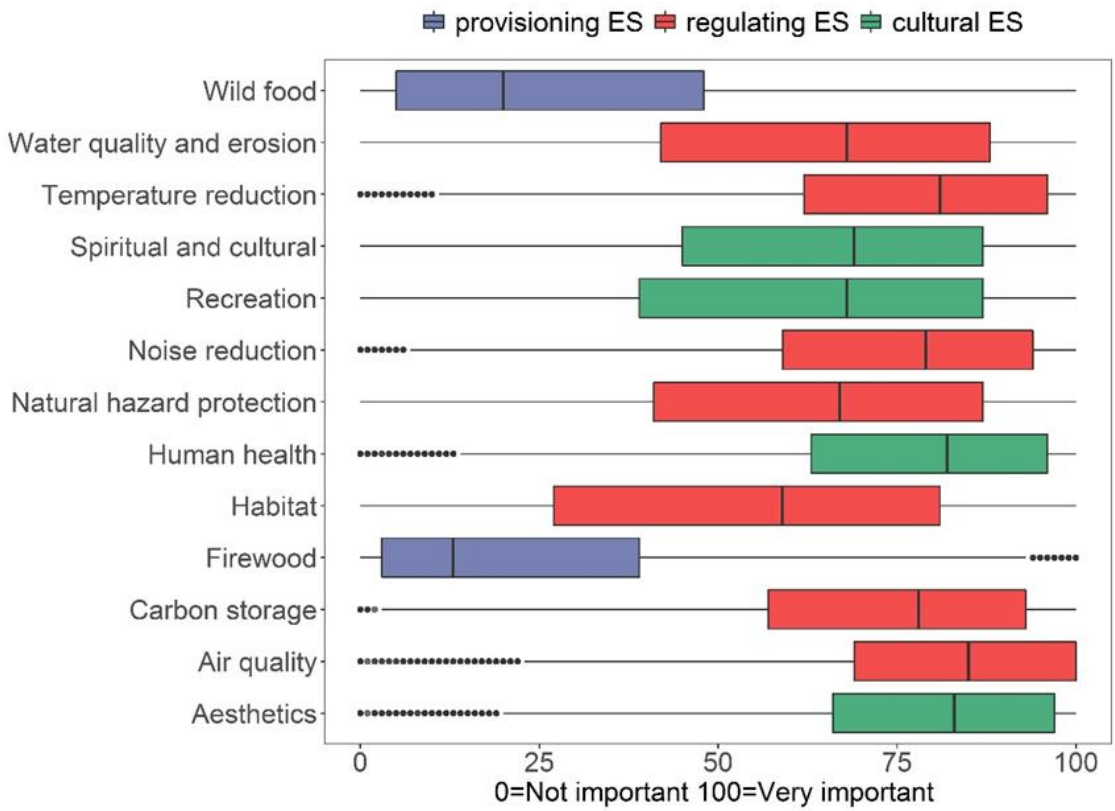

Figure 88: Perspective for ecosystem services of trees. Responses to the questions: How important are the following benefits of trees to you? (N=7323)

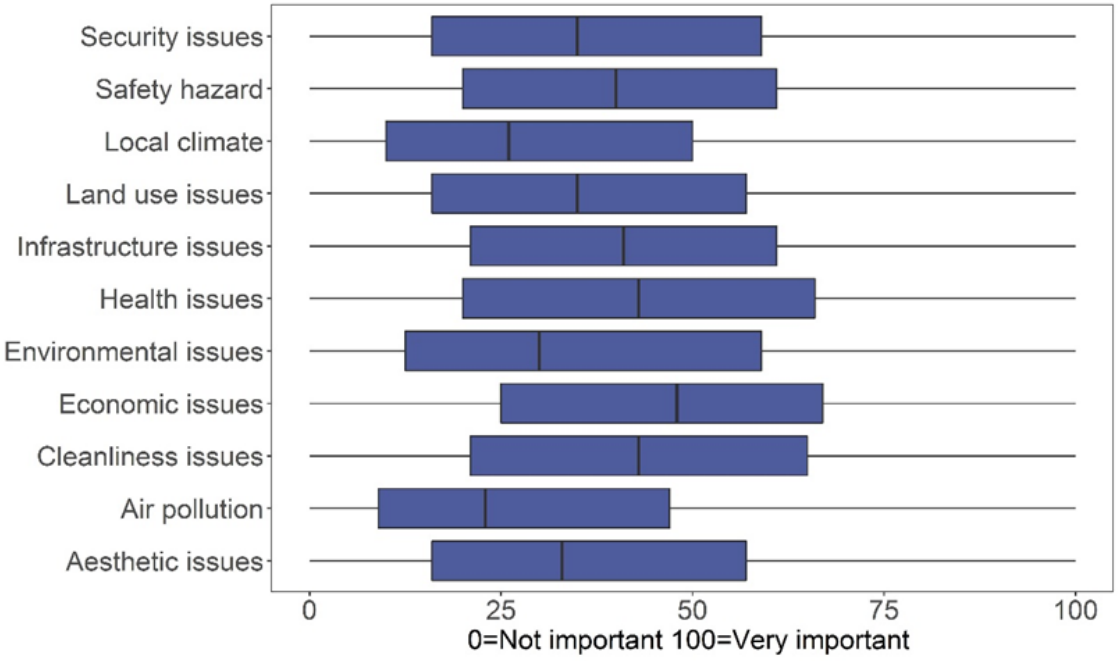

Figure 89: Perspective for ecosystem disservices of trees. Responses to the questions: How important are the following disbenefits of trees to you? (N=1643)

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Table 52: Median value of importance ES provided by trees by provinces

Province	Timber	Firewood	Wild food	Water quality and erosion	Air quality	Carbon storage	Habitat	Spiritual	Education	Recreation	Human health	Natural hazard protection	Employment	Aesthestics	Noise reduction	Temperature reduction
AnHui	16	20	72	87	80	60	70	67	82	72	85	79	81	16	20	72
BeiJing	8	11	61	82	77	57	64	64	81	61	82	79	80	8	11	61
FuJian	17.5	21	75	86	81	60	73	71	83	73.5	85	79	82.5	17.5	21	75
GuangDong	13	16	63	85	75	53	64	63	78	64	80	76	79	13	16	63
GuangXi	20.5	25.5	75	89.5	81	64.5	72.5	70.5	84	74.5	84	80	83	20.5	25.5	75
HeBei	12	19.5	63	83	73	54	64.5	65	81	64	80.5	75	77	12	19.5	63
HeNan	12	20	68	85	78	55	68	62.5	80	65	82.5	79	82	12	20	68
HuBei	14	17	64	83	75	55	68	62	80	62	81	76	79	14	17	64
HuNan	12	18	69	86	79	58	68	64	82	66	84	80	79	12	18	69
JiangSu	12.5	20	68	85	79	60	69	66	83	70	83	80	82	12.5	20	68
JiangXi	21	31	78.5	88	80	60	73.5	74	82	75	84	80	86	21	31	78.5
ShanDong	11	16	72.5	86	78	58.5	71	72	84	68	85	80	82	11	16	72.5
ShanXi	16	21	72.5	86	79	64	74	74.5	85	69.5	85	80	81	16	21	72.5
ShaanXi	12	19	69	86	77	59	73	76.5	84.5	70	84	81.5	84.5	12	19	69
ShangHai	10	11	61	83.5	74	53	64	64	81	60	81	78	79	10	11	61
TianJing	12	16	65	83.5	77	57	70	70	83	68	83.5	80	83	12	16	65
Zhejiang	12	19.5	69.5	85	78	57	63	66	80.5	67	84	78	78	12	19.5	69.5
Chongqing	18	22	67.5	86	79	55	74.5	71	83	68	84	81	83	18	22	67.5

Table 53: Median value of importance EDS provided by trees by provinces

Province	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
AnHui	53	58	61.5	40.5	61.5	42.5	61.5	66.5	55.5	57.5
BeiJing	62	59	68	57	62	57	66	68	61	62
FuJian	52	57	55	47.75	57.75	44	62	63.5	64	59
GuangDong	53.75	53.25	60	47	64.75	39.75	66	63.75	51.5	57.75
GuangXi	52.5	62	67	55.5	64	44.5	73.5	65.5	63	56.5
HeBei	57	54	61	46	60	47	62	66	59	61
HeNan	50	54	65	48	61	56	65	62	56	56
HuBei	61.25	60.25	69	53	70	52.75	71.25	75.5	58	65.25
HuNan	51	59	61	48	60.75	46	65.75	68.5	60.5	51.25
JiangSu	56.25	59.75	61.25	60.25	59.25	45	63.25	74.25	60	57
JiangXi	59.25	61	63.25	58.25	69.25	57.25	75	70	62.25	72.25
ShanDong	58.5	60	65.5	47	66	48	66.5	68.5	62.5	61.5
ShanXi	61	54.5	65.25	55.5	63.5	51.25	68.75	61.5	63.25	54.75
ShaanXi	53.75	52.25	63.75	50.75	57.75	53	62.25	68.75	66.25	63.75
ShangHai	60	56.25	56.25	38.25	60	35.25	60.25	65	56.5	44
TianJing	55.75	49.5	59.25	47.25	60.75	40.5	67.75	70	49	51.75
Zhejiang	59	60	64	49	55	41.75	66	68	59	48.25
Chongqing	50	53	59	56	60	51	62	62	59	60

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3.2.16.3 Importance of ES and EDS by provinces

The spatial distribution of ES and DES provided by trees is shown in Table 52 and Table 53. The statistics median importance value of ES and EDS across all tree and forest types by provinces can be found in Appendix XXVI. Significant differences by provinces were found for all ecosystem services items (Kruskal-Walis test, $p<0.05$), whilst not all EDS have the same significance across provinces (Kruskal-Walis test, $p>0.05$). Regarding the ES, the firewood and wild food provided by trees were the least important ES for the respondents in all provinces.

3.2.16.4 Importance of ES and EDS by socio-demographic factors

The different perceptions of ecosystem services (ES) and ecosystem disservices (EDS) across all tree types by demographic factors such as gender (difference between female and male gender categories, 32 samples of the "other" and "prefer not to say" gender definition excluding from the 7,323 enter data set, see Appendix XVI), education (differences among six categories) and age (differences among 18-30, 31-50 and 51-65 categories, tiny proportion samples of <18 and >65 excluding from the 7,323 enter data set, see Appendix XVI) were analysed.

1. Gender differences

Significant differences between female and male were found in several ecosystem services (ES) including recreation (p=0.023), noise reduction (p<0.01), habitat (p<0.01), carbon storage (p=0.003), water quality and erosion (p<0.01) and wild food (p=0.028) from trees (Figure 90).

Regarding the EDS, the gender difference was only observed for land use issues (p=0.029), and with males were more concerned about the trees reducing development opportunities for industry and businesses (Figure 91).

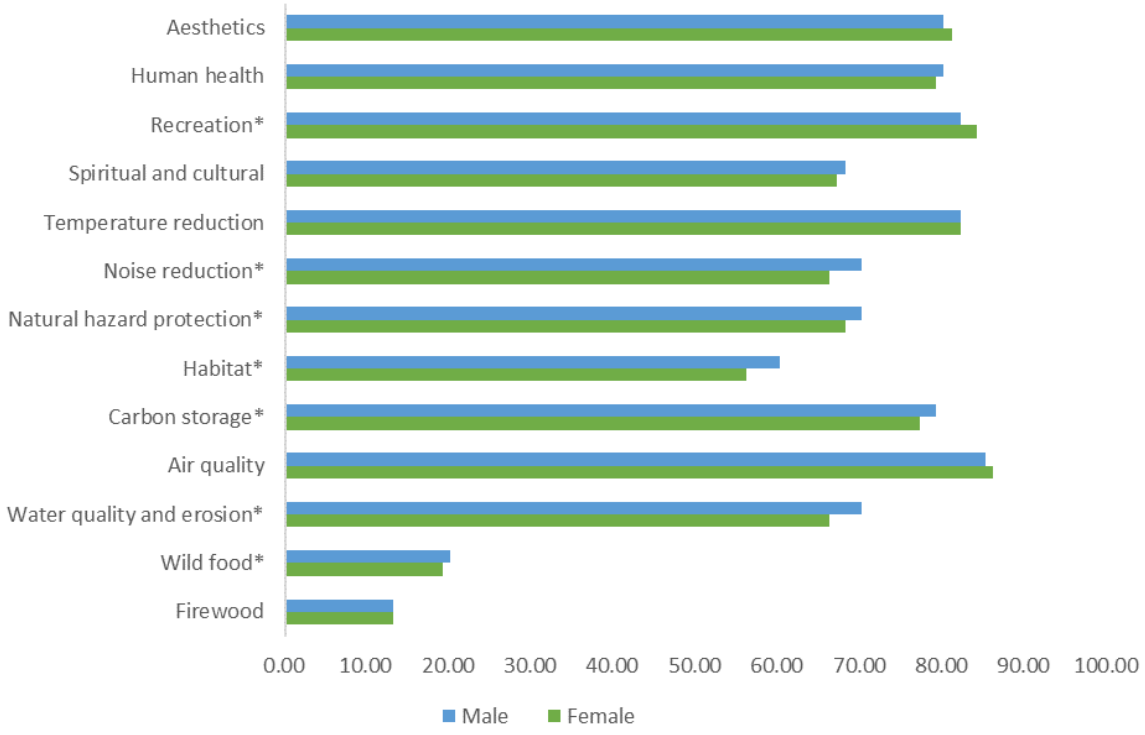

Figure 90: Gender differences for ecosystem services (ES) across all trees types. The * denotes significant differences. Responses of the questions: "How important are the following benefits of trees to you?," Respondents in this figure involved two gender categories female and male (N=7291). Scale: 0=Not at all important; 100=Very important.

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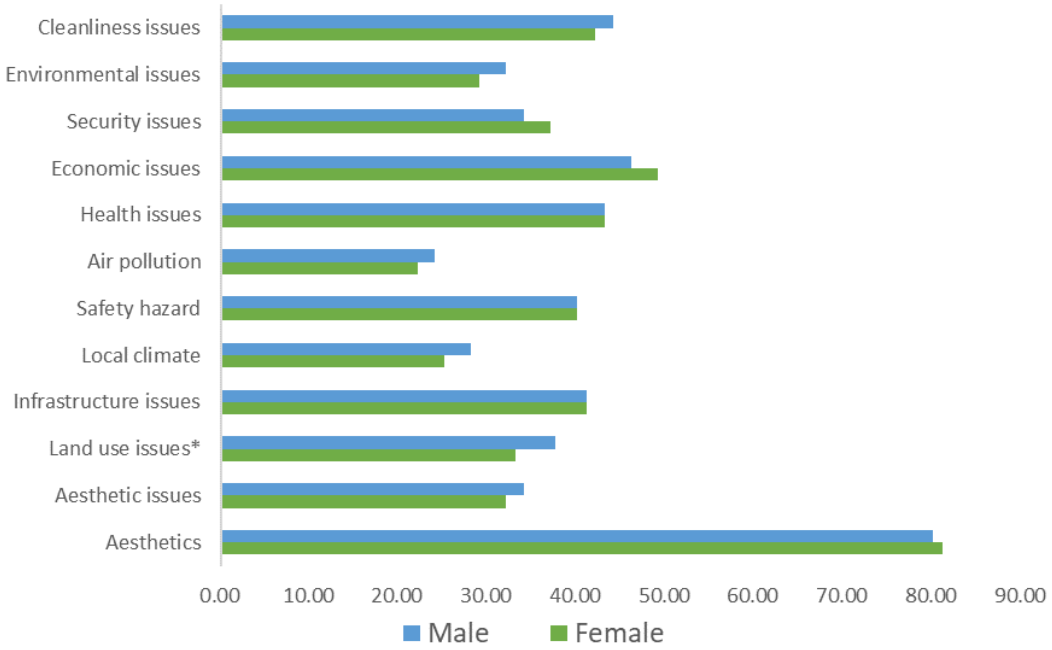

Figure 91: Gender differences for ecosystem services (EDS) across all trees types. The * denotes significant differences. Responses of the question: "How important are the following disbenefits of trees to you?," Respondents in this figure involved two gender categories female and male (N=1637). Scale: 0=Not at all important; 100=Very important.

2. Education differences

The societal perceptions of ecosystem services (ES) are closely associated with education level (Figure 92). The statistically significant differences were found in most ES items except for carbon storage, natural hazard protection and temperature reduction (p>0.05). The technical college educated population significantly attached more importance to the benefits of protecting water quality and impact of erosion (p<0.01), improving air quality (p=0.01), providing living space for plants and animals (p<0.01), reducing noise (p=0.01), and providing cultural and spiritual value (p<0.01), than that of other education levels. The age group, school up to 16 years old, thought the firewood and wild food, (p<0.01) had the highest importance compared to other ES. Additionally, respondents with no qualification regarded the benefit of providing recreation and sports opportunities (p=0.039) as the most important ecosystem service of trees.

When considering the ecosystem services (EDS) of trees (Figure 93), no significant differences across the six education levels were found (p>0.05).

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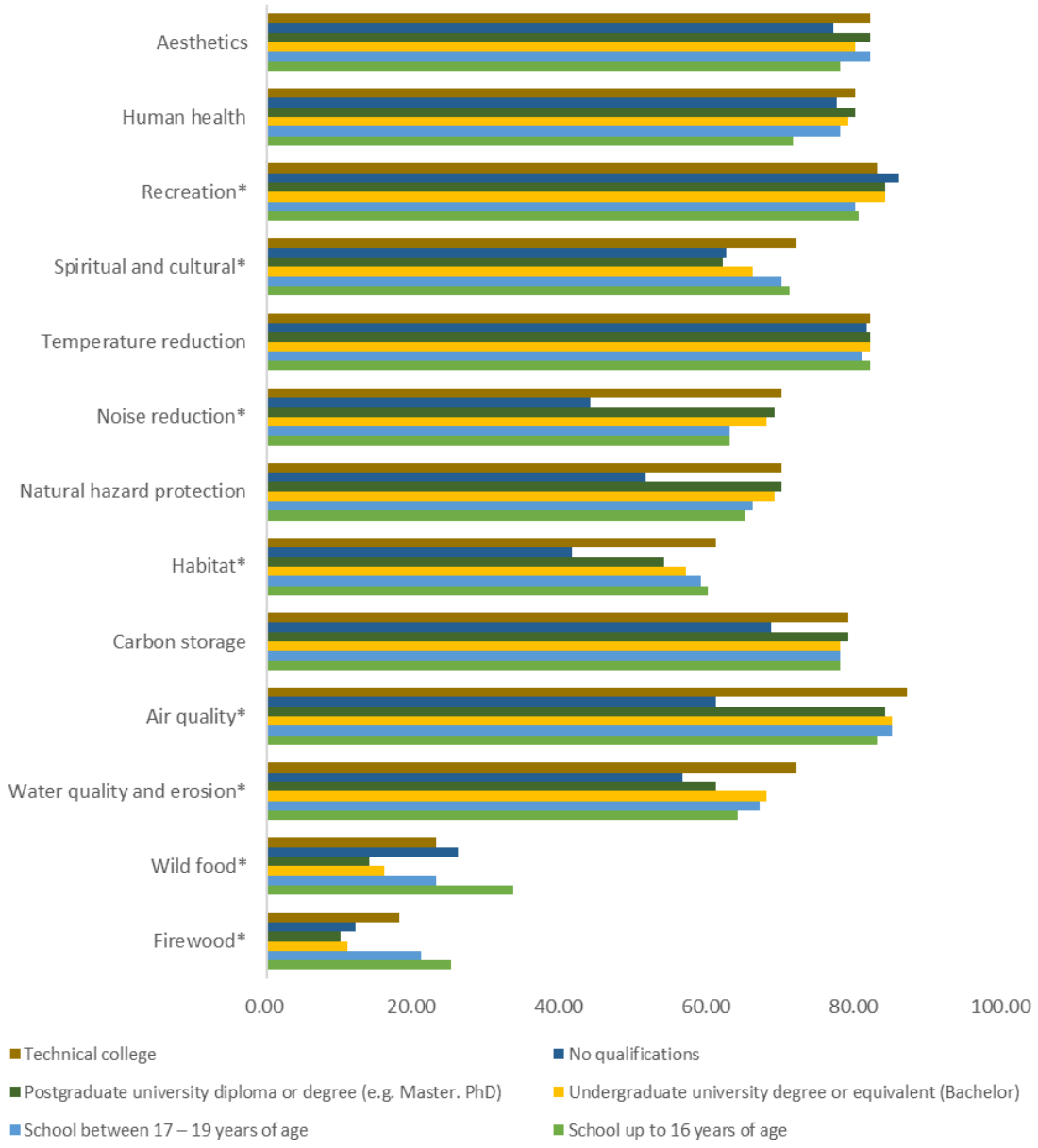

Figure 92: Education differences for ecosystem services (ES) across all trees types. The * denotes significant differences. Responses of the question: "How important are the following benefits of trees to you?," (N=7232). Scale: 0=Not at all important; 100=Very important.

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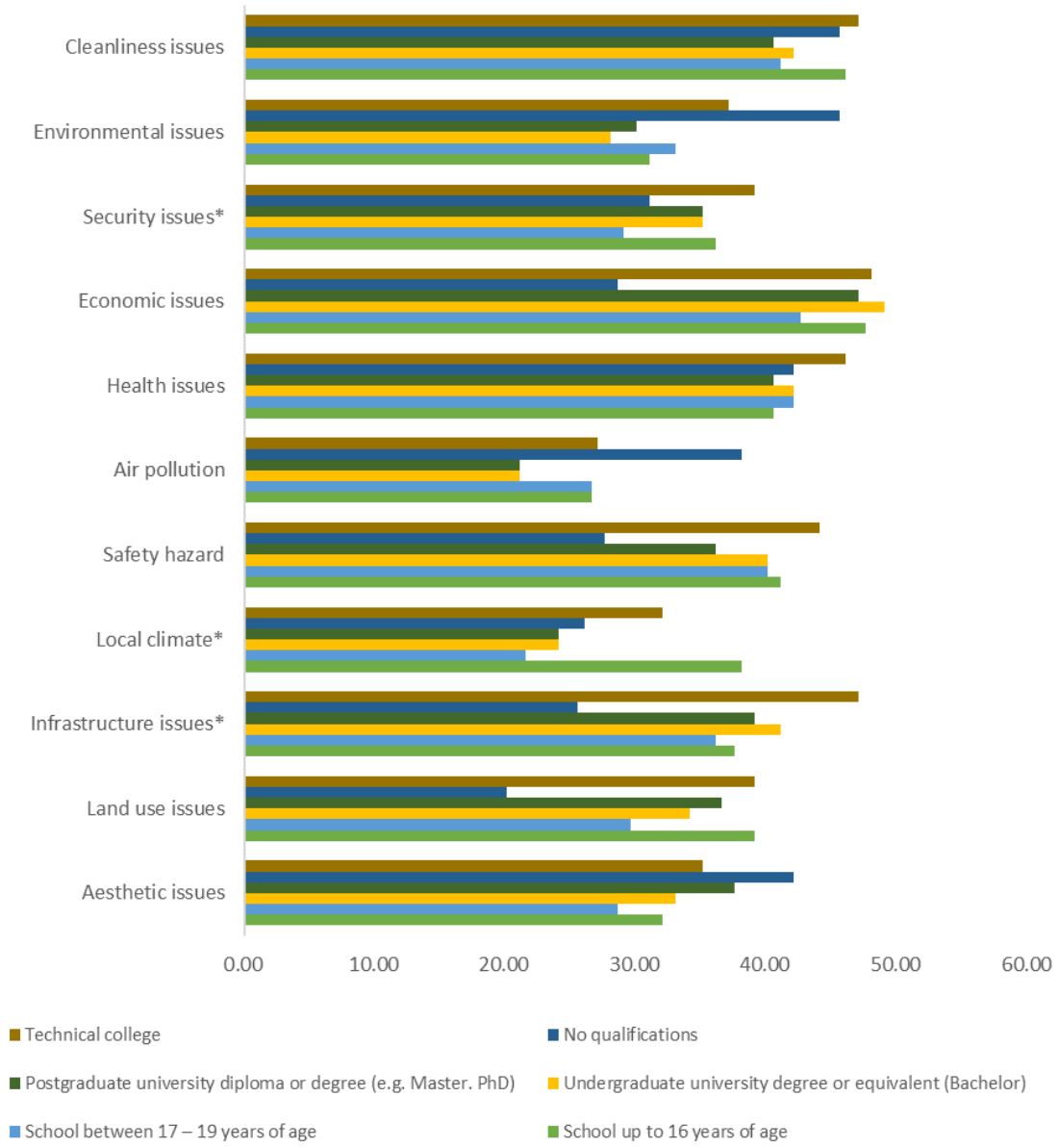

Figure 93: Education differences for ecosystem services (EDS) across all trees types. The * denotes significant differences. Responses of the question: "How important are the following disbenefits of trees to you?," (N=1643). Scale: 0=Not at all important; 100=Very important.

3. Age differences

There were obvious age differences in the perceptions for ecosystem services (ES) of trees (Figure 94). Most ecosystem services except air quality (p>0.05) were significantly varied in the three age categories. Compared to the 18-30 and 31-50 age categories groups, the population with 51-65 years of age, accorded a significantly higher importance value to the following benefits of trees (p<0.05): providing fuelwood (median=21), providing wild food products (median=28), protecting water and soil quality (median=78.5), storing carbon (median=81.5), providing cultural and spiritual value (median=75), providing recreation and sports opportunities (median=88.5), providing goods for health and well-being (median=83), lessening the negative impact of natural hazards (median=79), creating aesthetics (median=86.5), reducing noise (median=78) and reducing temperature (median=88).

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For the EDS, Figure 95 indicates that aesthetic issues (median=44), land use issues (median=44), local climate issues (median=43), safety hazards (median=41), air pollution (median=47) and environmental issues (median=47) were found to have statistically significant differences in the three age groups (p<0.05).

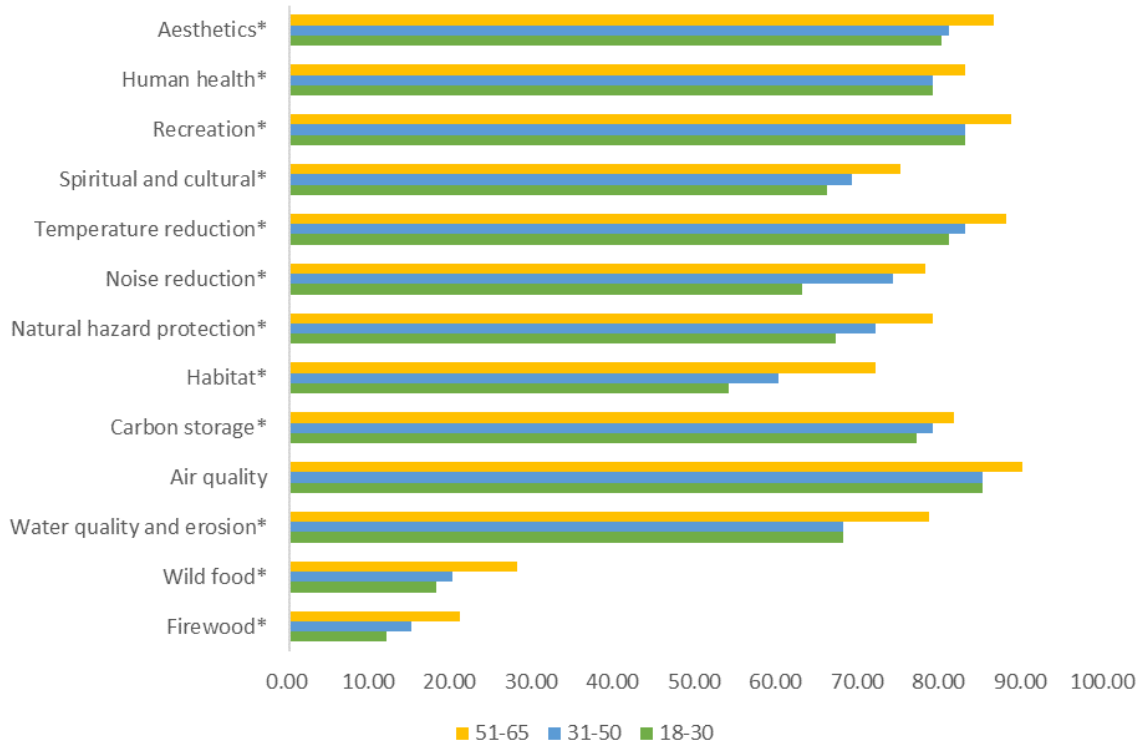

Figure 94: Age differences for ecosystem services (ES) across all trees types. The * denotes significant differences. Responses of the question: "How important are the following benefits of trees to you?," Respondents in this figure involved three age categories "18-30", "31-50 and "51-65" (N=7232). Scale: 0=Not at all important; 100=Very important.

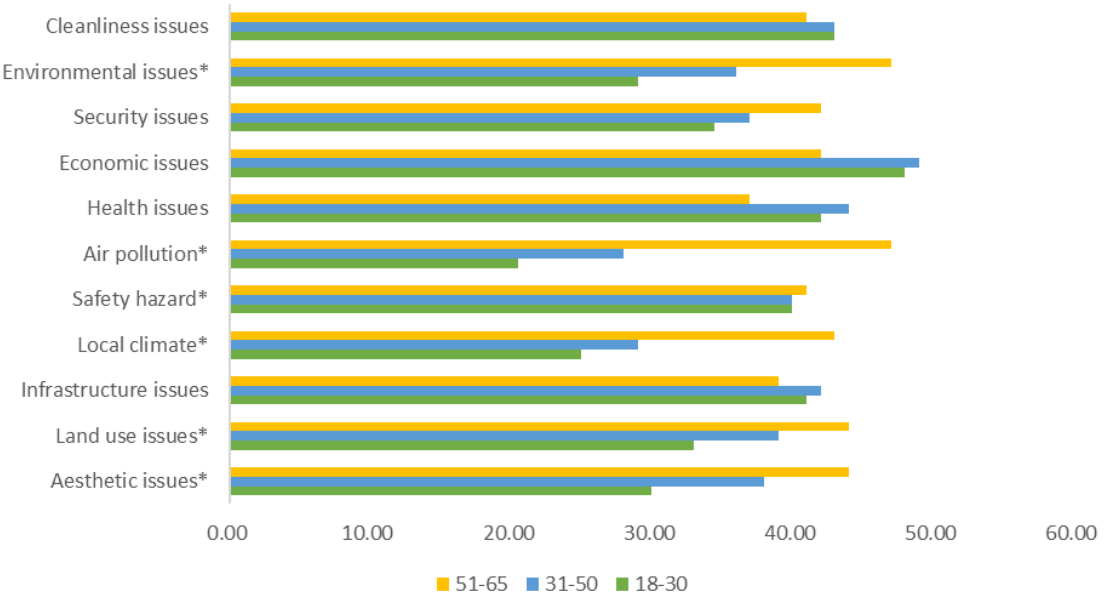

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Figure 95: Age differences for ecosystem services (EDS) across all trees types. The * denotes significant differences. Responses of the question: "How important are the following disbenefits of trees to you?," Respondents in this figure involved three age categories "18-30", "31-50 and "51-65" (N=538). Scale: 0=Not at all important; 100=Very important.

3.2.16.5 Public perceptions of trees in different locations

The perceptions of the ecosystem services (ES) and ecosystem disservices (EDS) in relation to the specific tree types, i.e., trees in private gardens, trees in public gardens, trees in public squares, trees in commercial areas and trees along streets, were analysed. The median importance value of ES and EDS for different tree types are shown in Table 54 and Table 55, respectively.

1. Ecosystem services (ES)

The median importance value of ecosystem services (ES) varied for different tree types, i.e., trees in private gardens (n=479), trees in public gardens (n=2,478), trees in public squares (n=1,184), trees in commercial areas (n=844) and trees along streets (n=2338) as shown in Table 54. It was indicated that reducing the negative impact of natural hazard protection (median=85) and providing recreation and sports opportunities (median=83) were the most important benefits of trees in private gardens and trees in public gardens, respectively. Whilst the benefit on improving air quality was principally for trees in commercial areas (median=84) and along streets (median=89), the importance of improving air quality (median=83) and providing recreation opportunities (median=83) were both considered as being the key benefits of trees in public squares. Additionally, provisioning ecosystem services (ES) had the lowest importance of tree types overall.

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Table 54: Importance of ES according to different tree types in China (n=7,323)

ES Items	Trees in private gardens		Trees in public gardens		Trees in public squares		Trees in commercial areas		Trees along streets	
	N=479		N=2,478		N=1,184		N=844		N=2,338	
	Median	IQR	Median	IQR	Median	IQR	Median	IQR	Median	IQR
Firewood	19.00	46.00	18.00	39.00	17.50	37.75	12.00	32.00	9.00	22.00
Wild food	35.00	57.00	24.00	47.00	21.00	48.00	16.00	39.00	11.00	28.00
Water quality and erosion	61.00	49.00	73.00	39.00	69.00	44.00	60.50	48.00	67.00	49.00
Air quality	80.00	41.00	85.00	30.00	83.00	34.00	84.00	32.00	89.00	26.00
Carbon storage	66.00	50.00	78.00	33.00	77.00	34.75	75.00	39.00	80.00	38.00
Habitat	60.00	54.00	68.00	42.25	60.00	50.75	47.00	58.00	42.00	58.00
Spiritual and cultural	74.00	41.00	75.00	36.00	71.00	38.00	64.00	42.00	61.00	50.00
Recreation	72.00	41.00	79.00	32.00	77.00	36.00	61.00	47.00	41.00	62.00
Human health	83.00	39.00	83.00	29.00	83.00	30.00	80.00	35.00	80.00	37.00
Natural hazard protection	56.00	55.00	69.00	40.25	66.00	47.75	62.00	52.00	69.00	49.00
Aesthetics	85.00	33.00	80.00	30.00	80.00	33.00	83.00	33.00	88.00	28.00
Noise reduction	74.00	43.00	75.00	33.00	78.00	36.00	80.00	35.00	84.00	34.00
Temperature reduction	79.00	43.00	79.00	32.00	80.00	33.00	80.00	35.00	86.00	32.00

4. Ecosystem disservices (EDS)

Across the entire data set (n=7,323), 1643 respondents were concerned with the issues of different tree types, i.e., trees in private gardens (n=120), trees in public gardens(n=552), trees in public squares (n=281), trees in commercial areas (n=229) and trees along streets (n=461) (Table 55). The disbenefits associated with health risks, e.g. wildlife or insect bites, allergies (median=51) were considered as the most serious issue of trees in private gardens. While the economic issue, e.g., costs for planting, maintaining, removal was thought to be the most important ecosystem disservice of trees within public gardens (median=48.5), in public squares (median=50), in commercial areas (median=45) and along streets (median=48).

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Table 55: Importance of EDS according to different tree types in China (n=1,643)

ES Items	Trees in private gardens		Trees in public gardens		Trees in public squares		Trees in commercial areas		Trees along streets	
	N=120		N=552		N=281		N=229		N=461	
	Median	IQR	Median	IQR	Median	IQR	Median	IQR	Median	IQR
Aesthetic issues	43.00	41.50	30.00	36.00	33.00	42.00	32.00	42.50	36.00	42.00
Land use issues	39.00	43.50	39.50	41.00	38.00	39.00	37.00	39.50	24.00	38.00
Infrastructure issues	45.00	37.50	40.50	39.00	40.00	44.50	41.00	41.00	44.00	42.50
Local climate	34.00	44.75	31.00	44.00	26.00	43.50	25.00	37.50	19.00	33.50
Security issues	43.50	44.50	40.00	41.00	39.00	40.00	40.00	44.00	40.00	43.00
Air pollution	33.00	40.50	28.00	42.00	25.00	43.50	22.00	38.50	15.00	28.00
Health issues	51.00	55.50	45.00	42.00	44.00	42.00	40.00	44.50	40.00	47.00
Economic issues	46.50	40.00	48.50	41.00	50.00	42.50	45.00	39.00	48.00	43.50
Safety hazard	45.50	45.00	38.00	41.75	35.00	44.00	34.00	45.00	31.00	44.00
Environmental issues	39.00	42.75	39.00	45.00	30.00	46.00	27.00	49.00	21.00	38.00
Cleanliness issues	50.00	46.00	43.00	42.00	41.00	42.50	44.00	43.00	43.00	45.00

4. Summary and recommendations

With this study, we sampled a representative number of responses and analysed public perceptions of forests, greenspaces and trees based on the countries/provinces, gender, age groups and education in Europe and China. Besides determining the peoples' habits around visiting forests and trees (travel time, means of transport, etc.), we also summarized their overall satisfaction with forests, greenspaces and trees. Another interesting analysis dealt with public preferences towards landscape aesthetics.

4.1 Summary of European results

In response to the main goal of this study, which was to assess public perceptions of forest ES and forest EDS, we found that across all the woodland types most frequently visited, the public viewed regulating and cultural ES as more important than provisioning ecosystem services. Among the most important ES were air quality, habitat and aesthetics (Table 10). Similar findings were reported by Rametsteiner & Kraxner (2003) who found that the main reason for people to go to the forest was recreation, while very few relied on hunting game or collecting non-timber products. In our study, recreation was still important, but is by no means as important now as it was in 2003. Hunting game and collecting non-timber products (wild food) were the least important ES now, similarly to 2003. When comparing our results with recent studies in Czech Republic (Šišák, 2011), England (Natural England, 2021), Italy (Carrus et al., 2020) and Germany (Meyer et al., 2019), it confirms that ES such as

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air quality, carbon storage, biodiversity protection and human health are perceived as being the most important nowadays. Locally, the collection of wild food (e.g., mushrooms) appears an important ES (Almeida et al., 2018), however, as we have shown with our study, this does not appear to be the case on a national or European level.

The different EDS are all perceived to be of little importance compared to ES. Among the most important EDS were security and health issues.

This study observed differences between landscape aesthetic preferences and preferences towards a landscape providing natural benefits to society. The preferred image of a woodland in terms of aesthetics in the city is closer to a forest than it is to a park. Nevertheless, about one-fourth of respondents preferred an image depicting a park-like structure in an urban area. In contrast, the preferred image of a woodland in terms of providing benefits by nature to society is closer to a park than a forest. However, the two images that depict a forest-like structure were favoured by around 50 % of the respondents compared to the two images that depict a park-like structure which was preferred by around 40 % of respondents.

The respondents most frequently visit parks rather than forests in the countryside or even near a city. Only around 10 % of respondents do not go to the forest at all, with limited time and distance being the main reasons. Overall, the respondents were very satisfied with the forest or park that they most frequently visit. A small share of respondents go to a forest or park daily, several times a week, or only once per year. The majority appears to be visiting several times a week or month. Park visits tend to be more frequent than visit to a forest in the countryside. Respondents take up to 15 minutes, mostly by walking, to get there, indicating that closeness to forests and greenspaces is important.

The forests and parks are well appreciated across Europe, particularly for the regulating and cultural ES that they offer to citizens. Nevertheless, on a frequent basis, there were differences in perceptions of ES and EDS between different countries and regions in Europe. Most of the differences occurred between Southern and Northern countries, but also between Eastern/South-Eastern countries and Central/Western European countries.

From the provisioning ES, timber production was perceived as more important in Hungary, Poland, and Sweden compared to for example Belgium, the Netherlands and Spain. Similarly for the provision of firewood which was important in Sweden, Poland, and Slovenia but less so in Belgium, the Netherlands, and Czech Republic. Wild food was perceived more important by respondents in many Eastern European countries (e.g., Turkey, Russia, Ukraine) compared to many Western European countries (e.g., the UK, Belgium, Ireland). Hunting game was considered particularly important in Scandinavia (e.g., Norway and Sweden), but not important in for example Germany and Switzerland.

Regulating ES such as air quality, carbon storage, temperature reduction, and water quality and erosion were frequently viewed as very important in South-Eastern European countries (e.g., Albania, Turkey, and Romania) while these were still important in Scandinavia, but slightly less important. However, the findings of the current study do not support the previous research by which claimed that forest production functions are considered equally important to forest protection functions (e.g., climate protection, recreation, water protection) in Romania (Pacurar & Albu, 2018). Our work has shown that in certain regions in Europe, including Romania, timber production is perceived as more important compared to other regions, however, it is not seen as being as important as some regulating and cultural ES.

The different cultural ES were perceived as important across all countries; however, some regional differences or individual countries stand out. While aesthetics was of comparatively low importance in France and the UK, it was of higher importance in many Eastern European countries (e.g., Ukraine, Romania, and Bulgaria). Forests providing opportunities for education was perceived of low

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importance in Ukraine and the Baltics compared to for example Ireland. Human health was very important in several Eastern and South-Eastern European countries, but less important in the UK, Finland, and Norway.

Overall, the importance of the different EDS was low in Europe but frequently, some were perceived to be most important in the UK from all countries. This particularly applied to air pollution, environmental issues, safety hazard and economic issues.

Respondents that do not visit a forest or greenspace at all rated the provisioning ES (e.g., timber production, hunting game, and wild food) as more important compared to respondents that frequently visit a specific forest or greenspace.

In terms of socio-demographic differences, we showed that gender, age, and education are predictors for different ES (e.g., gender being a significant predictor for preferences towards timber and firewood). For gender differences, it is not easily possible to generalize for all woodland types and trees in this study. What emerged is the observation that in forests in the countryside and in the city, male respondents viewed provisioning ES as more important than female respondents. While in parks and for trees, females viewed all ES to be more important compared to male respondents. The only exception for parks was the negligible ES of hunting.

Furthermore, the results showed differences between age groups for rural and urban forests as younger respondents generally perceived provisioning ES of hunting game, timber, and firewood to be of higher importance compared to older respondents. These differences were not as pronounced in the results by respondents who do not visit a forest or park at all, and who answered for forests in general.

For differences based on the highest level of education, we cannot report generalized findings from our study. An interesting finding may be that the ES natural hazard protection in a rural forest was perceived as very important by respondents with no qualification, but the same ES was most important in an urban forest. Mostly the strongest differences emerged between respondents with no qualification and respondents with high school and university degrees.

With this study we have shown how Europeans value different ES and EDS, and how age, gender, and education influence their perceptions. Using a structured online questionnaire yielded a representative number of responses which would have otherwise not been possible.

From the results presented, it can be said that the public is quite satisfied with their forests and parks, and that the benefits provided outweigh the disbenefits. These claims remain rather generic as the acceptance of the forest or park depends on several local circumstances which were not further investigated with this study. The management of both rural and urban forests could lead to potential conflicts of use, especially if forestry interventions alter the appearance and restrict the use by the public. This study has clearly shown that the public prefers regulating and cultural ES while the forest owners and forest managers traditionally require the forest to provide wood for timber and firewood production. Bridging these differences will further require debates in European societies. In light of these results, policymakers should adequately communicate that forest use is an important aspect for the economy and in order to address sustainability challenges.

The study further informs the design preferences of forests and greenspaces by the public. Planners should therefore ensure that there is an adequate number of forests and parks that resemble rather wilder and rather cleaner greenspaces across the city. Overall, the public was in favour of more trees being planted in parks, greenspaces, and forests in their city.

In general, the results presented in our study could indicate that the public is quite satisfied with the forests and parks in their cities, and the benefits provided by forests and trees are viewed to outweigh

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the disbenefits. The aesthetics of forests and greenspaces in urban and peri-urban regions and countryside has shown that the cultivated landscape was preferred by the public, which provides some information for city planners, landscape architects and decision makers on new sites for urban greenspace design and planning.

4.2 Summary of Chinese results

Regarding the societal perceptions of Forest ES and EDS, we found that across all the woodland types that respondents frequently visit, people viewed regulating and cultural ES as being more important than provisioning ES. The ten types of EDS are all perceived to be less important compared to ES. The air quality was considered as the most important ES provided by forests while the most important EDS was health issues.

Generally, there is no difference to the aesthetic preferences and the preferences for the most beneficial landscape. More than half people selected the cultivated landscape as being the most attractive landscape, as well as the most beneficial landscape for urban residents. Furthermore, only 8% of respondents preferred the wild landscape and most were older people over 50 years old.

The public most frequently visit a forest in or nearby by a city than parks in city or town or the forest in the countryside. Only 11% of respondents do not go to the forests at all with the limited time and distance being the main reasons. In general, over half of respondents who visit the forest or parks frequently viewed the forest provide more benefits than dis-benefits. Only a small group people go to the forest or parks daily. The majority appears to visit forest or parks monthly or 2-3 times per mouth. Most people chose to walk to the urban parks, however, the majority chose driving to the forest in the countryside or nearby a city. This indicates that neighbourhood greenspace is important for the public.

The regulating and cultural ES provided by forests and parks are highly appreciated across 18 provinces in China. The public's perceptions on the economic, security and safety issues created by forests and parks showed more differences in 18 provinces comparted to other EDS. For the provisioning ES, the firewood was perceived as less important in 16 province excepting Guangxi hand Jiangxi. Wild food was considered as more important in Guangxi compared to other provinces such as Hubei, Beijing and Guangdong. Timber production was perceived as more important in south-eastern provinces (e.g. Guangxi, Guangdong, Fujian, Jiangxi) compared to the other provinces such as Hunan, Hubei, Henan and Shanxi.

For the regulation ES, those such as carbon storage and air quality were generally viewed as very important ES in all 18 provinces. The habitat, natural hazard protection and noise reduction were quite important in Fujian, Jiangxi, Hunan, Guangxi, Shanxi and Shaanxi, while these were slightly less important in Beijing, Hebei and Guangdong.

From the cultural ES, the employment provided by forests was perceived as being the least important ES across all provinces, whilst recreation, aesthetics and human health were viewed as being very important. The Spiritual ES was relatively more important in Guangxi, Hunan, Jiangxi, Fujian, Chongqing, Shaanxi and Shanxi.

Generally, the importance of different EDS was low in all provinces, however, the health, economic and safety issues were viewed as more important in Hubei and Jiangxi, respectively.

Respondents that don't visit a forest or parks at all, viewed the provisioning ES such timber production, firewood and wild food as more important compared to those who frequently visit forests or greenspace. The spiritual and cultural were considered as more important than other cultural and regulating ES.

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As for the socio-demographic differences, the gender, age, education and how long people live within the city/town/countryside are important predictors for different ES and EDS. For example, region and income are significant predictors towards provisioning ES (e.g., timber production, firewood, and wild food). However, it is not easy to generalize for all woodland types and trees and whether these factors can be good predictors varied across different woodland types and trees. For example, education showed a significant difference on EDS (e.g., safety hazard and aesthetic issues) while it didn't show any differences in the ES of rural forests. But education is a good predictor of provisioning ES that are offered by urban parks.

Elderly people considered the cultural ES such as aesthetics, recreation and education provided by urban parks, rural forests or suburban forests are more important than younger respondents. For those who do not go the parks or forests frequently, the regulating ES (e.g., water quality and erosion, air quality improvement) were perceived as being more important by elderly respondents than younger people.

For differences based upon the highest level of education, the results presented above cannot show generalized findings. However, we still found some interesting points. For example, the public's perceptions on ES for rural forests importance didn't show any significant differences in education levels. The respondents without qualifications viewed the timber production and firewood provided by suburban forests as more important than other ES, while they perceived natural hazards protection (e.g., storms, floods) more important than ES of urban parks.

4.3 Synthesis of results between China and Europe

In this chapter we present the most notable similarities and differences in the samples and results between China and Europe.

Both samples have a similar characteristic as the distribution of female and male respondents is almost balanced (51.2% female and 48.5% male respondents in Europe and 50.39% female and 49.17% male respondents in China). However, the samples differ when it comes to the average age, education, rurality and number of children. For instance, the sample population in Europe is much older with 43.2 years compared to an average age of 30.14 years in China. Consequently, the majority of respondents in Europe belong in the age group 31-50 (40.3%) while in China, the majority belong in the age group 18-30 (56.51%). Due to legal reasons, minors have not been included in the survey, although they are an important group of urban greenspace users. Their use and perceptions are partly covered by respondents who indicated to have children, but for teenagers that are visiting greenspace independently, we have limited input. A similar observation has to be made for pensioners in China, who are also a relevant user group: due to the online nature of the survey, this group is underrepresented in the Chinese sample.

When looking at the responses for the highest level of education, we notice that the majority of respondents in China have an undergraduate degree (Bachelor) (58.05%). In Europe, the largest group left school between 17-19 years of age (36.2%), followed by respondents with an undergraduate degree (Bachelor) (34.9%). The share of respondents with a postgraduate degree is 23.5% in Europe compared to 8.34% in China. Furthermore, about half the respondents in the European sample live in a city or town centre (52.7 %) while this was rather higher in China (63.50%). Moreover, in China most respondents (45.3%) have one child while in Europe most respondents (62.3 %) have no children or young people (under 18 years of age) living in their household.

When assessing public perceptions of forest ES, it was common in both contexts that the public viewed regulating and cultural ES as being more important compared to the provision ES. On the specific ES there was some deviation as the most important ES were air quality, human health, and aesthetics in

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China, while in Europe, it was air quality, habitat, and aesthetics in Europe. For details, please see table 56 below.

Table 56: Importance of ES in Europe and China

Ecosystem services	China	Europe
Air quality	86	95
Human health	85	93
Aesthetics	80	94
Carbon storage	78	89
Habitat	73	93
Water quality and erosion	78	77
Recreation	78	83
Temperature reduction	78	81
Spiritual and cultural	75	81
Noise reduction	72	85
Natural hazard protection	70	80
Education	68	70
Employment	59	51
Wild food	34	57
Firewood	21	23
Timber	27	23
Game	-	7

In China and Europe, all EDS (e.g., air pollution, infrastructure issues, health issues) investigated were of little importance compared to ES. It is noteworthy that overall, EDS were perceived to be more important in China than Europe, indicating that forests and greenspaces are seen as creating slightly more burdens for society. Differences emerged on determining the most important EDS, which in China was perceived to be human health, meaning that forests and greenspaces can be a source of health risks (e.g., wildlife/insect bites, allergies). The most important EDS in Europe was security issues meaning that forests and greenspaces can be unsafe because of uncontrolled pet dogs, risk of crime and falling branches. For details, please see table 57 below.

Table 57: Importance of EDS in Europe and China

Ecosystem disservices	China	Europe
Aesthetic issues	30	9
Land use issues	40	6
Infrastructure issues	36	9
Local climate	27	6
Safety hazard	44	10
Air pollution	28	8
Health issues	48	14
Economic issues	45	10
Security issues	38	16
Environmental issues	38	11

Considering visitor patterns like the frequency of forest and greenspace use, we reported that in Europe the majority of respondent walked to the forest or greenspace, while in China most people used their car or public transport. Most respondents in Europe took around 15 minutes to get to the greenspace or forest, while in China people take up to 30 minutes in many cases.

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The respondents that don't visit a forest or park at all viewed the provisioning ES such timber production, firewood and wild food as more important compared to those who frequently visit forests or greenspace in both China and Europe.

Establishing which type of forest/woodland is perceived as attractive compared to which provides most benefits provided by nature to society, interestingly, the preferred image of a woodland in terms of aesthetics in the city is closer to a forest than it is to a park in Europe. In contrast, in China, the preferred image of a woodland was reminiscent of a park rather than a forest. The Chinese and European respondents perceived that a park-like woodland would provide most natural benefits to society.

Generally, the socio-economic factors are good predictors for different ES and EDS in China and Europe, however, the significance of the correlation depends on woodland types and trees. Also, the correlation between socio-economic factors (e.g., gender, age, income, and education) and public's perception on individual ES and EDS of woodland types and trees varied in China and Europe. In the case of age groups, older respondents viewed the cultural ES provided by parks, suburban and rural forests as being more important than younger people in China, while younger respondents perceived the provision of ES to be of higher importance than older respondents in Europe.

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6. APPENDIX

Appendix I: Survey questionnaire in China and Europe

A SURVEY ON THE ROLE OF FORESTS, CITY PARKS AND TREES FOR HUMAN WELL-BEING AND QUALITY OF LIFE

Welcome to our survey and thank you for your participation, we value your time and effort.

Forests, city parks and trees provide a multitude of benefits to us all including for example, clean air, protect water quality and space for recreation. These benefits are also called 'ecosystem services'. With this survey, we want to understand how you value the importance of these benefits.

This survey is part of the China-European research project called CLEARING HOUSE. By filling this survey you will provide information that is very much needed to conserve and manage forests, city parks and trees in line with what society demands.

We will provide feedback too as a link to the analysis report on the survey will be go to all survey participants who express an interest in the results at the end of the survey.

Your participation is voluntary, and all responses are strictly anonymous. The personal information (age, gender, etc.) that you submit as part of the survey cannot be used to trace your answers back to you personally. Your answers are safely stored on secured servers within the European Union. Please do not hesitate to contact us in case you have any questions or experience any technical problems.

The CLEARING HOUSE project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 821242. Several Chinese partners contributed financially to the project.

Section A: Personal information

0. What is your gender?*
   - Female
   - Male
   - Other
   - Prefer not to say

1. Please indicate the year of your birth.*
   - Please enter _____

2. What is your highest level of education? *
   - School up to 16 years of age
   - School between 17 – 19 years of age
   - Undergraduate university degree or equivalent (Bs)

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- Postgraduate university diploma or degree (e.g. Ms, PhD)
- No qualifications

3. Could you indicate to which annual income category your household belongs (household income per year after taxes in 2019)? *

4. How many dependent children or young people (under 18 years of age) live in your household? Please enter: _____

5. Please indicate the region you live in

6. Would you say you live…?

1	City or town centre
2	Suburb of a city or town
3	Rural area nearby a city or town
4	Rural area/countryside

Section B: Your views on forests, parks

This section addresses questions about the importance of various benefits, disbenefits and characteristics of forests and city parks that you visit most often. In this study, we understand forests as any landscape made up of a large number of trees. Together, these trees form a natural system that supports a variety of life forms. Parks are public green spaces in or close to the residential areas for predominantly recreational use, which can include all types of recreational infrastructure as well as trees. Depending on which area you visit most frequently, you can answer the following questions for forests in rural areas, forests in urban areas or for parks and green spaces that include trees in a town or city.

9. What do you visit most frequently?

1	Forest in the countryside	(Leads to Map Module)
2	Forest in or nearby a city or town	(Leads to Map Module)
3	Park in a city or town	(Leads to Map Module)
4	I do not go to a forest/park at all	(Leads to Q10, do not re-direct to Map Module)

Please show us where the forest/park that you most frequently visit is located. Your location and the location of the forest/park will be processed only in an anonymised way, so that no connection between survey information and your location will be possible.

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Section B1: I do not go to a forest/park at all

10. Please indicate the main reason why you do not go to a forest/park*

1	I do not have time
2	I am not interested to go
3	It's too far away from where I live
4	I am physically not able to get there
5	I have a fear to get lost
6	I have a fear of danger related to falling trees/branches
7	I have a fear of wild animals
8	I have a fear of domestic animals (e.g. dogs)
9	I have allergies
10	I think its unsafe
11	I fear to get unwell while being in the forest or park
12	I find forest or park around where I live to be untidy places
13	The forests around me are lacking parking space
14	I cannot go to the forest or park as these are not accessible by public transport, bike or on foot
15	Other reason

Forests provide benefits (positive effects) and disbenefits (negative effects) for society and we are interested to understand your views on the following questions.

11. How important are the following benefits of forests to you?

	Forests…	Is not important	Is very much important
1	…Provide wood for timber and furniture		
2	…Provide fuelwood		
3	…Provide products other than wood (e.g. mushrooms, berries, nuts, medicinal plants)		
4	…Provide opportunities to hunt game		
5	…Protect water quality and protect soils from erosion		
6	…Improve air quality		
7	…Store carbon and reduce climate change		
8	…Provide living space for plants and animal species		
9	…Provide cultural, emotional and spiritual value		
10	…Provide opportunities for education (e.g. for forest kindergartens, schools)		
11	…Provide recreation and sports opportunities		
12	…Provide benefits to human health and well-being		
13	…Lessen the negative impact of natural hazards (e.g. storms, floods)		
14	…Provide jobs and economic activity		
15	…Are beautiful		
16	…Reduce noise		
17	…Reduce temperature		

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12. How important are the following disbenefits of forests to you?*
    - 1=Very unimportant
    - 5=Very important

	Forests…
1	…Are obscuring views
2	…Are foregone land use opportunity (e.g. less land for industry, housing and businesses)
3	…Cause damage to public infrastructure (e.g. trees falling on electricity lines)
4	…Have a negative impact on local climate
5	…Are unsafe (e.g. uncontrolled pet dogs, risk of crime, falling branches)
6	…Contribute to air pollution from blocking wind
7	…Are a source of health risks (e.g. wildlife/insect bites, allergies)
8	…Are a cost to society (e.g. costs for planting, maintaining, removal)
9	…Pose a threat to homes and properties (e.g. forest fires, storms)
10	…Cause environmental issues (e.g. spread of invasive species)

13. Overall: Please evaluate the proportion of benefits and disbenefits that forests provide to you

Likert: 1= Only disbenefits; 5=Only benefits

Section B2: Forest in the countryside/Forest in or nearby a city or town/Park in a city or town

This section addresses questions about the benefits (positive effects) and disbenefits (negative effects) of the [text] that you visit most frequently.

14. The forest/park you indicated on the map may offer several benefits. How important are the following benefits of this forest/park to you? *

	[text2]	Is not important	Is very much important
1	…Provides wood for timber and furniture		
2	…Provides fuelwood		
3	…Provides products other than wood (e.g. mushrooms, berries, nuts, medicinal plants)		
4	…Provides opportunities to hunt game		
5	…Protects water quality and protect soils from erosion		
6	…Improves air quality		
7	…Stores carbon and reduces climate change		
8	…Provides living space for plants and animal species		
9	…Provides cultural, emotional and spiritual value		
10	…Provides opportunities for education (e.g. for forest kindergartens, schools)		
11	…Provides recreation and sports opportunities		
12	…Provides benefits to human health and well-being		
13	…Lessens the negative impact of natural hazards (e.g. storms, floods)		
14	…Provides jobs and economic activity		
15	…Is beautiful		
16	…Reduces noise		
17	…Reduces temperature		

15. On average, how often do you visit this forest/park?

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1	Once a year
2	A few times a year
3	Monthly
4	2-3 times a month
5	Once per week
6	2-3 times per week
7	4-6 times a week
8	Daily

16. How do you typically get to this forest/park?

Please select from the list below.

1	Walking
2	Cycle
3	Car
4	Public transport

17. How long do you need to travel to this forest/park?

- Please enter travel time ____ (in minutes)
- I do not know

18. The forest/park you indicated on the map may have several disbenefits. How important are the following disbenefits of this forest/park to you?*

1	…is obscuring views
2	…Is foregone land use opportunity (e.g. less land for industry, housing and businesses)
3	…Causes damage to public infrastructure (e.g. trees falling on electricity lines)
4	…Has a negative impact on the local climate
5	… Is unsafe (e.g. uncontrolled pet dogs, risk of crime, falling branches)
6	…Contributes to air pollution from blocking wind
7	…Is a source of health risks (e.g. wildlife/insect bites, allergies)
8	…Is a cost to society (e.g. costs for planting, maintaining, removal)
9	…Poses a threat to homes and properties (e.g. forest fires, storms)
10	…Causes environmental issues (e.g. spread of invasive species)

19. Overall: Please evaluate the proportion of benefits and disbenefits that this forest/ park provides to you

Likert: 1= Only disbenefits; 5=Only benefits

20. The forest/park you indicated on the map may have certain characteristics. How important are the following characteristics of this forest/park to you?*

Please only rate the characteristics that apply to the forest/park you indicated on the map.

(Likert: 1=Very unimportant; 5=Very important)

	Characteristics
1	Cleanliness

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2	Within close reach (time to get there)
3	Accessibility (e.g. parking space, public transport, secure bike stalls)
4	Light at night
5	Availability of garbage bins
6	Water features (e.g. ponds, fountains, streams, lakes)
7	Soft pathways (blank soils, sand)
8	Hard Pathways (concrete, asphalt)
9	Presence of recreational areas (e.g. sports fields)
10	Presence of road signs and information panels
11	Availability of benches
12	Availability of playgrounds
13	Availability of public toilets
14	Availability of picnic places

21. Please specify the reasons why you go to the forest/park you indicated on the map*

(Likert: 1= Very unimportant; 5=Very important)

	Reasons
1	To physically exercise (running, biking, horse riding, swimming, etc.)
2	To walk the dog(s)
3	To take the children out
4	To be alone & relax
5	For social activities (e.g. to meet friends and family, picnics, BBQs)
6	To get away from everyday life
7	To enjoy its climate
8	To enjoy the beauty
9	To learn about nature

Section C: Your views on forests, parks and other urban green spaces with trees

In this section we would like to see which type of landscape you find most beautiful close to where you live.

22. From the 5 pictures below, please select the landscape which you find most attractive*


Image b1


Image b2

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Image b3


Image b4


Image b5

23. From the 5 pictures below, please select the landscape which you think offers the most benefits provided by nature to society*


Image b1


Image b2


Image b3


Image b4

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 Image b5	

Section D: Relationship between humans and the environment.

24. In this section listed below are statements about the relationship between humans and the environment. For each statement, please indicate whether you strongly disagree, mildly disagree, unsure, mildly agree, strongly agree *(Scale: 5 point Likert scale: Strongly disagree, Mildly disagree, Unsure, Mildly agree, Strongly agree)*

1.	*We are approaching the limit of the number of people the Earth can support*
2.	*Humans have the right to modify the natural environment to suit their needs.*
3.	*When humans interfere with nature it often produces disastrous consequences.*
4.	*Human ingenuity will ensure that we do not make the Earth unliveable.*
5.	*Humans are seriously abusing the environment.*
6.	*The Earth has plenty of natural resources if we just learn how to develop them.*
7.	*Plants and animals have as much right as humans to exist.*
8.	*The balance of nature is strong enough to cope with the impacts of modern industrial nations.*
9.	*Despite our special abilities, humans are still subject to the laws of nature.*
10.	*The so-called "ecological crisis" facing humankind has been greatly exaggerated*
11.	*The Earth is like a spaceship with very limited room and resources.*
12.	*Humans were meant to rule over the rest of nature.*
13.	*The balance of nature is very delicate and easily upset.*
14.	*Humans will eventually learn enough about how nature works to be able to control it.*
15.	*If things continue on their present course, we will soon experience a major ecological catastrophe.*

25. Next we would be interested in learning more about how you would characterize your own personality. Please position yourself in regard to the below statements – to what extent the described persons are like you?* *Likert scale: Not like me at all, not like me, a little like me, somewhat like me, like me, Very much like me*

1.	*Thinking up new ideas and being creative is important to her/him. She/he likes to do things in her/his own original way.*
2.	*It is important to her/him to be rich. She/he wants to have a lot of money and expensive things.*
3.	*She/he thinks it is important that every person in the world should be treated equally. She/he believes everyone should have equal opportunities in life.*

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4.	*It's important to her/him to show her/his abilities. She/he wants people to admire what she/he does.*
5.	*It is important to her/him to live in secure surroundings. She/he avoids anything that might endanger her/his safety.*
6.	*She/he likes surprises and is always looking for new things to do. She/he thinks it is important to do lots of different things in life.*
7.	*She/he believes that people should do what they're told. She/he thinks people should follow rules at all times, even when no-one is watching.*
8.	*It is important to her/him to listen to people who are different from her/him. Even when she/he disagrees with them, she/he still wants to understand them.*
9.	*It is important to her/him to be humble and modest. She/he tries not to draw attention to herself/himself.*
10.	*Having a good time is important to her/him. She/he likes to "spoil" herself/himself.*
11.	*It is important to her/him to make her/his own decisions about what she/he does. She/he likes to be free and not depend on others.*
12.	*It's very important to her/him to help the people around her/him. She/he wants to care for their well-being.*
13.	*Being very successful is important to her/him. She/he hopes people will recognise her/his achievements.*
14.	*It is important to her/him that the government ensures her/his safety against all threats. She/he wants the state to be strong so it can defend its citizens.*
15.	*She/he looks for adventures and likes to take risks. She/he wants to have an exciting life.*
16.	*It is important to her/him always to behave properly. She/he wants to avoid doing anything people would say is wrong.*
17.	*It is important to her/him to get respect from others. She/he wants people to do what she/he says.*
18.	*It is important to her/him to be loyal to her/his friends. She/he wants to devote herself/himself to people close to her/him.*
19.	*She/he strongly believes that people should care for nature. Looking after the environment is important to her/him.*
20.	*Tradition is important to her/him. She/he tries to follow the customs handed down by her/his religion or her/his family.*
21.	*She/he seeks every chance she/he can to have fun. It is important to her/him to do things that give her/him pleasure.*

Section E: Trees near where you live

The following section is about trees outside of forests and outside parks. Depending on where you live, these can be trees in private and public gardens, in public squares, in commercial areas, or along streets.

26. Overall, do you think your municipality has too many or too few trees?*

Likert: 1=Way too few trees; 5=Way too many trees

Now please answer for one area that is most important to you personally.

27. For what area in your city or town would you like to respond to below?*

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1	Trees in private gardens
2	Trees in public gardens
3	Trees in public squares
4	Trees in commercial areas (e.g. downtown shopping area, high street, central business districts)
5	Trees along streets

28. [text3] may offer several benefits. How important are the following benefits of trees to you?

Likert: 1=Very unimportant; 5=Very important

	Trees…
1	…Provide fuelwood
2	…Provide products other than wood (e.g. nuts)
3	…Protect water quality and protect soils from erosion
4	…Improve air quality
5	…Store carbon and reduce climate change
6	…Provide living space for plants and animal species
7	…Provide cultural, emotional and spiritual value
8	…Provide recreation and sports opportunities
9	…Provide benefits to human health and well-being
10	…Lessen the negative impact of natural hazards (e.g. storms, floods)
11	…Are beautiful
12	…Reduce noise
13	…Reduce temperature

29 b. Trees [text4] may have disbenefits. How important are the following disbenefits of trees to you? *

Slider: Very unimportant; Very important

	Trees…
1	…Are obscuring views
2	…Are foregone land use opportunity (e.g. less land for industry and businesses)
3	…Cause damage to public infrastructure (e.g. trees falling on electricity lines, trees damaging streets/sidewalks)
4	…Have a negative impact on the local climate
5	… Are unsafe (e.g. falling branches on people)
6	…Contribute to air pollution from blocking wind
7	…Are a source of health risks (e.g. wildlife/insect bites, allergies)
8	…Are a cost to society (e.g. costs for planting, maintaining, removal)
9	…Pose a threat to private homes and properties (e.g. fires, storms)
10	…Cause environmental issues (e.g. spread of invasive species)
11	…Create dirt and debris (e.g. falling leaves and fruits)

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30. Please rate your level of agreement with the following statements

Scale: Strongly disagree, Mildly disagree, Unsure, Mildly agree, Strongly agree

1	I would like new trees planted close to my house
2	I would like new trees planted in parks, green spaces and forests in my city or town
3	There should be more information on trees for residents
4	I consider trees when selecting a place to live
5	Tree removal should be prohibited by law
6	More public funding should be available for managing existing trees
7	There should be more engagement to plant new trees from the private sector (investors, businesses)
8	The trees in my city/town are well managed
9	I feel that I am involved in the decision-making on trees in my city/town
10	Trees along streets are a security risk
11	New infrastructure (e.g. roads) and developments (e.g. housing) should give space to trees
12	Car parks should be removed to plant more trees

Thank you

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Appendix II: List of contributors and translators

Language	Name	Affiliation
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Appendix III : Characteristics of the sample population in Europe

	Country	Sample population (n total)	Sample population (%)
	Albania	289	2.8
	Austria	319	3.1
	Belgium	332	3.2
	Bosnia and Herzegovina	282	2.7
	Bulgaria	280	2.7
	Croatia	310	3.0
	Czech Republic	328	3.2
	Denmark	318	3.1
	Estonia	310	3.0
	Finland	315	3.0
	France	342	3.3
	Germany	332	3.2
	Greece	328	3.2
	Hungary	310	3.0
	Ireland	345	3.3
	Italy	331	3.2
	Latvia	305	2.9
	Lithuania	323	3.1
	Netherlands	320	3.1
	Norway	295	2.8
	Poland	310	3.0
	Portugal	321	3.1
	Romania	291	2.8
	Russia	305	2.9
	Serbia	318	3.1
	Slovakia	331	3.2
	Slovenia	327	3.1
	Spain	315	3.0
	Sweden	317	3.1
	Switzerland	341	3.3
	Turkey	284	2.7
	Ukraine	300	2.9
	United Kingdom	317	3.1
Average age		43.2	
Age group	18-30	3253	31.3
	31-50	4189	40.3
	51-65	1532	14.7
	66+	1417	13.6
Gender	Female	5317	51.2
	Male	5042	48.5
	Other	16	.2
	Prefer not to say	16	.2
Education	School up to 16 years of age	491	4.7

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	School between 17 – 19 years of age	3764	36.2
	Undergraduate university degree or equivalent (Bachelor)	3622	34.9
	Postgraduate university diploma or degree (e.g., Master. PhD)	2443	23.5
	No qualifications	71	.7
Income	Less than EUR 3500	1052	10.1
	EUR 3500-6500	917	8.8
	EUR 6501-9500	776	7.5
	EUR 9501-13000	852	8.2
	EUR 13001-16000	724	7.0
	EUR 16001-22000	950	9.1
	EUR 22001-27000	740	7.1
	EUR 27001-32000	543	5.2
	EUR 32001-37000	458	4.4
	EUR 37001-42000	426	4.1
	EUR 42001-53000	531	5.1
	EUR 53001-63000	402	3.9
	EUR 63001-74000	275	2.6
	EUR 74001-85000	197	1.9
	More than EUR 85000	376	3.6
	Prefer not to say	1172	11.3
Rurality	City or town centre	5473	52,8
	Suburb of a city or town	2362	22,8
	Rural area nearby a city or town	1378	13,3
	Rural area/countryside	1150	11,1
Forest ownership	Yes	1448	13.9
	No	8943	86.1
No. of Children	No children	6469	62.3
	1 child	2146	20.7
	2 children	1368	13.2
	3 children	326	3.1
	4 children	57	0.5

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Appendix IV: Normal distribution of ecosystem services and ecosystem disservices: Results of the Kolmogorov-Smirnov test to test the sample for normal distribution

	Kolmogorov-Smirnov[a]		
	Statistica	df	Sign.
Timber	.162	9256	.000
Firewood	.155	9256	.000
Wild food	.084	9256	.000
Game	.222	9256	.000
Water quality and erosion	.151	9256	.000
Air quality	.231	9256	.000
Carbon storage	.201	9256	.000
Habitat	.222	9256	.000
Spiritual and cultural	.162	9256	.000
Education	.113	9256	.000
Recreation	.166	9256	.000
Human health	.210	9256	.000
Natural hazard protection	.156	9256	.000
Employment	.059	9256	.000
Aesthetics	.217	9256	.000
Noise reduction	.176	9256	.000
Temperature reduction	.158	9256	.000
Aesthetic issues	.207	9256	.000
Land use issues	.239	9256	.000
Infrastructure issues	.207	9256	.000
Local climate	.234	9256	.000
Security issues	.174	9256	.000
Air pollution	.218	9256	.000
Health issues	.182	9256	.000
Economic issues	.203	9256	.000
Safety hazard	.203	9256	.000
Environmental issues	.197	9256	.000

a: Significancy corrected, as per Lilliefors

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Appendix V: Tests of variance homogeneity (Levene´s test): Results for testing the variance homogeneity based on the median

	Levene-Statistic	df1	df2	Sig.
Timber	.186	3	10288	.906
Firewood	.042	3	10219	.989
Wild food	5.763	3	10312	.001
Game	23.395	3	10266	.000
Water quality and erosion	3.085	3	10321	.026
Air quality	18.121	3	10349	.000
Carbon storage	5.448	3	10333	.001
Habitat	23.721	3	10337	.000
Spiritual and cultural	8.902	3	10335	.000
Education	.991	3	10336	.396
Recreation	7.670	3	10340	.000
Human health	28.607	3	10304	.000
Natural hazard protection	6.849	3	10333	.000
Employment	1.816	3	10344	.142
Aesthetics	23.434	3	10358	.000
Noise reduction	9.172	3	10339	.000
Temperature reduction	2.509	3	10348	.057
Aesthetic issues	.636	3	10351	.592
Land use	7.180	3	10327	.000
Infrastructure issues	2.529	3	10315	.055
Local climate	3.449	3	10322	.016
Security issues	15.423	3	10333	.000
Air pollution	7.800	3	10323	.000
Health issues	2.937	3	10325	.032
Economic issues	.582	3	10316	.627
Safety hazard	5.013	3	10304	.002
Environmental issues	2.259	3	10278	.079

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Appendix VI: Tests of variance homogeneity (Brown-Forsythe test)

Robust Tests of Equality of Means (Brown-Forsythe)

	Statistic[a]	df1	df2	Sig.
Timber	1.071	3	64.663	.368
Firewood	.299	3	62.826	.826
Wild food	4.984	3	71.116	.003
Game	27.676	3	66.446	.000
Water quality and erosion	2.864	3	58.162	.044
Air quality	17.140	3	44.269	.000
Carbon storage	10.534	3	46.395	.000
Habitat	32.308	3	47.705	.000
Spiritual and cultural	45.877	3	56.331	.000
Education	18.920	3	54.520	.000
Recreation	23.138	3	61.771	.000
Human health	43.523	3	59.133	.000
Natural hazard protection	36.314	3	65.581	.000
Employment	11.514	3	82.767	.000
Aesthetics	22.796	3	42.475	.000
Noise reduction	39.217	3	57.137	.000
Temperature reduction	22.029	3	56.975	.000
Aesthetic issues	3.888	3	56.908	.013
Land use issues	5.874	3	51.728	.002
Infrastructure issues	4.760	3	56.726	.005
Local climate	4.473	3	60.160	.007
Security issues	14.989	3	55.587	.000
Air pollution	9.882	3	58.485	.000
Health issues	8.450	3	59.517	.000
Economic issues	.835	3	49.303	.481
Safety hazard	7.359	3	54.429	.000
Environmental issues	5.570	3	60.961	.002

[a] Asymptotically F distributed.

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Appendix VII: Descriptive statistics across all woodland types

Ecosystem service	**N**	**Median**	**IQR**
Timber	10292	23.00	56
Firewood	10223	23.00	54
Wild food	10316	57.00	61
Game	10270	7.00	38
Water quality and erosion	10325	77.00	44
Air quality	10353	95.00	21
Carbon storage	10337	89.00	30
Habitat	10341	93.00	25
Spiritual and cultural	10339	81.00	39
Education	10340	70.00	43
Recreation	10344	83.00	36
Human health	10308	93.00	23
Natural hazard protection	10337	80.00	43
Employment	10348	51.00	50
Aesthetics	10362	94.00	23
Noise reduction	10343	85.00	33
Temperature reduction	10352	81.00	40
Ecosystem disservice	**N**	**Median**	**IQR**
Aesthetic issues	10355	9.00	40
Land use issues	10331	6.00	34
Infrastructure issues	10319	9.00	36
Local climate	10326	6.00	32
Security issues	10337	16.00	46
Air pollution	10327	8.00	38
Health issues	10329	14.00	42
Economic issues	10320	10.00	33
Safety hazard	10308	10.00	37
Environmental issues	10282	11.00	39

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Appendix VIII: Perceptions of ES and EDS for woodland types

	Forest in the countryside			Forest in or nearby a city			Park in a city			Forests		
	N	Std. Deviation	Median	N	Std. Deviation	Median	N	Std. Deviation	Median	N	Std. Deviation	Median
Timber	2874	31.992	32.00	2735	31.676	21.00	3639	31.396	8.00	1044	27.768	64.00
Firewood	2872	32.242	41.00	2725	30.400	22.00	3581	27.771	6.00	1045	29.976	54.00
Wild food	2880	29.918	69.00	2755	31.254	62.00	3631	34.051	30.00	1050	25.320	74.00
Game	2876	30.741	20.00	2730	27.151	9.00	3617	22.530	1.00	1047	29.998	25.00
Water quality and erosion	2874	25.172	80.00	2752	26.717	79.00	3646	32.985	69.00	1053	21.519	85.00
Air quality	2882	18.647	94.00	2754	18.162	95.00	3665	20.375	95.00	1052	17.135	95.00
Carbon storage	2882	22.159	89.00	2751	22.433	90.00	3655	25.649	89.00	1049	20.079	91.00
Habitat	2880	17.854	95.00	2752	18.197	95.00	3660	25.190	89.00	1049	17.944	93.00
Spiritual and cultural	2884	25.921	78.00	2742	24.435	83.00	3665	23.917	85.00	1048	27.460	70.00
Education	2880	30.160	68.00	2748	27.899	72.00	3664	30.087	70.00	1048	26.810	65.00
Recreation	2884	26.447	79.00	2753	23.336	85.00	3659	21.814	88.00	1048	25.477	68.00
Human health	2860	18.596	92.00	2744	17.875	93.00	3655	16.157	95.00	1049	21.415	82.00
Natural hazard protection	2878	24.336	81.00	2747	25.175	82.00	3661	29.824	74.00	1051	21.918	84.00
Employment	2881	29.887	50.00	2749	30.420	50.00	3666	31.507	50.00	1052	25.114	65.00
Aesthetics	2887	17.836	95.00	2759	18.161	95.00	3666	17.257	94.00	1050	21.779	86.50
Noise reduction	2880	23.626	84.00	2749	22.661	87.00	3664	23.710	85.00	1050	23.192	80.00
Temperature reduction	2884	24.497	79.00	2758	25.061	82.00	3663	26.539	82.00	1047	22.657	80.00
Aesthetic issues	2889	26.317	9.00	2751	26.686	8.00	3657	26.522	7.00	1058	30.421	39.00
Land use issues	2881	27.602	6.00	2747	28.798	6.00	3645	27.719	4.00	1058	31.252	29.00
Infrastructure issues	2872	25.266	9.00	2737	26.139	8.00	3652	25.965	6.00	1058	27.706	30.00
Local climate	2875	25.721	5.00	2745	26.712	6.00	3648	27.767	4.00	1058	27.734	21.00
Security issues	2876	27.056	11.00	2750	28.330	15.00	3653	30.279	18.00	1058	27.236	30.00
Air pollution	2875	27.125	7.00	2739	28.371	8.00	3655	28.882	6.00	1058	29.300	22.00
Health issues	2869	26.183	13.00	2750	27.040	13.00	3652	28.069	11.00	1058	27.912	29.00
Economic issues	2872	23.662	8.00	2742	24.569	9.00	3648	24.669	10.00	1058	27.049	22.00
Safety hazard	2863	25.244	9.00	2739	26.558	10.00	3648	25.852	7.00	1058	27.211	30.00
Environmental issues	2866	25.526	10.00	2727	26.678	10.00	3631	26.846	8.00	1058	26.305	29.00

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Appendix IX: Descriptive statistics results of ecosystem services by country

Country		Timber	Firewood	Wild food	Game	Water quality and erosion	Air quality	Carbon storage	Habitat	Spiritual and cultural	Education	Recreation	Human health	Natural hazard protection	Employment	Aesthetics	Noise reduction	Temperature reduction
Austria	Mean	32.37	36.21	52.66	23.07	72.19	88.33	83.45	86.75	66.60	61.90	71.41	86.01	73.14	46.76	86.43	78.30	74.61
	Median	28.00	33.00	55.00	10.00	79.00	95.00	93.00	96.00	70.50	65.50	77.00	94.00	80.00	48.00	95.00	84.00	79.00
	Std. Deviation	29.367	30.110	31.771	27.442	27.192	15.894	21.806	19.439	28.910	30.814	26.345	18.597	26.922	28.094	18.368	22.904	24.114
Belgium	Mean	26.51	25.16	47.56	14.72	69.59	83.14	78.82	83.09	61.94	65.32	72.92	82.64	70.18	48.23	80.37	71.90	72.73
	Median	14.00	14.00	51.00	4.00	75.00	88.00	84.50	88.00	66.00	70.00	77.00	85.50	75.50	50.00	83.00	77.00	77.00
	Std. Deviation	28.458	26.802	30.577	21.507	25.452	18.638	20.652	18.868	27.743	26.335	21.800	16.519	24.787	28.004	17.622	23.097	22.052
Bosnia and Herzegovina	Mean	39.19	43.64	58.53	34.26	76.87	89.39	82.83	85.12	72.58	61.72	77.79	86.75	79.06	47.75	89.92	83.82	82.76
	Median	31.50	42.00	60.00	22.00	88.00	100.00	95.00	97.00	80.00	62.50	86.00	95.00	89.00	48.00	100.00	95.00	91.00
	Std. Deviation	35.217	35.428	34.097	35.214	27.491	18.184	23.927	21.491	27.845	31.639	24.928	17.301	24.028	31.752	17.761	21.359	20.520
Bulgaria	Mean	30.24	26.10	47.26	22.44	64.71	89.06	81.20	75.57	74.76	67.14	87.81	88.25	72.51	45.19	91.66	80.81	76.23
	Median	13.00	10.00	48.00	6.00	76.00	98.00	95.00	89.00	86.00	75.00	97.00	97.00	82.50	47.00	99.00	91.00	84.00
	Std. Deviation	34.814	31.553	36.174	28.878	34.780	19.029	24.413	29.145	26.844	30.774	17.630	17.018	28.799	30.590	14.197	23.137	26.212
Croatia	Mean	27.04	31.06	48.55	22.70	65.57	85.89	78.66	79.81	70.18	63.05	76.06	84.04	72.80	45.58	87.50	80.46	75.37
	Median	11.00	19.00	52.00	9.00	74.50	96.00	89.00	91.00	75.00	68.00	85.50	92.00	80.00	45.00	97.00	90.00	85.00
	Std. Deviation	31.125	32.277	32.764	28.774	31.485	19.669	25.579	24.614	26.966	29.311	25.163	19.134	26.412	32.378	17.799	23.201	26.657
Czech Republic	Mean	26.68	27.19	60.38	20.65	72.65	86.49	76.06	87.00	76.09	60.45	76.18	84.79	70.61	41.43	88.19	78.97	75.33
	Median	13.00	15.00	68.00	7.00	78.00	95.00	83.00	97.00	82.00	62.00	83.00	90.00	76.00	43.00	97.00	84.00	81.00
	Std. Deviation	29.537	28.716	33.055	26.154	26.522	17.936	23.498	18.789	23.728	28.143	24.270	17.625	26.520	28.871	16.749	21.762	23.197
Denmark	Mean	26.37	24.21	42.27	19.05	59.49	74.21	69.35	82.26	76.96	59.80	66.95	80.92	61.72	42.90	81.01	66.94	57.26
	Median	14.00	11.00	43.00	5.00	63.00	78.50	73.50	89.00	83.00	60.00	72.00	86.00	64.50	45.00	87.00	71.00	57.00
	Std. Deviation	27.886	26.673	30.110	26.220	29.749	23.472	27.320	19.785	23.725	28.808	27.779	19.077	30.060	30.309	19.815	26.288	28.865
Estonia	Mean	26.40	27.35	50.29	20.54	59.59	80.35	74.81	81.62	72.34	57.46	72.56	81.88	64.51	33.84	84.33	76.83	66.37
	Median	8.00	9.00	52.00	4.00	67.00	88.50	82.00	90.50	80.00	60.00	81.00	90.00	68.50	25.00	93.00	86.00	72.50
	Std. Deviation	32.173	31.879	35.759	27.375	32.870	21.879	25.550	22.949	26.962	32.822	28.916	21.954	29.509	30.127	20.961	24.802	28.928
Finland	Mean	36.98	38.04	61.23	23.70	64.86	76.50	72.69	80.94	70.12	59.58	82.63	80.41	64.75	47.86	83.67	75.41	68.98
	Median	25.00	27.00	68.00	9.00	70.50	83.00	80.00	88.00	76.00	65.00	91.00	86.00	68.00	50.00	88.00	82.00	74.00

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	Std. Deviation	33.886	33.639	31.047	29.170	27.514	23.224	26.073	21.107	26.300	29.615	20.660	20.640	27.392	30.077	17.428	23.643	26.385
France	Mean	33.72	36.14	52.61	24.21	70.69	82.04	77.70	83.27	70.79	67.81	71.26	80.52	71.65	55.23	78.94	71.52	70.01
	Median	27.00	33.00	55.50	10.00	76.00	90.00	83.00	90.00	74.00	70.00	74.00	83.00	76.00	56.00	82.00	76.00	72.00
	Std. Deviation	30.475	31.111	32.243	28.411	25.925	20.250	22.339	19.712	24.294	23.635	22.882	16.764	24.995	27.686	18.455	24.033	23.428
Germany	Mean	32.80	34.73	51.34	24.14	72.47	87.60	83.55	89.61	67.40	64.26	70.36	85.89	73.82	49.28	86.64	79.50	72.00
	Median	19.50	29.00	52.00	8.00	78.00	95.00	91.00	98.00	73.00	69.00	76.00	92.00	80.00	50.00	94.00	86.00	76.00
	Std. Deviation	32.909	30.931	32.897	29.098	25.709	16.671	20.689	15.690	28.272	29.246	26.444	16.579	24.411	30.107	17.128	22.181	25.733
Greece	Mean	33.59	31.17	48.96	20.60	71.27	87.83	82.85	82.33	81.81	69.36	74.32	87.94	80.47	55.28	89.48	80.90	83.67
	Median	22.00	21.00	51.00	6.00	79.50	95.00	93.00	92.00	89.00	76.00	82.00	95.00	90.00	56.00	96.00	88.00	90.00
	Std. Deviation	32.654	30.902	33.724	26.560	29.051	16.151	22.573	22.743	20.733	29.156	25.853	15.816	23.026	30.217	14.672	21.983	19.948
Hungary	Mean	46.65	40.19	64.33	28.04	77.07	90.72	81.13	87.52	79.83	70.88	83.76	86.86	78.45	59.73	87.74	84.83	85.00
	Median	49.00	36.50	70.00	18.00	85.00	98.00	90.00	98.00	86.00	76.00	92.00	94.00	88.00	63.00	97.00	92.00	93.00
	Std. Deviation	35.277	33.325	31.958	28.821	25.685	14.969	24.155	18.064	21.807	27.563	20.443	17.420	23.715	30.244	17.096	18.526	18.999
Ireland	Mean	41.26	35.21	48.55	22.94	70.20	82.99	80.14	84.49	77.42	69.85	71.93	84.22	75.41	60.63	85.48	74.16	66.95
	Median	35.00	24.00	48.00	8.00	74.00	89.00	87.00	90.00	83.00	75.00	76.50	90.00	80.00	62.00	91.00	79.00	72.00
	Std. Deviation	34.833	32.078	31.318	29.137	25.655	19.076	21.719	18.187	22.493	26.410	24.799	18.364	23.246	26.010	16.654	24.151	26.335
Italy	Mean	38.78	36.98	54.93	22.22	69.55	85.09	83.93	83.51	78.58	69.41	74.72	85.12	76.75	61.14	83.99	79.24	80.18
	Median	34.00	34.00	59.00	8.00	74.00	94.00	91.50	90.00	84.00	71.00	78.00	91.00	81.00	65.00	90.00	84.00	84.00
	Std. Deviation	32.661	30.660	31.710	26.517	26.927	18.291	19.032	19.118	21.881	24.014	22.637	17.021	22.831	27.264	17.318	20.082	19.387
Latvia	Mean	24.92	26.12	51.97	18.80	60.98	85.45	78.33	79.08	76.64	51.90	78.04	84.56	66.22	41.06	85.21	78.43	64.24
	Median	10.00	10.00	54.50	2.00	69.00	95.00	88.00	89.00	85.00	50.00	88.00	93.00	73.50	40.00	95.00	86.00	70.00
	Std. Deviation	30.608	30.975	34.780	27.905	31.920	20.184	24.807	25.212	25.651	33.890	25.274	19.957	30.307	31.898	19.375	24.904	29.746
Lithuania	Mean	33.40	35.44	58.29	18.78	65.29	87.33	85.45	83.27	83.39	60.93	80.95	86.57	71.69	46.21	84.31	82.11	70.99
	Median	23.00	27.00	62.50	4.00	72.00	96.00	97.00	95.00	93.00	61.50	90.00	95.00	78.00	47.00	92.50	90.00	76.00
	Std. Deviation	33.584	34.418	35.672	27.043	31.630	18.790	20.760	22.217	21.223	31.038	21.745	18.439	27.450	29.195	19.633	21.381	26.581
Norway	Mean	33.20	36.77	47.40	26.60	58.70	73.30	68.27	77.53	68.82	58.87	71.50	77.11	61.54	42.24	78.43	69.78	54.89
	Median	24.00	32.00	50.00	10.00	63.00	78.00	74.00	87.00	71.00	62.00	75.00	83.50	62.00	43.00	83.00	75.00	52.00
	Std. Deviation	31.976	32.496	31.480	30.460	30.463	25.277	28.139	24.612	26.925	28.222	25.203	22.653	28.186	30.318	21.925	25.116	27.359
Poland	Mean	37.60	36.78	63.68	19.38	77.37	89.21	88.47	86.90	78.54	73.20	79.59	88.35	79.94	52.35	89.74	85.58	84.37
	Median	35.00	35.00	72.00	7.00	83.00	97.00	97.00	95.00	82.00	76.00	84.00	96.00	84.50	51.00	98.00	90.00	89.50

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	Std. Deviation	30.698	31.061	31.156	25.252	23.364	15.489	15.347	16.888	21.227	24.037	21.122	15.213	19.836	30.143	15.304	17.544	17.333
Portugal	Mean	32.25	34.81	47.17	18.67	74.07	89.10	83.95	80.34	76.68	71.59	75.74	87.18	77.40	63.07	84.92	77.84	78.64
	Median	20.00	25.00	49.00	5.00	84.00	98.00	92.00	87.00	82.00	78.00	82.00	94.00	84.00	65.50	92.50	86.00	86.00
	Std. Deviation	33.188	32.343	34.139	24.970	26.083	15.931	20.078	21.498	23.072	26.252	24.315	16.968	23.590	28.349	18.210	22.941	22.021
Romania	Mean	31.56	27.79	54.74	19.85	73.12	92.10	87.37	83.57	77.55	74.46	87.26	91.97	83.12	51.92	91.61	84.39	85.67
	Median	15.00	11.00	61.00	4.00	90.00	99.00	98.00	97.00	90.00	86.00	97.00	99.00	95.00	49.00	99.00	95.00	96.00
	Std. Deviation	34.782	32.538	37.505	27.821	31.895	14.279	20.282	24.803	27.098	29.128	19.682	14.502	23.836	32.904	14.253	21.823	20.529
Russia	Mean	32.49	22.87	47.30	18.13	74.53	90.19	82.42	86.68	86.76	58.47	85.99	91.59	68.41	44.22	90.44	84.75	85.05
	Median	14.00	8.00	49.00	3.00	83.50	98.00	95.00	96.00	95.00	59.00	95.00	99.00	78.00	44.00	98.00	95.00	94.00
	Std. Deviation	36.163	28.424	36.287	27.239	27.564	16.470	23.643	18.905	17.757	31.998	19.634	13.813	30.803	31.341	14.275	19.474	19.540
Serbia	Mean	23.65	26.21	45.01	17.72	67.20	92.38	83.01	84.69	83.68	73.28	84.40	90.85	74.68	46.21	89.79	83.99	85.51
	Median	6.00	6.00	44.00	3.00	79.00	99.00	93.50	97.00	95.00	82.00	96.00	98.00	82.00	46.50	98.00	93.00	95.00
	Std. Deviation	32.243	34.049	37.378	27.638	32.593	14.971	22.383	22.177	20.860	28.626	22.591	15.919	26.853	33.072	16.544	21.321	19.794
Slovakia	Mean	29.35	32.07	60.16	29.94	73.39	87.88	77.76	86.07	76.02	61.21	77.22	84.52	74.62	43.11	87.94	80.83	82.45
	Median	16.50	20.00	68.00	19.50	82.50	96.00	86.00	95.00	83.00	64.50	83.00	92.00	82.00	44.00	96.00	88.00	90.00
	Std. Deviation	30.855	32.005	33.005	30.989	27.850	17.887	24.414	19.167	24.844	29.409	23.423	18.807	26.075	29.903	17.410	23.151	19.883
Slovenia	Mean	47.74	49.36	62.26	25.39	76.89	89.49	84.32	87.25	72.31	67.11	80.19	87.75	77.75	55.37	84.38	82.42	82.44
	Median	49.00	51.50	69.00	14.00	88.00	98.00	94.00	96.00	78.00	72.50	87.50	96.00	86.50	55.00	96.00	90.00	90.00
	Std. Deviation	33.970	34.639	31.096	27.702	25.649	16.449	21.261	17.975	26.345	28.862	22.240	16.155	24.699	29.489	21.776	22.115	20.620
Spain	Mean	37.52	41.57	55.05	17.73	72.69	88.27	79.89	85.02	76.80	69.18	76.30	87.79	76.60	63.01	82.63	81.46	78.11
	Median	32.50	41.00	58.50	3.00	79.00	95.00	87.00	93.00	83.00	74.50	82.00	94.00	84.00	65.00	90.00	86.00	82.00
	Std. Deviation	34.178	31.959	32.502	26.067	27.792	15.511	23.434	19.800	23.669	27.594	23.592	15.133	24.411	27.717	20.260	19.345	21.118
Sweden	Mean	42.72	39.78	62.51	32.01	68.01	82.32	79.70	82.39	65.46	62.10	72.89	83.96	70.97	55.72	83.46	76.24	69.37
	Median	46.00	42.00	69.00	24.00	75.00	87.00	84.00	89.00	71.50	67.00	79.00	90.00	75.50	59.00	89.50	80.00	73.00
	Std. Deviation	31.650	30.883	29.439	30.784	26.418	19.299	21.076	19.949	28.451	26.782	24.217	18.415	25.732	28.341	17.626	22.144	25.008
Switzerland	Mean	34.99	40.67	56.65	21.39	69.41	84.52	78.47	85.30	72.34	68.10	71.04	82.44	69.82	50.04	82.08	72.14	71.11
	Median	29.00	38.00	63.00	8.00	75.50	89.50	84.00	92.00	76.00	74.00	74.50	87.00	76.00	50.00	86.00	78.00	76.00
	Std. Deviation	29.423	30.383	30.546	27.100	27.993	18.045	22.164	18.472	24.024	27.242	24.264	18.270	26.051	26.262	19.039	24.280	24.312
Netherlands	Mean	31.84	26.14	51.60	19.39	67.15	80.39	74.64	79.87	61.97	60.69	70.04	78.87	66.66	49.33	81.64	67.67	72.97
	Median	20.50	14.00	55.00	3.00	70.00	85.00	80.00	84.00	66.00	65.50	75.00	82.00	72.00	51.00	87.00	73.00	78.00

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	Std. Deviation	31.208	27.974	30.922	27.938	25.116	19.204	23.588	19.373	25.625	26.899	24.188	18.748	26.095	27.143	17.994	26.102	21.660
Turkey	Mean	42.39	33.74	66.12	25.12	86.27	93.48	89.95	91.28	84.27	68.52	78.30	88.63	87.76	63.57	90.33	86.46	84.24
	Median	41.00	24.00	76.00	10.00	97.00	99.00	97.00	99.00	92.00	77.00	88.00	97.50	97.00	66.50	99.00	96.00	93.50
	Std. Deviation	34.180	32.736	30.913	28.875	22.152	12.853	15.366	15.944	19.806	29.257	24.087	17.787	18.391	29.409	17.265	19.253	20.562
Ukraine	Mean	25.99	25.34	45.92	13.70	67.91	90.39	83.85	83.76	84.40	57.12	74.27	89.46	70.33	44.70	91.09	80.43	78.07
	Median	8.00	8.00	48.00	2.00	80.00	99.00	97.00	97.00	95.00	55.00	83.00	98.00	85.00	47.00	99.00	93.00	89.00
	Std. Deviation	32.497	31.877	37.596	23.851	33.068	16.551	23.937	23.713	21.248	32.372	27.206	16.542	32.626	32.051	14.936	24.810	26.095
United Kingdom	Mean	35.75	27.61	43.11	18.31	62.11	77.93	74.94	81.16	69.17	64.97	64.56	79.98	67.35	53.73	78.84	67.42	59.12
	Median	32.00	20.00	43.00	3.00	67.50	83.00	79.50	88.00	72.00	67.50	66.00	82.50	69.00	55.00	82.00	69.00	58.00
	Std. Deviation	31.519	27.444	31.515	26.255	28.661	21.990	24.171	19.942	23.125	24.910	24.819	18.495	26.133	26.500	19.271	23.538	27.107
Albania	Mean	46.45	38.34	59.55	25.71	79.52	93.52	80.84	81.86	84.70	56.72	82.56	90.26	76.15	56.79	88.78	76.88	68.84
	Median	48.00	30.00	67.00	12.00	98.00	100.00	99.00	99.00	99.00	54.00	97.00	100.00	88.50	58.00	99.00	88.50	74.00
	Std. Deviation	38.543	36.325	37.525	29.763	29.198	15.212	27.089	25.908	22.018	34.032	23.487	16.774	28.640	33.354	18.709	27.518	29.554

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Appendix X: Descriptive statistics results of ecosystem disservices by country

Country		Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Security issues	Air pollution	Health issues	Economic issues	Safety hazard	Environmental issues
Austria	Mean	28.24	26.04	18.81	17.40	20.78	17.15	18.70	18.26	16.54	18.47
	Median	15.00	8.50	8.00	5.00	9.00	5.00	8.00	7.00	5.00	6.00
	Std. Deviation	31.123	32.682	24.214	24.472	25.522	23.941	23.909	23.069	22.575	23.840
Belgium	Mean	20.48	16.36	21.23	21.03	26.86	24.77	21.96	21.12	22.51	24.20
	Median	8.00	6.00	11.00	8.00	19.00	11.00	13.00	10.00	13.00	14.00
	Std. Deviation	25.097	23.109	24.401	26.109	25.882	28.477	24.055	24.066	25.122	25.133
Bosnia and Herzegovina	Mean	23.97	13.65	20.08	17.31	22.46	22.04	24.81	15.32	21.39	18.24
	Median	12.00	4.00	8.00	5.00	10.00	8.00	15.00	5.00	9.00	7.00
	Std. Deviation	28.424	23.251	26.893	26.094	26.989	29.312	26.273	22.773	27.286	24.007
Bulgaria	Mean	11.53	11.69	12.43	10.88	20.07	12.06	18.14	12.95	12.95	13.03
	Median	3.00	2.00	2.00	2.00	6.00	1.50	6.50	3.00	2.00	2.00
	Std. Deviation	18.807	20.115	21.708	20.851	27.173	23.152	23.680	21.780	20.293	21.794
Croatia	Mean	22.02	13.77	20.35	20.85	27.12	21.96	27.27	19.08	22.72	23.28
	Median	8.00	2.00	8.00	5.50	15.00	7.00	18.00	7.00	11.00	12.00
	Std. Deviation	28.399	22.935	25.986	28.119	29.453	28.516	28.479	24.205	26.888	26.268
Czech Republic	Mean	14.26	14.76	18.33	16.43	23.95	17.65	22.51	19.46	18.35	20.87
	Median	4.00	3.00	6.00	3.00	11.00	4.00	11.00	9.00	6.00	10.00
	Std. Deviation	21.244	22.968	24.784	25.190	28.793	26.290	26.213	23.726	24.775	24.920
Denmark	Mean	21.73	18.74	20.71	23.29	25.34	24.66	25.43	23.85	19.87	23.58
	Median	9.00	5.00	6.50	7.00	11.00	9.00	12.00	11.50	7.00	10.00
	Std. Deviation	25.058	26.401	27.316	29.315	28.229	28.984	27.610	27.567	26.146	27.744
Estonia	Mean	21.26	25.96	21.16	19.68	22.83	26.72	25.83	18.84	20.16	18.49
	Median	5.00	5.00	6.50	4.00	11.00	13.00	16.00	8.00	8.00	6.00
	Std. Deviation	27.780	33.322	26.534	27.491	26.739	30.067	27.233	23.516	25.571	24.034
Finland	Mean	20.33	19.50	18.73	16.84	20.31	22.64	21.54	19.54	18.74	20.98
	Median	7.00	6.00	7.00	5.00	9.00	10.00	10.00	7.00	6.50	9.00
	Std. Deviation	26.330	26.519	24.337	23.787	24.899	26.138	26.145	25.095	25.146	26.262
France	Mean	20.35	17.00	21.03	18.28	25.71	22.29	23.40	21.91	22.63	22.96
	Median	8.00	5.00	10.00	7.00	18.00	10.00	12.50	14.00	11.00	11.50
	Std. Deviation	24.461	24.722	24.142	23.622	25.626	25.836	25.223	22.402	25.197	24.735
Germany	Mean	26.43	27.67	20.64	21.20	24.87	19.39	21.24	21.15	19.13	19.88
	Median	9.00	10.00	7.00	5.00	12.00	6.00	8.00	9.50	6.00	7.00
	Std. Deviation	29.977	32.414	26.529	28.764	27.957	26.522	26.793	25.659	25.209	26.205
Greece	Mean	17.31	21.07	19.55	18.11	30.63	24.27	25.40	18.70	22.20	20.38
	Median	7.00	6.00	9.50	4.50	23.00	10.00	15.00	8.00	10.00	9.00
	Std. Deviation	24.230	27.463	24.623	25.893	28.775	30.553	27.288	23.852	25.145	25.755

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Hungary	Mean	18.65	17.93	19.48	16.99	26.96	20.71	26.82	20.45	21.25	23.24
	Median	6.00	4.00	10.00	3.00	17.50	8.00	16.00	11.00	11.00	11.00
	Std. Deviation	25.384	27.131	23.455	25.229	27.114	26.817	27.120	23.491	24.962	26.665
Ireland	Mean	31.91	30.98	34.02	31.01	37.80	32.57	31.49	30.80	31.85	33.11
	Median	23.00	16.50	26.00	20.00	33.00	19.00	18.00	19.00	20.50	24.00
	Std. Deviation	30.384	31.153	30.303	30.490	30.846	31.086	30.538	29.110	30.534	29.208
Italy	Mean	25.26	31.43	27.81	22.48	32.78	22.93	26.19	25.04	25.90	25.34
	Median	15.00	16.00	20.00	7.00	26.00	9.50	17.00	16.00	14.50	15.00
	Std. Deviation	26.785	33.822	27.196	28.260	30.025	27.446	26.474	25.580	27.272	27.569
Latvia	Mean	20.00	12.48	20.66	20.58	30.93	20.43	23.83	19.47	22.85	23.18
	Median	8.00	3.00	8.00	5.00	17.00	7.00	12.00	6.00	8.50	10.00
	Std. Deviation	26.482	20.386	26.436	27.870	31.561	26.627	27.498	25.719	28.353	27.569
Lithuania	Mean	17.93	18.49	26.66	25.04	34.22	28.59	30.10	22.39	27.83	30.41
	Median	8.00	7.00	18.00	10.00	24.00	14.00	18.50	14.00	18.00	20.50
	Std. Deviation	23.068	24.725	27.207	29.723	32.705	32.783	30.196	24.252	29.304	28.873
Norway	Mean	22.49	18.39	22.25	20.66	24.61	20.97	23.34	20.38	23.08	22.00
	Median	10.00	7.00	10.00	7.00	13.50	8.00	13.00	11.00	12.00	11.00
	Std. Deviation	26.310	24.081	24.915	25.434	26.759	26.268	24.831	23.437	25.104	25.085
Poland	Mean	22.31	21.63	26.41	19.68	23.75	20.02	27.16	21.04	23.60	25.63
	Median	8.00	6.50	18.00	6.00	12.50	7.00	14.00	10.00	13.00	14.50
	Std. Deviation	27.194	28.149	25.679	25.960	25.445	25.558	28.133	23.772	25.503	25.917
Portugal	Mean	24.11	12.31	16.27	17.61	27.61	21.00	21.14	16.44	24.49	21.16
	Median	13.00	2.00	5.00	3.00	15.00	3.00	10.00	6.00	11.00	8.00
	Std. Deviation	26.494	20.399	22.374	26.051	29.585	29.706	26.510	21.801	27.868	26.422
Romania	Mean	19.31	20.29	20.09	15.68	22.61	17.85	21.32	19.14	19.61	18.13
	Median	6.00	4.00	5.00	2.00	10.00	3.00	8.00	6.00	6.00	4.00
	Std. Deviation	26.793	30.347	27.971	26.261	27.704	27.816	27.352	24.853	26.604	24.872
Russia	Mean	17.90	26.50	20.80	17.59	30.55	20.21	27.81	21.03	21.30	21.23
	Median	4.00	6.00	7.00	5.00	19.00	5.00	16.00	9.00	9.00	7.50
	Std. Deviation	25.786	33.576	26.682	25.454	31.669	27.400	29.942	25.340	26.985	26.980
Serbia	Mean	41.22	25.30	22.66	18.79	29.30	18.48	23.22	15.27	16.91	18.77
	Median	41.00	7.00	8.00	5.00	19.00	5.00	10.00	5.00	6.00	5.00
	Std. Deviation	32.866	33.309	29.052	27.771	30.713	26.891	27.189	21.815	23.950	25.876
Slovakia	Mean	22.11	23.09	20.33	19.03	20.80	18.24	20.85	18.44	16.44	18.40
	Median	11.00	8.00	7.00	6.00	10.50	6.00	10.00	8.00	7.00	9.00
	Std. Deviation	25.788	29.193	25.831	26.000	24.642	25.538	24.759	23.822	22.187	22.312
Slovenia	Mean	18.26	17.17	22.27	17.34	24.74	19.30	27.60	17.35	21.54	21.55
	Median	7.00	6.00	13.00	5.00	12.00	6.00	19.50	10.00	13.00	13.00
	Std. Deviation	24.265	23.850	24.836	23.561	27.748	26.239	26.975	19.733	23.796	22.739
Spain	Mean	35.33	21.74	27.38	25.00	30.64	27.85	29.98	26.78	26.41	27.72

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	Median	30.00	9.00	18.00	9.00	21.00	14.00	21.00	19.00	16.00	16.00
	Std. Deviation	27.412	27.443	27.875	30.036	29.630	30.902	28.927	27.263	27.357	29.205
Sweden	Mean	28.72	33.25	29.34	27.47	33.20	30.22	31.78	28.80	27.92	32.61
	Median	16.00	24.00	22.00	15.00	27.00	20.00	22.50	17.00	21.00	21.00
	Std. Deviation	29.536	31.549	27.547	28.233	29.480	28.951	28.589	27.829	26.421	29.687
Switzerland	Mean	22.44	21.86	19.24	18.02	25.64	20.25	24.65	21.18	19.44	21.77
	Median	11.00	7.00	9.00	6.00	14.00	8.00	14.00	13.00	10.00	12.00
	Std. Deviation	25.964	28.592	24.871	24.301	26.830	26.581	26.097	23.060	23.316	24.567
Netherlands	Mean	22.92	23.37	22.49	26.22	33.91	26.76	28.04	25.67	27.26	29.36
	Median	9.00	6.00	7.00	10.00	29.00	12.00	16.00	12.50	14.00	15.00
	Std. Deviation	27.316	29.346	27.232	30.084	29.501	29.892	29.522	27.975	29.750	29.664
Turkey	Mean	18.04	25.74	22.05	21.70	30.06	29.05	26.51	19.35	24.26	27.21
	Median	5.00	8.00	6.50	6.00	17.00	12.00	12.50	8.00	11.50	13.00
	Std. Deviation	26.662	32.329	28.292	28.650	30.298	33.580	29.465	24.915	28.834	30.608
Ukraine	Mean	10.14	12.92	13.55	12.29	23.05	15.26	21.10	14.51	13.29	14.04
	Median	1.00	2.00	3.00	1.00	9.00	2.00	10.00	4.00	3.00	3.00
	Std. Deviation	19.755	24.698	22.324	22.945	28.911	26.401	25.088	21.602	21.882	22.958
United Kingdom	Mean	32.19	34.01	31.81	33.80	37.76	33.54	33.64	30.31	32.53	34.56
	Median	26.00	27.00	24.00	28.50	35.50	28.00	25.00	23.00	27.00	32.00
	Std. Deviation	29.904	31.662	29.256	29.798	28.496	29.800	29.340	26.884	28.563	27.908
Albania	Mean	33.11	30.12	17.12	16.08	25.82	20.09	25.06	20.04	19.99	18.36
	Median	23.50	13.00	5.00	4.00	11.50	3.50	14.00	9.50	8.00	6.00
	Std. Deviation	32.586	34.346	24.414	25.226	29.702	29.519	28.003	25.103	25.396	23.894

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Appendix XI : Statistical results for forest in the countryside

Descriptive statistics comparing means – Forest in the countryside – Gender

	Female			Male		
	N	Std. Deviation	Median	N	Std. Deviation	Median
Timber	1403	32.391	30.00	1466	31.603	33.00
Firewood	1396	32.778	40.00	1471	31.704	43.00
Wild food	1406	30.190	72.00	1469	29.487	65.00
Game	1400	29.846	14.00	1472	31.299	25.00
Water quality and erosion	1401	25.558	81.00	1469	24.721	79.00
Air quality	1405	17.916	96.00	1472	19.137	92.00
Carbon storage	1407	22.412	91.00	1470	21.865	87.00
Habitat	1404	17.262	97.00	1471	18.100	91.00
Spiritual and cultural	1405	25.236	83.00	1474	26.168	74.00
Education	1406	30.972	70.00	1469	29.243	66.00
Recreation	1405	26.145	81.00	1474	26.574	76.00
Human health	1394	17.462	96.00	1461	19.351	88.00
Natural hazard protection	1403	23.596	85.00	1471	24.753	79.00
Employment	1402	30.162	50.00	1475	29.608	50.00
Aesthetics	1410	17.264	97.00	1472	18.224	93.00
Noise reduction	1404	22.429	88.00	1471	24.454	82.00
Temperature reduction	1408	24.331	82.00	1471	24.553	77.00
Aesthetic issues	1407	26.142	9.00	1477	26.496	8.00
Land use issues	1409	26.246	6.00	1467	28.672	7.00
Infrastructure issues	1402	24.969	10.00	1465	25.525	8.00
Local climate	1403	25.723	6.00	1467	25.699	5.00
Security issues	1402	27.976	12.00	1469	26.110	10.00
Air pollution	1401	27.638	8.00	1469	26.555	6.00
Health issues	1396	25.872	15.00	1468	26.487	11.00
Economic issues	1397	23.307	9.00	1470	23.990	7.00
Safety hazard	1396	25.068	11.00	1462	25.360	8.00
Environmental issues	1395	25.737	11.00	1466	25.330	9.00

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Mann Whitney U Test for ecosystem services and disservices – Forest in the countryside – Gender

	Gender		
	N	Sig.	
Timber	2,869	.360	
Firewood	2,867	.374	
Wild food	2,875	<.001	*
Game	2,872	<.001	*
Water quality and erosion	2,870	.008	
Air quality	2,877	<.001	*
Carbon storage	2,877	.009	*
Habitat	2,875	<.001	*
Spiritual and cultural	2,879	<.001	*
Education	2,875	<.001	*
Recreation	2,879	<.001	*
Human health	2,855	<.001	*
Natural hazard protection	2,874	<.001	*
Employment	2,877	.574	
Aesthetics	2,882	<.001	*
Noise reduction	2,875	<.001	*
Temperature reduction	2,879	<.001	*
Aesthetic issues	2,884	.426	
Land use issues	2,876	.118	
Infrastructure issues	2,867	.025	*
Local climate	2,870	.037	*
Security issues	2,871	.034	*
Air pollution	2,870	.003	*
Health issues	2,864	.020	*
Economic issues	2,867	.145	
Safety hazard	2,858	.031	*
Environmental issues	2,861	.013	*

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Descriptive statistics comparing means – Forest in the countryside – Age groups

	18-30			31-50			51-65			66+		
	N	Std. Deviation	Median	N	Std. Deviation	Median	N	Std. Deviation	Median	N	Std. Deviation	Median
Timber	918	32.398	35.00	1155	31.582	34.00	404	31.442	25.00	397	32.620	25.00
Firewood	922	31.725	42.00	1152	32.297	44.00	406	31.457	37.00	392	34.022	38.00
Wild food	923	29.231	65.00	1156	30.001	70.00	405	30.960	71.00	396	30.195	71.00
Game	920	31.234	22.00	1154	30.350	20.00	406	31.511	16.00	396	29.799	12.00
Water quality and erosion	921	26.269	77.00	1150	24.485	79.00	407	24.543	84.00	396	24.756	83.00
Air quality	924	20.008	94.00	1156	18.193	94.00	406	16.971	95.00	396	18.198	94.00
Carbon storage	922	24.240	84.00	1155	21.096	89.00	408	20.117	90.50	397	21.305	93.00
Habitat	924	19.250	93.00	1157	17.685	95.00	403	15.486	96.00	396	16.772	96.00
Spiritual and cultural	926	26.310	73.50	1156	25.051	80.00	408	26.331	81.00	394	26.677	80.00
Education	926	30.297	64.00	1154	29.246	70.00	404	30.553	68.00	396	31.383	71.00
Recreation	924	26.408	74.00	1156	24.881	81.00	406	27.644	81.00	398	29.036	78.00
Human health	920	19.807	87.00	1149	18.336	93.00	399	16.669	95.00	392	17.464	94.00
Natural hazard protection	921	25.056	76.00	1155	23.533	82.00	405	24.092	88.00	397	24.344	85.00
Employment	920	29.210	48.00	1157	29.928	51.00	406	30.475	50.00	398	30.326	50.00
Aesthetics	926	19.383	93.00	1156	17.810	95.00	407	16.367	97.00	398	14.953	95.50
Noise reduction	924	24.183	80.00	1157	23.600	85.00	405	23.385	90.00	394	22.240	85.00
Temperature reduction	925	24.641	75.00	1156	23.862	81.00	407	23.871	83.00	396	25.815	81.00
Aesthetic issues	928	27.577	15.50	1156	27.254	9.00	407	24.047	5.00	398	19.200	5.00
Land use issues	926	28.622	10.00	1151	28.075	6.00	407	27.733	4.00	397	21.138	3.00
Infrastructure issues	920	27.054	15.00	1147	25.094	9.00	408	23.738	6.00	397	20.764	5.00
Local climate	919	27.617	9.00	1153	26.356	6.00	407	21.629	3.00	396	20.942	2.00
Security issues	920	28.681	16.00	1155	27.217	11.00	406	24.724	8.00	395	22.869	5.00
Air pollution	919	27.785	11.00	1153	27.865	7.00	406	26.412	4.50	397	22.091	3.00
Health issues	919	27.227	19.00	1146	26.382	13.00	406	24.338	9.00	398	23.608	9.00
Economic issues	920	25.317	11.00	1151	24.114	7.00	405	20.782	6.00	396	19.524	4.50
Safety hazard	916	26.823	15.00	1149	25.941	10.00	404	22.030	6.00	394	19.372	4.00
Environmental issues	920	27.216	14.00	1150	25.930	11.00	404	23.413	7.00	392	19.974	6.50

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Kruskal-Wallis Test – Forest in the countryside – Age groups (*p>0.05 differences not statistically different)

	Age groups		
	N	Sig.	Sig. (p<0.05)
Timber	2,874	.132	
Firewood	2,872	.429	
Wild food	2,880	.361	
Game	2,876	.243	
Water quality and erosion	2,874	.008	*
Air quality	2,882	.759	
Carbon storage	2,882	.003	*
Habitat	2,880	.466	
Spiritual and cultural	2,884	.006	*
Education	2,880	<.001	*
Recreation	2,884	.001	*
Human health	2,860	<.001	*
Natural hazard protection	2,878	<.001	*
Employment	2,881	.005	*
Aesthetics	2,887	.158	
Noise reduction	2,880	.005	*
Temperature reduction	2,884	<.001	*
Aesthetic issues	2,889	<.001	*
Land use issues	2,881	<.001	*
Infrastructure issues	2,872	<.001	*
Local climate	2,875	<.001	*
Security issues	2,876	<.001	*
Air pollution	2,875	<.001	*
Health issues	2,869	<.001	*
Economic issues	2,872	<.001	*
Safety hazard	2,863	<.001	*
Environmental issues	2,866	<.001	*

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Descriptive statistics comparing means – Forest in the countryside – Education

	School up to 16 years of age			School between 17-19 years of age			Undergraduate university degree			Postgraduate university degree			No qualification		
	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian
Timber	161	32.630	30	1126	31.705	31	955	31.663	32	613	33.110	33	19	23.644	40
Firewood	160	33.551	43,5	1127	31.753	43	956	31.988	40	611	33.236	39	18	29.272	20,5
Wild food	160	30.780	68,5	1126	29.703	70	962	29.671	68	613	30.481	67	19	31.097	78
Game	161	29.562	17	1127	31.395	23	956	30.786	17	613	29.618	17	19	28.889	13
Water quality and erosion	160	26.284	79	1125	24.817	80	958	25.718	80	612	24.535	81,5	19	27.239	57
Air quality	161	19.310	96	1125	19.021	95	963	18.665	92	614	17.664	93,5	19	20.799	85
Carbon storage	162	26.258	89	1129	22.696	89	959	21.958	87	613	20.090	90	19	22.919	84
Habitat	160	18.484	97	1128	17.671	96	960	17.831	93	613	18.058	94	19	16.316	97
Spiritual and cultural	161	29.195	76	1129	25.861	76	961	25.210	78	614	26.147	82	19	23.469	85
Education	160	30.351	72,5	1130	30.021	67	961	30.179	68	610	30.219	67	19	35.113	75
Recreation	161	28.989	73	1130	26.095	78	961	26.004	80	613	26.892	80	19	30.394	95
Human health	159	19.129	95	1120	18.579	92	956	18.253	91	606	18.869	92	19	24.217	93
Natural hazard protection	160	25.371	82	1127	24.556	82	962	24.336	81	610	23.486	82,5	19	24.661	51
Employment	162	28.924	54	1131	29.702	50	960	29.856	50	609	30.289	49	19	32.792	25
Aesthetics	162	18.101	96,5	1130	17.298	96	962	18.742	94	614	17.243	95	19	17.952	97
Noise reduction	162	21.096	82,5	1129	22.622	85	961	24.492	84	609	24.652	84	19	23.495	83
Temperature reduction	161	26.842	79	1129	24.153	79	961	24.253	80	615	24.950	80	18	21.496	67
Aesthetic issues	162	26.395	6	1133	26.258	9	962	26.262	10	613	26.536	7	19	25.929	8
Land use issues	162	26.139	4,5	1131	28.215	6	958	28.006	7	611	26.109	5	19	27.195	12
Infrastructure issues	162	23.195	7	1126	26.112	10	954	25.478	10	611	23.601	6	19	25.976	12
Local climate	162	25.034	4	1127	25.910	6	954	26.391	6	613	24.530	4	19	19.247	3
Security issues	161	24.855	10	1127	26.946	11	955	27.866	12	614	26.298	8	19	32.636	2
Air pollution	162	27.033	6,5	1122	27.326	7	959	27.442	8	613	26.175	5	19	27.837	5
Health issues	161	26.901	10	1125	25.966	13	954	26.668	15	610	25.099	10	19	34.141	27
Economic issues	159	22.783	9	1127	24.032	9	955	23.537	9	612	23.312	6	19	22.976	5
Safety hazard	162	21.602	8	1119	25.600	10	956	25.548	10	607	24.917	7	19	25.773	18
Environmental issues	161	22.338	8	1115	26.140	11	957	25.456	12	614	24.902	7	19	32.512	5

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Kruskal-Wallis test – Forest in the countryside – Education

	Education		
	N	Sig.	
Timber	2,874	.912	
Firewood	2,872	.391	
Wild food	2,880	.792	
Game	2,876	.045	*
Water quality and erosion	2,874	.221	
Air quality	2,882	.454	
Carbon storage	2,882	.393	
Habitat	2,880	.008	*
Spiritual and cultural	2,884	.010	*
Education	2,880	.513	
Recreation	2,884	.069	
Human health	2,860	.884	
Natural hazard protection	2,878	.027	*
Employment	2,881	.055	
Aesthetics	2,887	.058	
Noise reduction	2,880	.270	
Temperature reduction	2,884	.333	
Aesthetic issues	2,889	.199	
Land use issues	2,881	.050	*
Infrastructure issues	2,872	.005	*
Local climate	2,875	.014	*
Security issues	2,876	.132	
Air pollution	2,875	.030	*
Health issues	2,869	.002	*
Economic issues	2,872	.004	*
Safety hazard	2,863	.114	
Environmental issues	2,866	.003	*

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Appendix XII: Statistical results for forest in or nearby a city

Descriptive statistics comparing means – Forest in the city – Gender

	Female			Male		
	N	Std. Deviation	Median	N	Std. Deviation	Median
Timber	1365	31.616	20.00	1362	31.700	21
Firewood	1365	30.280	21.00	1353	30.489	22
Wild food	1377	31.987	65.00	1370	30.498	60
Game	1367	25.991	6.00	1356	28.087	11
Water quality and erosion	1379	27.675	80.00	1365	25.724	79
Air quality	1376	17.920	97.00	1370	18.225	92
Carbon storage	1375	22.265	92.00	1368	22.411	87
Habitat	1376	16.633	97.00	1368	19.340	91
Spiritual and cultural	1372	23.734	88.00	1362	24.814	79
Education	1375	27.752	75.00	1366	27.890	70
Recreation	1378	22.685	88.50	1368	23.776	83
Human health	1373	16.980	96.00	1363	18.514	90
Natural hazard protection	1374	24.579	85.00	1365	25.635	79
Employment	1377	30.682	50.00	1365	30.187	50
Aesthetics	1380	17.277	96.00	1371	18.819	92
Noise reduction	1372	22.095	90.00	1369	23.003	84
Temperature reduction	1379	24.966	84.00	1371	25.004	79
Aesthetic issues	1374	26.469	7.00	1369	26.861	8.00
Land use issues	1371	28.435	5.00	1369	29.086	6.00
Infrastructure issues	1368	26.172	9.00	1362	26.086	8.00
Local climate	1370	26.844	6.00	1367	26.572	5.00
Security issues	1374	28.999	16.50	1368	27.470	13.00
Air pollution	1370	28.870	9.00	1361	27.786	6.00
Health issues	1374	27.571	14.00	1368	26.396	11.00
Economic issues	1373	23.350	8.00	1362	25.645	10.00
Safety hazard	1372	26.404	11.00	1360	26.723	9.00
Environmental issues	1368	26.581	11.00	1352	26.795	10.00

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Mann Whitney U Test for ecosystem services and disservices – Forest in the city – Gender

	Gender		
	N	Sig.	
Timber	2,727	.129	
Firewood	2,718	.344	
Wild food	2,747	.048	*
Game	2,723	<.001	*
Water quality and erosion	2,744	.222	
Air quality	2,746	<.001	*
Carbon storage	2,743	<.001	*
Habitat	2,744	<.001	*
Spiritual and cultural	2,734	<.001	*
Education	2,741	<.001	*
Recreation	2,746	<.001	*
Human health	2,736	<.001	*
Natural hazard protection	2,739	<.001	*
Employment	2,742	.070	
Aesthetics	2,751	<.001	*
Noise reduction	2,741	<.001	*
Temperature reduction	2,750	<.001	*
Aesthetic issues	2,743	.421	
Land use issues	2,740	.006	*
Infrastructure issues	2,730	.155	
Local climate	2,737	.550	
Security issues	2,742	.021	*
Air pollution	2,731	.030	*
Health issues	2,742	.088	
Economic issues	2,735	.054	
Safety hazard	2,732	.116	
Environmental issues	2,720	.104	

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Descriptive statistics comparing means – Forest in or nearby a city – Age groups

	18-30			31-50			51-65			66+		
	N	Std. Deviation	Median	N	Std. Deviation	Median	N	Std. Deviation	Median	N	Std. Deviation	Median
Timber	837	31.813	26.00	1173	32.091	20.00	403	30.296	17.00	322	30.919	18.00
Firewood	831	30.202	27.00	1179	30.963	22.00	398	28.691	18.00	317	30.559	18.00
Wild food	845	29.394	58.00	1182	31.922	63.00	404	32.150	67.00	324	32.309	66.00
Game	832	27.076	13.00	1174	28.105	8.00	403	25.890	6.00	321	24.399	4.00
Water quality and erosion	843	27.560	73.00	1182	26.540	80.00	404	24.171	86.00	323	26.415	86.00
Air quality	849	19.500	91.00	1178	18.347	95.00	406	15.540	97.00	321	15.756	98.00
Carbon storage	841	24.098	83.00	1182	22.644	90.00	405	18.582	94.00	323	19.497	95.00
Habitat	845	18.663	92.00	1182	18.314	95.00	403	16.414	97.00	322	18.189	97.00
Spiritual and cultural	841	24.673	79.00	1179	24.288	84.00	399	23.836	89.00	323	24.708	87.00
Education	845	29.084	68.00	1176	26.883	72.00	405	26.686	78.00	322	28.537	77.00
Recreation	845	22.259	84.00	1179	23.111	85.00	406	24.740	89.50	323	25.104	87.00
Human health	842	19.696	88.50	1178	17.838	93.00	403	14.237	97.00	321	15.038	98.00
Natural hazard protection	840	26.039	76.00	1183	24.059	83.00	403	24.917	90.00	321	25.762	84.00
Employment	839	29.312	50.00	1183	30.787	50.00	406	31.571	50.00	321	30.520	49.00
Aesthetics	846	20.637	90.00	1184	17.304	95.00	406	15.320	97.00	323	15.757	98.00
Noise reduction	846	23.808	80.00	1179	22.543	87.00	405	19.492	94.00	319	21.993	90.00
Temperature reduction	846	26.006	76.00	1183	24.278	84.00	406	24.574	90.00	323	24.362	87.00
Aesthetic issues	842	27.173	11.00	1182	27.992	8.00	405	24.937	4.00	322	19.071	4.00
Land use issues	838	28.330	9.00	1181	30.299	7.00	406	26.053	3.00	322	25.472	3.00
Infrastructure issues	833	27.478	13.00	1179	27.098	9.00	404	22.566	4.00	321	19.824	5.00
Local climate	837	28.321	9.00	1181	27.192	6.00	405	23.917	3.00	322	20.888	2.50
Security issues	841	29.590	23.00	1181	28.298	15.00	405	25.837	9.00	323	24.760	9.00
Air pollution	838	28.821	12.00	1178	29.220	9.00	401	26.275	3.00	322	23.685	3.00
Health issues	847	28.361	20.00	1178	27.726	13.00	403	23.219	7.00	322	21.361	8.00
Economic issues	838	26.141	13.00	1179	25.448	8.00	403	21.824	5.00	322	17.322	6.50
Safety hazard	839	27.627	18.00	1174	27.181	10.00	406	23.586	4.00	320	21.104	4.00
Environmental issues	834	27.850	14.00	1170	27.086	11.00	402	24.651	7.00	321	21.940	6.00

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Kruskal-Wallis Test – Forest in the city – Age groups (*p>0.05 differences not statistically different)

	Age groups		
	N	Sig.	Sig. (p>0.05)
Timber	2,735	.007	*
Firewood	2,725	.037	*
Wild food	2,755	.102	
Game	2,730	<.001	*
Water quality and erosion	2,752	<.001	*
Air quality	2,754	<.001	*
Carbon storage	2,751	<.001	*
Habitat	2,752	.011	*
Spiritual and cultural	2,742	.003	*
Education	2,748	<.001	*
Recreation	2,753	.236	
Human health	2,744	<.001	*
Natural hazard protection	2,747	<.001	*
Employment	2,749	.831	
Aesthetics	2,759	<.001	*
Noise reduction	2,749	<.001	*
Temperature reduction	2,758	<.001	*
Aesthetic issues	2,751	<.001	*
Land use issues	2,747	<.001	*
Infrastructure issues	2,737	<.001	*
Local climate	2,745	<.001	*
Security issues	2,750	<.001	*
Air pollution	2,739	<.001	*
Health issues	2,750	.000	*
Economic issues	2,742	<.001	*
Safety hazard	2,739	.000	*
Environmental issues	2,727	<.001	*

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Descriptive statistics comparing means – Forest in the city – Education

	School up to 16 years of age			School between 17-19 years of age			Undergraduate university degree			Postgraduate university degree			No qualification		
	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian
Timber	100	32.682	24.00	943	31.505	21.00	1008	32.133	21.00	668	31.069	20.00	16	32.664	5.00
Firewood	100	31.501	26.00	941	30.901	21.00	1008	29.949	22.00	660	30.124	21.00	16	35.705	9.50
Wild food	101	33.526	63.00	951	30.893	64.00	1018	30.834	60.00	669	31.862	60.00	16	32.245	56.00
Game	100	26.524	4.00	944	27.069	9.00	1007	27.136	10.00	663	27.365	7.00	16	28.967	30.50
Water quality and erosion	102	27.029	78.00	950	26.564	80.00	1014	27.146	79.00	670	26.244	78.00	16	27.780	78.50
Air quality	102	18.517	96.00	949	17.710	97.00	1016	18.345	94.00	671	18.410	93.00	16	17.872	95.00
Carbon storage	100	25.359	88.00	949	22.483	91.00	1016	22.483	89.00	670	21.740	89.00	16	25.892	87.00
Habitat	102	18.208	97.00	951	17.441	97.00	1014	18.164	94.00	669	19.154	91.00	16	19.143	95.00
Spiritual and cultural	102	27.934	78.00	946	25.270	85.00	1009	23.963	83.00	670	23.077	82.50	15	33.141	80.00
Education	101	28.417	69.00	946	28.437	75.00	1015	28.090	71.00	670	26.684	71.00	16	29.425	78.50
Recreation	102	28.080	81.00	950	23.260	85.50	1016	23.650	85.00	669	22.028	87.00	16	21.745	88.00
Human health	102	19.695	94.00	948	17.599	95.00	1009	18.399	93.00	669	17.113	92.00	16	19.978	95.00
Natural hazard protection	102	24.456	79.00	948	25.199	84.00	1013	25.758	81.00	668	24.368	80.00	16	22.791	91.00
Employment	102	30.154	49.00	947	30.855	50.00	1014	29.815	50.00	670	30.623	48.00	16	36.405	42.50
Aesthetics	102	20.913	96.50	953	18.161	97.00	1019	17.853	93.00	669	18.094	92.00	16	21.121	97.00
Noise reduction	102	20.506	83.00	947	22.176	90.00	1015	23.230	85.00	669	22.825	85.00	16	14.585	82.50
Temperature reduction	101	26.821	77.00	952	24.976	84.00	1019	24.543	80.00	670	25.653	84.00	16	25.199	75.00
Aesthetic issues	101	28.168	10.00	950	26.128	8.00	1014	26.707	8.00	670	27.207	6.00	16	28.320	6.00
Land use issues	101	30.811	5.00	948	29.942	6.00	1013	28.184	6.00	669	27.880	5.00	16	21.974	7.50
Infrastructure issues	102	25.098	7.00	942	25.340	9.00	1010	26.870	8.50	668	26.348	8.00	15	24.767	5.00
Local climate	101	26.060	5.00	949	25.072	5.00	1012	28.110	7.00	667	26.803	4.00	16	25.327	21.50
Security issues	102	27.164	12.00	949	28.095	14.00	1012	29.207	16.50	671	27.442	15.00	16	28.199	11.50
Air pollution	102	28.007	7.50	940	27.699	7.50	1013	28.986	9.00	669	28.406	6.00	15	28.311	20.00
Health issues	102	25.731	12.00	952	26.402	12.00	1013	27.174	14.00	668	27.726	12.00	15	34.758	13.00
Economic issues	102	21.905	8.50	942	23.664	8.00	1014	25.153	9.00	668	25.083	9.00	16	31.754	8.00
Safety hazard	101	28.362	11.00	943	26.132	9.00	1010	26.863	11.00	669	26.397	10.00	16	26.077	40.50
Environmental issues	100	27.245	10.50	940	25.622	10.00	1004	27.403	12.00	667	26.950	9.00	16	24.718	9.50

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Kruskal-Wallis test – Forest in the city – Education

	Education		
	N	Sig.	
Timber	2,735	.461	
Firewood	2,725	.826	
Wild food	2,755	.026	*
Game	2,730	.441	
Water quality and erosion	2,752	.642	
Air quality	2,754	.005	*
Carbon storage	2,751	.418	
Habitat	2,752	.003	*
Spiritual and cultural	2,742	.330	
Education	2,748	.117	
Recreation	2,753	.119	
Human health	2,744	.149	
Natural hazard protection	2,747	.092	
Employment	2,749	.608	
Aesthetics	2,759	.035	*
Noise reduction	2,749	.007	*
Temperature reduction	2,758	.078	
Aesthetic issues	2,751	.850	
Land use issues	2,747	.523	
Infrastructure issues	2,737	.587	
Local climate	2,745	.061	
Security issues	2,750	.229	
Air pollution	2,739	.200	
Health issues	2,750	.281	
Economic issues	2,742	.351	
Safety hazard	2,739	.101	
Environmental issues	2,727	.097	

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Appendix XIII : Statistical results for parks

Descriptive statistics comparing means – Parks – Gender

	Female			Male		
	N	Std. Deviation	Median	N	Std. Deviation	Median
Timber	1948	31.483	10.00	1686	31.276	6.00
Firewood	1922	27.884	8.00	1654	27.631	5.00
Wild food	1951	34.499	32.00	1675	33.451	28.00
Game	1940	21.395	1.00	1672	23.672	2.00
Water quality and erosion	1954	33.404	71.00	1687	32.425	67.00
Air quality	1963	19.216	97.00	1697	21.341	92.00
Carbon storage	1960	25.071	90.00	1690	26.096	86.00
Habitat	1962	24.280	92.00	1693	25.836	84.00
Spiritual and cultural	1967	22.925	90.00	1693	24.619	80.00
Education	1965	30.110	73.00	1694	29.790	66.00
Recreation	1961	20.577	90.00	1693	23.026	86.00
Human health	1959	15.211	97.00	1691	16.992	92.00
Natural hazard protection	1965	28.417	79.00	1691	30.943	70.00
Employment	1963	31.560	51.00	1698	31.151	47.00
Aesthetics	1965	16.210	96.00	1696	18.203	91.00
Noise reduction	1964	23.048	89.00	1695	24.123	81.00
Temperature reduction	1960	25.703	85.00	1698	27.156	79.00
Aesthetic issues	1948	31.483	10.00	1686	31.276	6.00
Land use issues	1922	27.884	8.00	1654	27.631	5.00
Infrastructure issues	1951	34.499	32.00	1675	33.451	28.00
Local climate	1940	21.395	1.00	1672	23.672	2.00
Security issues	1954	33.404	71.00	1687	32.425	67.00
Air pollution	1963	19.216	97.00	1697	21.341	92.00
Health issues	1960	25.071	90.00	1690	26.096	86.00
Economic issues	1962	24.280	92.00	1693	25.836	84.00
Safety hazard	1967	22.925	90.00	1693	24.619	80.00
Environmental issues	1965	30.110	73.00	1694	29.790	66.00

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Mann Whitney U Test for ecosystem services and disservices – Parks – Gender

	Gender		
	N	Sig.	
Timber	3,634	.003	*
Firewood	3,576	.004	*
Wild food	3,626	.009	*
Game	3,612	.108	
Water quality and erosion	3,641	.013	*
Air quality	3,660	<.001	*
Carbon storage	3,650	<.001	*
Habitat	3,655	<.001	*
Spiritual and cultural	3,660	<.001	*
Education	3,659	<.001	*
Recreation	3,654	<.001	*
Human health	3,650	<.001	*
Natural hazard protection	3,656	<.001	*
Employment	3,661	<.001	*
Aesthetics	3,661	<.001	*
Noise reduction	3,659	<.001	*
Temperature reduction	3,658	<.001	*
Aesthetic issues	3,652	.057	
Land use issues	3,640	.631	
Infrastructure issues	3,647	<.001	*
Local climate	3,643	<.001	*
Security issues	3,648	<.001	*
Air pollution	3,650	<.001	*
Health issues	3,647	<.001	*
Economic issues	3,643	.004	*
Safety hazard	3,643	<.001	*
Environmental issues	3,626	<.001	*

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Descriptive statistics comparing means – Parks – Age groups

	18-30			31-50			51-65			66+		
	N	Std. Deviation	Median	N	Std. Deviation	Median	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian
Timber	1186	31.647	14.00	1452	31.662	7.00	519	29.949	5.00	482	30.827	4.00
Firewood	1171	28.547	10.00	1438	27.699	7.00	508	26.072	3.00	464	27.085	3.00
Wild food	1184	33.449	35.00	1450	34.222	29.50	520	34.408	24.50	477	34.427	24.00
Game	1176	24.788	2.00	1450	22.531	2.00	516	20.412	1.00	475	17.477	1.00
Water quality and erosion	1190	32.441	67.00	1456	33.058	69.00	521	33.218	75.00	479	33.740	71.00
Air quality	1197	21.941	92.00	1460	20.126	96.00	521	18.636	96.00	487	18.333	95.00
Carbon storage	1194	27.607	81.00	1455	24.939	90.00	522	23.911	93.50	484	22.855	91.00
Habitat	1194	26.555	84.00	1459	24.599	90.00	521	23.608	94.00	486	24.506	90.00
Spiritual and cultural	1199	24.494	80.00	1462	23.749	88.00	523	23.992	87.00	481	22.370	87.00
Education	1198	30.750	63.00	1460	29.025	72.00	523	29.965	73.00	483	30.211	76.00
Recreation	1193	21.574	86.00	1461	21.161	89.00	522	22.907	89.00	483	23.053	91.00
Human health	1197	17.586	92.00	1458	15.562	96.00	518	14.814	96.00	482	14.845	96.50
Natural hazard protection	1197	29.901	68.00	1458	29.318	77.00	520	29.931	79.00	486	30.247	78.50
Employment	1197	31.486	50.00	1460	30.588	50.00	523	33.122	50.00	486	32.494	47.00
Aesthetics	1196	18.455	90.00	1462	17.057	95.00	522	15.669	97.00	486	15.682	96.00
Noise reduction	1198	25.941	80.00	1457	22.884	86.00	523	21.428	89.00	486	20.732	89.00
Temperature reduction	1194	27.993	73.50	1460	25.457	83.00	523	25.688	86.00	486	24.646	87.00
Aesthetic issues	1192	28.181	12.00	1459	26.376	7.00	520	25.445	5.00	486	21.347	3.00
Land use issues	1190	28.518	7.00	1455	27.990	4.00	517	25.835	2.00	483	25.654	2.00
Infrastructure issues	1187	28.153	11.00	1459	25.525	6.00	522	23.246	5.00	484	22.299	2.00
Local climate	1189	30.128	9.00	1456	26.578	4.00	519	26.388	2.00	484	24.287	1.00
Security issues	1193	31.255	25.00	1454	30.196	18.00	523	29.729	13.00	483	26.844	10.00
Air pollution	1193	30.868	11.00	1455	28.385	6.00	520	26.723	3.00	487	25.201	2.00
Health issues	1195	30.221	19.00	1456	27.615	11.00	518	25.789	9.00	483	22.463	5.00
Economic issues	1194	26.407	14.00	1447	24.658	9.00	521	21.460	7.00	486	22.078	7.00
Safety hazard	1188	28.455	13.00	1454	24.856	6.00	522	23.699	5.00	484	20.497	2.00
Environmental issues	1181	29.229	13.00	1447	25.830	7.00	518	25.036	6.00	485	23.069	3.00

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Kruskal-Wallis Test – Parks – Age groups (*p>0.05 differences not statistically different)

	Age groups		
	N	Sig.	Sig. (p<0.05)
Timber	3,639	<.001	*
Firewood	3,581	<.001	*
Wild food	3,631	.006	*
Game	3,617	<.001	*
Water quality and erosion	3,646	.111	
Air quality	3,665	.200	
Carbon storage	3,655	<.001	*
Habitat	3,660	.001	*
Spiritual and cultural	3,665	.001	*
Education	3,664	<.001	*
Recreation	3,659	.330	
Human health	3,655	<.001	*
Natural hazard protection	3,661	<.001	*
Employment	3,666	.435	
Aesthetics	3,666	<.001	*
Noise reduction	3,664	<.001	*
Temperature reduction	3,663	<.001	*
Aesthetic issues	3,657	<.001	*
Land use issues	3,645	<.001	*
Infrastructure issues	3,652	<.001	*
Local climate	3,648	<.001	*
Security issues	3,653	<.001	*
Air pollution	3,655	<.001	*
Health issues	3,652	.000	*
Economic issues	3,648	<.001	*
Safety hazard	3,648	.000	*
Environmental issues	3,631	<.001	*

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Descriptive statistics comparing means – Parks – Education

	School up to 16 years of age			School between 17-19 years of age			Undergraduate university degree			Postgraduate university degree			No qualification		
	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian
Timber	132	32.449	10.50	1178	31.293	9.00	1333	31.785	9.00	977	30.347	5.00	19	37.047	52.00
Firewood	126	31.607	7.00	1160	27.699	8.00	1318	28.012	7.00	957	26.441	4.00	20	34.474	41.50
Wild food	130	34.472	35.50	1177	34.134	33.00	1333	33.906	33.00	972	33.759	20.00	19	35.070	44.00
Game	130	22.551	1.00	1177	22.406	1.00	1327	22.632	2.00	963	22.488	1.00	20	25.222	7.50
Water quality and erosion	128	34.966	71.00	1183	32.884	67.00	1342	32.115	72.00	973	33.855	67.00	20	36.179	66.50
Air quality	131	22.733	95.00	1189	21.304	94.00	1345	19.289	96.00	980	20.188	95.00	20	24.090	88.00
Carbon storage	130	27.457	91.00	1184	26.572	85.00	1343	24.920	90.00	979	24.942	90.00	19	31.935	70.00
Habitat	131	27.746	93.00	1188	25.230	89.00	1343	24.377	89.00	978	25.701	87.50	20	32.414	76.00
Spiritual and cultural	132	24.028	84.50	1190	25.416	82.00	1347	22.839	87.00	976	23.254	86.00	20	23.417	79.00
Education	132	32.045	71.00	1191	30.616	69.00	1344	29.861	71.00	977	29.344	70.00	20	35.876	72.00
Recreation	132	24.422	88.50	1189	22.819	86.00	1342	21.379	90.00	976	20.690	89.00	20	18.805	82.50
Human health	132	18.718	96.00	1187	17.112	94.00	1342	15.468	95.00	974	15.389	95.00	20	18.203	85.50
Natural hazard protection	132	28.471	75.50	1189	30.176	72.00	1342	29.427	76.00	978	30.068	75.00	20	29.428	55.50
Employment	132	32.783	51.00	1191	32.217	49.00	1347	30.860	50.00	976	31.298	48.00	20	31.725	58.50
Aesthetics	132	17.035	95.00	1187	17.413	95.00	1345	17.137	94.00	982	17.259	94.00	20	18.489	87.50
Noise reduction	132	23.202	84.00	1191	24.331	84.00	1343	23.799	86.00	978	22.846	86.00	20	23.191	78.50
Temperature reduction	132	25.376	84.00	1188	27.604	80.00	1346	26.034	83.00	977	25.856	82.00	20	30.263	58.00
Aesthetic issues	132	28.335	7.00	1186	26.168	8.00	1341	27.245	10.00	978	25.475	5.00	20	26.349	5.00
Land use issues	132	33.406	5.50	1177	26.805	4.00	1340	28.138	5.00	976	27.162	2.00	20	27.703	21.50
Infrastructure issues	132	26.022	6.00	1185	26.775	8.00	1335	25.985	7.00	980	24.708	4.00	20	26.756	10.00
Local climate	131	31.273	5.00	1183	28.422	5.00	1338	27.604	5.00	976	26.374	2.00	20	34.095	9.00
Security issues	132	30.628	17.00	1183	29.906	17.00	1339	30.668	20.00	979	30.088	15.00	20	29.690	25.00
Air pollution	132	27.525	7.00	1184	28.591	6.00	1341	29.813	7.00	978	27.994	4.00	20	29.009	7.00
Health issues	132	27.921	9.00	1186	27.727	11.50	1342	28.585	14.00	972	27.622	9.50	20	30.749	22.50
Economic issues	129	24.688	10.00	1182	24.447	10.00	1341	25.553	11.00	976	23.395	8.00	20	29.843	23.00
Safety hazard	129	25.257	5.00	1184	26.291	7.00	1342	26.169	8.00	973	24.763	5.00	20	27.989	17.50
Environmental issues	130	26.429	6.50	1179	26.842	8.00	1337	27.183	9.00	965	26.330	5.00	20	27.312	14.50

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Kruskal-Wallis test – Parks – Education

	Education		
	N	Sig.	
Timber	3,639	<.001	*
Firewood	3,581	<.001	*
Wild food	3,631	<.001	*
Game	3,617	.016	*
Water quality and erosion	3,646	.088	
Air quality	3,665	.071	
Carbon storage	3,655	.004	*
Habitat	3,660	.329	
Spiritual and cultural	3,665	.003	*
Education	3,664	.640	
Recreation	3,659	.030	*
Human health	3,655	.149	
Natural hazard protection	3,661	.121	
Employment	3,666	.182	
Aesthetics	3,666	.769	
Noise reduction	3,664	.169	
Temperature reduction	3,663	.022	
Aesthetic issues	3,657	<.001	*
Land use issues	3,645	<.001	*
Infrastructure issues	3,652	<.001	*
Local climate	3,648	.003	*
Security issues	3,653	.105	
Air pollution	3,655	.007	*
Health issues	3,652	.013	*
Economic issues	3,648	.016	*
Safety hazard	3,648	.004	*
Environmental issues	3,631	.002	*

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Appendix XIV: Statistical results for trees

Descriptive statistics comparing means – Trees – Gender

	Female			Male		
	N	Std. Deviation	Median	N	Std. Deviation	Median
Firewood	5250	30.036	8.00	4970	30.139	7.00
Wild food	5247	33.985	41.00	4967	33.527	37.00
Water quality and erosion	5276	29.244	77.00	5004	29.522	73.00
Air quality	5287	18.971	95.00	5010	20.913	91.00
Carbon storage	5284	21.418	92.00	4981	23.283	87.00
Habitat	5275	25.108	88.00	4990	26.983	81.00
Spiritual and cultural	5263	26.224	82.00	4995	27.395	74.00
Recreation	5277	30.411	72.00	4991	30.234	68.00
Human health	5275	19.226	92.00	4982	21.273	86.00
Natural hazard protection	5276	26.435	82.00	4999	28.134	76.00
Aesthetics	5266	18.056	96.00	4981	19.809	90.00
Noise reduction	5284	22.671	89.00	4987	23.051	84.00
Temperature reduction	5277	23.900	87.00	5002	24.735	83.00
Aesthetic issues	5295	30.845	23.00	5000	30.723	22.00
Land use issues	5271	30.332	11.00	4976	30.568	13.00
Infrastructure issues	5239	28.357	23.00	4968	28.039	19.00
Local climate	5250	27.217	12.00	4981	27.425	9.00
Security issues	5235	29.049	24.00	4961	28.216	18.00
Air pollution	5250	28.695	15.00	4954	28.123	10.00
Health issues	5254	27.755	18.00	4966	27.605	13.00
Economic issues	5243	25.895	15.00	4967	26.383	14.00
Safety hazard	5231	27.433	19.00	4962	27.497	15.00
Environmental issues	5217	27.166	17.00	4956	27.317	12.00
Dirt	5238	27.041	15.00	4957	27.246	14.00

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Mann Whitney U Test for ecosystem services and disservices – Trees – Gender

	Gender		
	N	Sig.	Sig. (p<0.05)
Firewood	10220	.944	
Wild food	10214	.004	*
Water quality and erosion	10280	<.001	*
Air quality	10297	<.001	*
Carbon storage	10265	<.001	*
Habitat	10265	<.001	*
Spiritual and cultural	10258	<.001	*
*Recreation	10268	<.001	*
Human health	10257	<.001	*
Natural hazard protection	10275	<.001	*
Aesthetics	10247	<.001	*
Noise reduction	10271	<.001	*
Temperature reduction	10279	<.001	*
Aesthetic issues	10295	.334	
Land use issues	10247	.025	
Infrastructure issues	10207	<.001	*
Local climate	10231	<.001	*
Security issues	10196	<.001	*
Air pollution	10204	<.001	*
Health issues	10220	<.001	*
Economic issues	10210	.011	
Safety hazard	10193	<.001	*
Environmental issues	10173	<.001	*
Dirt	10195	.208	

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Descriptive statistics comparing means – Trees – Age groups

	18-30			31-50			51-65			66+		
	N	Std. Deviation	Median	N	Std. Deviation	Median	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian
Firewood	3187	30.376	12.00	4138	30.514	8.00	1519	28.444	5.00	1408	29.014	5.00
Wild food	3193	32.976	43.00	4134	33.944	41.00	1512	34.283	34.00	1405	34.055	31.00
Water quality and erosion	3226	29.302	70.00	4153	29.631	76.00	1524	29.041	81.00	1407	28.688	80.00
Air quality	3227	21.595	91.00	4161	19.862	93.00	1525	18.454	96.00	1414	17.722	95.00
Carbon storage	3214	24.149	85.00	4157	21.957	90.00	1518	20.772	94.00	1407	20.395	94.00
Habitat	3223	27.247	79.00	4150	25.126	86.00	1520	25.296	90.00	1403	26.639	87.00
Spiritual and cultural	3220	26.830	73.00	4149	26.534	79.00	1517	27.873	80.00	1403	27.151	80.00
Recreation	3218	29.856	66.00	4153	29.382	72.00	1521	32.007	70.00	1407	32.119	69.00
Human health	3217	21.826	83.00	4149	20.050	91.00	1520	18.690	93.00	1403	18.656	93.00
Natural hazard protection	3221	27.667	73.00	4152	26.453	81.00	1525	27.373	84.00	1408	28.633	80.00
Aesthetics	3203	21.016	89.00	4144	18.511	93.00	1521	17.286	97.00	1410	16.003	96.00
Noise reduction	3220	24.893	79.00	4152	21.789	87.00	1523	20.967	92.00	1408	21.209	90.00
Temperature reduction	3222	25.442	78.00	4162	23.289	86.00	1521	24.078	90.00	1405	23.868	89.00
Aesthetic issues	3222	30.419	29.00	4164	31.347	24.00	1528	30.676	16.00	1413	29.024	15.00
Land use issues	3200	30.474	19.00	4153	31.100	13.00	1517	29.974	7.00	1408	27.122	5.00
Infrastructure issues	3188	28.757	28.00	4123	28.475	20.00	1517	27.184	16.00	1410	25.949	15.00
Local climate	3199	28.316	17.00	4140	27.754	10.00	1515	25.467	7.00	1408	23.946	6.00
Security issues	3194	29.033	27.00	4126	29.280	21.00	1506	26.922	17.00	1401	26.897	17.00
Air pollution	3185	29.055	19.00	4135	29.095	12.00	1511	26.433	8.00	1404	25.656	6.00
Health issues	3192	29.099	22.00	4138	28.040	15.00	1516	25.284	10.00	1405	23.253	10.00
Economic issues	3198	27.567	21.00	4131	26.514	14.00	1507	23.678	11.00	1405	22.220	11.00
Safety hazard	3187	28.406	24.00	4124	27.781	16.00	1512	25.789	12.50	1401	24.555	12.00
Environmental issues	3175	28.559	20.00	4118	27.361	14.00	1514	24.988	11.50	1397	25.109	11.00
Dirt	3177	28.349	20.00	4135	27.319	14.00	1509	24.880	10.00	1405	24.699	12.00

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Kruskal-Wallis Test – Trees – Age groups (*p>0.05 differences not statistically different)

	Age groups		
	N	Sig.	Sig. (p<0.05)
Timber	10252	.000	*
Firewood	10244	.000	*
Wild food	10310	.000	*
Game	10327	.000	*
Water quality and erosion	10296	.000	*
Air quality	10296	.000	*
Carbon storage	10289	.000	*
Habitat	10299	.000	*
Spiritual and cultural	10289	.000	*
Education	10306	.000	*
Recreation	10278	.000	*
Human health	10303	.000	*
Natural hazard protection	10310	.000	*
Employment	10327	.000	*
Aesthetics	10278	.000	*
Noise reduction	10238	.000	*
Temperature reduction	10262	.000	*
Aesthetic issues	10227	.000	*
Land use issues	10235	.000	*
Infrastructure issues	10251	.000	*
Local climate	10241	.000	*
Security issues	10224	.000	*
Air pollution	10204	.000	*
Health issues	10226	.000	*
Economic issues	10252	.000	*
Safety hazard	10244	.000	*
Environmental issues	10310	.000	*

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Descriptive statistics comparing means – Trees – Education

	School up to 16 years of age			School between 17-19 years of age			Undergraduate university degree			Postgraduate university degree			No qualification		
	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian	N	Std. Deviation	Me-dian
Firewood	482	32.007	16.50	3717	30.777	10.00	3566	29.905	7.00	2416	28.253	5.00	71	33.007	19.00
Wild food	484	33.513	50.00	3705	33.652	46.00	3581	33.753	36.00	2405	33.170	28.00	69	30.285	42.00
Water quality and erosion	486	27.977	76.00	3736	28.940	76.00	3595	29.343	74.00	2423	30.422	76.00	70	29.138	65.50
Air quality	489	21.039	93.00	3741	20.071	94.00	3596	19.683	93.00	2430	20.054	93.00	71	25.467	81.00
Carbon storage	487	23.905	89.00	3723	22.834	90.00	3589	21.879	90.00	2426	22.119	90.00	71	28.571	76.00
Habitat	489	25.594	88.00	3717	25.671	86.00	3591	25.573	83.00	2428	27.599	83.00	71	29.188	74.00
Spiritual and cultural	488	28.188	70.50	3726	27.525	76.00	3593	26.368	79.00	2413	26.525	80.00	69	27.295	68.00
Recreation	490	31.651	57.00	3722	30.537	68.00	3594	29.680	71.00	2424	30.639	72.00	69	28.485	59.00
Human health	487	21.877	88.00	3723	20.553	89.00	3590	20.142	89.00	2419	20.081	90.00	70	25.519	89.00
Natural hazard protection	487	27.955	80.00	3733	27.486	79.00	3587	26.825	79.00	2428	27.981	80.00	71	27.428	66.00
Aesthetics	484	21.054	93.50	3716	19.381	94.00	3587	18.598	93.00	2422	18.459	93.00	69	23.750	89.00
Noise reduction	485	23.590	84.00	3725	23.435	86.00	3597	22.420	86.00	2425	22.531	88.00	71	27.197	81.00
Temperature reduction	489	26.200	84.00	3734	24.804	84.00	3588	23.800	85.00	2429	23.830	86.00	70	28.148	77.00
Aesthetic issues	490	31.398	33.00	3739	30.707	24.00	3599	30.695	22.00	2428	30.757	19.00	71	32.243	40.00
Land use issues	488	32.742	16.50	3714	30.669	13.00	3587	30.136	12.00	2419	29.885	8.00	70	30.143	33.00
Infrastructure issues	488	28.556	28.00	3700	28.082	22.00	3567	28.163	21.00	2413	28.433	18.00	70	27.613	40.50
Local climate	488	28.193	13.00	3705	27.289	11.00	3585	27.428	11.00	2414	27.032	8.00	70	26.504	22.00
Security issues	486	29.336	27.50	3696	28.730	22.00	3566	28.818	22.00	2409	28.207	18.00	70	29.583	40.50
Air pollution	489	29.720	15.00	3694	28.511	13.00	3570	28.434	14.00	2412	28.134	9.00	70	26.697	26.00
Health issues	487	27.930	20.00	3704	27.623	16.00	3573	27.856	16.00	2417	27.482	13.00	70	27.880	30.00
Economic issues	485	26.220	18.00	3699	25.868	15.00	3576	26.380	15.00	2411	26.057	12.00	70	28.607	26.00
Safety hazard	490	28.245	23.00	3690	27.474	18.00	3570	27.395	17.00	2408	27.344	13.00	66	27.379	33.50
Environmental issues	483	28.414	20.00	3682	26.976	16.00	3564	27.286	16.00	2406	27.266	11.00	69	27.049	23.00
Dirt	489	28.604	18.00	3691	27.140	16.00	3568	27.175	15.00	2409	26.552	12.00	69	31.348	30.00

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Kruskal-Wallis test – Trees – Education

	Education		
	N	Sig.	
Firewood	10252	<.001	*
Wild food	10244	<.001	*
Water quality and erosion	10310	.113	
Air quality	10327	.137	
Carbon storage	10296	.006	
Habitat	10296	<.001	*
Spiritual and cultural	10289	<.001	*
Recreation	10299	<.001	*
Human health	10289	.207	
Natural hazard protection	10306	.273	
Aesthetics	10278	.100	
Noise reduction	10303	.008	*
Temperature reduction	10310	.001	*
Aesthetic issues	10327	<.001	*
Land use issues	10278	<.001	*
Infrastructure issues	10238	<.001	*
Local climate	10262	<.001	*
Security issues	10227	<.001	*
Air pollution	10235	<.001	*
Health issues	10251	<.001	*
Economic issues	10241	<.001	*
Safety hazard	10224	<.001	*
Environmental issues	10204	<.001	*
Dirt	10226	<.001	*

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Appendix XV: Results of the multiple categorical regression analysis for ecosystem services

	Dependent variables																
	Timber	Firewood	Wild food	Game	Water quality and erosion	Air quality	Carbon storage	Habitat	Spiritual and cultural	Education	Recreation	Human health	Natural hazard protection	Employment	Aesthetics	Noise reduction	Temperature reduction
Country	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Gender	.513	.590	<.001	<.001	<.001	.000	<.001	.000	.000	.000	<.001	.000	.000	<.001	.000	.000	.000
Age	.000	.000	.008	.000	.000	.000	.000	.000	.000	.000	.043	.000	.000	.234	.000	.000	.000
Education	.000	.000	.000	.000	<.001	.000	.037	<.001	.005	<.001	<.001	<.001	<.001	.000	.000	<.001	.021
Income	<.001	.000	<.001	<.001	.005	.030	.774	.847	.000	.000	<.001	.005	<.001	.083	.000	<.001	<.001
Rurality	.000	.000	<.001	.000	<.001	<.001	<.001	.000	<.001	<.001	.000	<.001	<.001	<.001	<.001	.013	<.001
Relationship to forests	.002	.000	.169	.000	.000	.000	.000	.000	.000	<.001	.000	.000	<.001	.999	<.001	<.001	<.001

Appendix XVI: Results of the multiple categorical regression analysis for ecosystem disservices

	Dependent variables									
	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Security issues	Air pollution	Health issues	Economic issues	Safety hazard	Environmental issues
Country	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Gender	.151	<.001	.037	.054	<.001	<.001	.016	.164	<.001	.024
Age	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Education	<.001	.000	.000	.000	<.001	.000	<.001	<.001	.000	<.001
Income	.982	.009	.712	.500	.482	.916	.766	.991	.973	.755
Rurality	<.001	<.001	<.001	<.001	.000	<.001	.330	<.001	<.001	<.001
Relationship to forests	<.001	.000	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001

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Appendix XVII: Characteristics of the sample population in China

Overview of samples (N=7,323)

Sample population		**(n)**	**(%)**
Province (abbreviation)	Anhui (AH)	399	5.4
	Beijing (BJ)	463	6.3
	Fujian (FJ)	396	5.4
	Guangdong (GD)	417	5.7
	Guangxi (GX)	392	5.4
	Hebei (HB)	390	5.3
	Henan (HEN)	426	5.8
	Hubei (HB)	391	5.3
	Hunan (HUN)	391	5.3
	Jiangsu (JS)	398	5.4
	Jiangxi (JX)	390	5.3
	Shandong (SD)	406	5.5
	Shanxi (SX)	402	5.5
	Shaanxi (SHX)	394	5.4
	Shanghai (SH)	468	6.4
	Tianjing (TJ)	406	5.5
	Zhejiang (ZJ)	402	5.5
	Chongqing (CQ)	392	5.4
Average age	30.14		
Age group [a]	＜18	75	1.0
	18-30	4137	56.5
	31-50	2899	39.6
	51-65	196	2.7
	＞66	16	0.2
Gender [b]	Female	3601	50.39
	Male	3690	49.17
	Other	16	0.22
	Prefer not to say	16	0.22
Education [c]	School up to 16 years of age	142	1.9
	School between 17 – 19 years of age	651	8.9
	Undergraduate university degree or equivalent (Bachelor)	4251	58
	Postgraduate university diploma or degree (e.g. Master. PhD)	611	8.3
	No qualifications	14	0.2
	Technical college	1654	22.6
Income (RMB) [d]	＜24422	621	8.5
	24422-48844	501	6.8
	48845-73266	920	12.6
	73267-97688	599	8.2

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Sample population		(n)	(%)
	97689-122110	1411	19.3
	122111-146532	379	5.2
	146533-170954	637	8.7
	170955-195376	258	3.5
	195377-219798	746	10.2
	219799-244220	141	1.9
	244221-488440	761	10.4
	488441-1221100	270	3.7
	＞1221100	79	1.1
Rurality	City or town centre	4650	63.5
	Suburb of a city or town	1014	13.8
	Rural area nearby a city or town	1129	15.4
	Rural area/countryside	530	7.2
Average living year	16.50		
No. of Children	No children	2435	33.3
	1 child	3317	45.3
	2 children	1114	15.2
	>2 children	457	6.2

a. The proportion of population aged 0-14 years, 15-59 years and over 60 years were 17.95%, 63.35% and 18.70%, respectively (7th National Population Census, 2021). http://www.stats.gov.cn/xxgk/sjfb/zxfb2020/202105/t20210511_1817200.html
b. The total population of China in 2021 was 1,412.6 million, and among them 51.19% (n=723.11 million) were male and 48.81% (n=689.49 million) were female. (China Statistical Yearbook 2022). http://www.stats.gov.cn/tjsj/ndsj/2022/indexch.htm
c. The education degrees were divided into primary school (26%), junior high school (35%, junior high school-aged students were nearly 13-16 years), senior high school (17%, senior high school-aged students were nearly 16-19 years), undergraduate (8%), postgraduate (1%), technical college (10%), and uneducated (4%) in 2021. (Statistics of population aged more than 6 years, China Statistical Yearbook 2022). http://www.stats.gov.cn/tjsj/ndsj/2022/indexch.htm

The average level of personal disposable income in China in 2017 – 2019 was 24422 RMB. The median of personal disposable income was 22408 RMB, 24336 RMB and 26523 RMB in 2017, 2018 and 2019, respectively (National economy and social development statistics communique of 2017 to 2019). The 83% of Chinese survey samples were close to the average level of national family income (3 times of person disposable income level).

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Appendix XVIII: Results for descriptive statistics (ES and EDS across all woodland types)

Categories	Ecosystem service	Median	IQR
Provisioning ES	Timber	27	53
	Firewood	21	44
	Wild food	34	52
Regulating ES	Water quality and erosion	78	41
	Air quality	86	31
	Carbon storage	78	39
	Habitat	73	44
	Natural hazard protection	70	47
	Noise reduction	72	39
	Temperature reduction	78	36
Cultural ES	Spiritual and cultural	75	37
	Education	68	43
	Recreation	78	36
	Human health	85	31
	Employment	59	45
	Aesthetics	80	35

Description of ecosystem disservice (EDS) across all woodland types (N=834)

Ecosystem disservice	Median	IQR
Aesthetic issues	30	42
Land use issues	40	43
Infrastructure issues	36	43
Local climate	27	44
Safety hazard	44	43
Air pollution	28	44
Health issues	48	44
Economic issues	45	43
Security issues	38	49
Environmental issues	38	47

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Appendix XIX: Results for descriptive statistics (ES and EDS across all woodland types by provinces)

Descriptive statistics results of ecosystem services across all woodland types by provinces

Province	items	Tim*	Fir*	Wil*	Wat*	Air*	Car*	Hab*	Spi*	Edu*	Rec*	Hum	Nat*	Emp*	Aes*	Noi*	Tem*
Anhui (AH)	Mean	39.31	32.48	40.71	73.00	82.11	72.41	70.31	72.20	67.73	72.94	80.39	66.37	59.06	76.20	69.56	73.68
	Sd	31.48	30.36	30.87	27.05	22.30	26.16	28.52	26.03	28.51	24.99	22.82	28.76	28.80	23.31	25.60	25.78
	Median	29	21	36	80	90	79	78	79	78	80	87	72	61	80	75	80
	IQR	49.5	44.5	49.5	42	24	40	43.5	36.5	42	35	31	48	44.5	32.5	35.5	37
Beijing (BJ)	Mean	29.23	22.14	30.83	67.38	80.57	71.78	65.50	70.76	63.18	73.84	80.32	60.44	53.75	74.71	67.33	70.78
	Sd	30.20	25.34	28.96	27.40	21.25	24.25	26.75	25.07	27.53	25.41	21.79	29.61	27.84	24.07	24.95	25.39
	Median	19	12	21	75	86	79	70	77	68	80	86	66	55	80	71	78
	IQR	51.5	37	43.5	41	29	31	41	36	40	36	28.5	48	44.5	34.5	36	35.5
Fujian (FJ)	Mean	40.89	34.88	42.01	74.15	80.89	73.81	69.43	71.92	65.68	73.32	77.64	70.04	58.14	77.38	68.98	74.25
	Sd	33.55	32.29	32.57	26.65	22.25	26.71	28.39	25.61	28.74	25.48	23.08	27.76	29.28	22.68	26.05	25.59
	Median	32.5	21.5	37.5	80	87	81	79	79	72	80	82	79	60	81	74	80
	IQR	61.25	52	55	39	27.25	40.25	43.25	38.25	46.25	36	33	44.25	47	33.25	38	38
Guangdong (GD)	Mean	37.28	31.06	37.76	68.43	76.87	69.82	63.96	64.00	60.57	68.15	76.25	65.92	53.43	69.71	62.63	69.57
	Sd	30.00	28.64	31.01	25.04	23.66	24.64	27.03	24.49	26.03	25.43	22.99	26.30	25.70	23.94	26.17	25.00
	Median	32	22	30	74	84	76	69	69	63	73	82	70	55	73	66	76
	IQR	51	45	45	31	36	33	38	33	39	36	30	40	36	31	41	37
Guangxi (GX)	Mean	45.62	37.57	47.24	72.68	82.13	72.55	71.75	69.23	65.21	69.54	78.33	69.33	61.03	75.67	67.59	73.89
	Sd	32.76	30.52	31.85	27.17	23.39	27.04	28.22	27.11	28.82	27.93	23.19	28.62	28.86	24.45	28.30	25.46
	Median	41	29	45.5	79.5	90.5	79	79	75.5	69.5	77	84	78	64	81	72	79
	IQR	59.25	50	57	42	25.25	41.25	41.25	41.5	42	40.25	36	44	44	38	43	39
Hebei (HEB)	Mean	34.70	27.18	35.86	65.93	76.61	66.15	61.33	66.97	59.41	71.41	77.30	58.83	53.41	74.30	61.45	67.65
	Sd	30.86	27.94	30.23	27.93	24.31	28.46	28.96	26.17	28.81	25.21	23.40	29.13	28.09	23.82	28.04	26.09
	Median	25	20	28	76	83	75	67	74	65	78	84	63	58	79	67	76
	IQR	51	43	50	42	38	41	46	38	44	36	36	44	46	34	43	33
Henan (HEN)	Mean	36.21	30.74	39.67	69.81	78.60	70.13	65.12	68.95	62.10	72.10	78.01	64.46	56.00	74.69	66.52	70.08
	Sd	31.08	30.31	31.55	28.52	23.78	26.65	29.12	26.23	29.47	26.69	23.28	29.67	28.93	24.01	26.98	26.37
	Median	25	20	33.5	78	85	78	70	74	65	80	83	70	59	80	69	75.5
	IQR	51	43.75	52	47	34.75	44	51.5	34.75	47.5	37	34	48.75	47	36	42	39.75
Hubei	Mean	35.74	30.75	37.73	69.45	78.12	69.54	64.99	69.06	63.40	71.49	77.46	62.36	55.64	73.70	64.68	72.03

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Province	items	Tim*	Fir*	Wil*	Wat*	Air*	Car*	Hab*	Spi*	Edu*	Rec*	Hum	Nat*	Emp*	Aes*	Noi*	Tem*
(HUB)	Sd	30.02	28.11	30.33	26.15	23.30	26.49	28.22	24.50	26.92	24.97	23.69	28.40	28.09	24.27	26.56	25.04
	Median	25	22	29	77	84	78	70	76	68	78	83	67	60	79	68	78
	IQR	50.5	43.5	49	38.5	38	36.5	45	33	37	33.5	33.5	42.5	45.5	31	38	32.5
Hunan	Mean	36.93	29.96	39.58	71.17	80.32	70.04	69.07	71.10	61.68	69.64	78.35	66.77	55.67	74.36	67.72	72.46
	Sd	31.07	28.69	30.49	26.97	23.40	27.35	28.37	26.15	29.92	25.83	24.33	29.35	29.78	24.47	27.98	25.34
(HUN)	Median	24	21	35	79	88	78	78	78	64	76	85	75	59	80	77	79
	IQR	50.5	40	46	42	31	44	48.5	37.5	48	36.5	30.5	49.5	48.5	36.5	40.5	38.5
	Mean	36.13	29.03	38.75	68.64	79.13	68.21	66.50	67.68	61.69	70.00	78.56	63.95	56.65	74.62	67.79	71.00
Jiangsu	Sd	29.84	27.03	30.32	27.51	22.40	26.69	28.04	25.19	27.41	26.46	23.27	29.36	28.50	23.93	25.90	25.60
(JS)	Median	26.5	21	34	78	86	74	73	73.5	65	78	85	69.5	61	80	73	77
	IQR	51	38	52	41	30	40	42.75	37	42.75	40.75	28	44.75	47	29	37	34.75
	Mean	44.19	36.48	44.20	73.09	81.13	72.25	69.32	71.34	66.22	74.74	80.25	69.25	59.25	75.63	69.31	74.34
Jiangxi	Sd	33.56	31.62	33.54	26.11	22.97	27.12	28.09	25.79	28.28	23.85	22.43	28.69	28.92	24.77	27.62	25.04
(JX)	Median	40	24	39	80	89.5	79	78.5	78	71	79	86	79	60	81	77.5	81
	IQR	64	50.75	61	39	28.75	44	49	41	43.75	38	28	48.75	46	38.75	46.75	39
	Mean	37.35	28.64	38.80	73.94	81.21	72.38	66.08	71.70	65.03	72.63	80.42	64.30	56.91	76.01	67.79	73.33
Shandong	Sd	32.20	28.38	31.24	24.51	20.92	25.07	27.67	22.91	26.29	24.01	20.68	28.96	27.37	22.66	25.92	23.27
(SD)	Median	25	20	33	80	86.5	78	71	76	69	77.5	86	70	59	81	71.5	77
	IQR	54.75	38	52	36.75	28	36	41	33	34	37.5	29	47	41.75	29	38	34.75
	Mean	38.20	32.71	40.87	71.18	80.54	73.63	68.40	70.15	64.58	73.33	80.75	68.33	59.29	77.58	71.05	74.14
Shanxi	Sd	33.83	32.27	32.63	27.78	23.42	26.78	28.97	27.44	29.99	25.57	21.57	27.75	30.19	22.97	26.07	24.65
(SX)	Median	23	20	34	79	88.5	80	78	78	69.5	80	85	74.5	60	82	77	80
	IQR	56	51	57	43	30.75	40.75	50.5	42	51	39	29	42.75	46	35	40.75	39
	Mean	37.91	31.82	40.13	70.89	80.04	70.23	66.68	69.89	62.80	71.28	78.97	65.58	56.09	76.23	68.17	72.38
Shaanxi	Sd	31.31	30.55	31.75	27.63	24.00	27.66	30.28	26.66	29.40	26.91	23.95	30.31	29.18	24.09	27.20	26.90
(SHX)	Median	30.5	21	36	78	88	79	75.5	78	65.5	79	86	72	59	80	75.5	80
	IQR	50.75	49.75	51.5	41.75	31.75	41.75	56	39.75	46	41	33.75	53	45	37	41	40
	Mean	31.48	26.23	33.48	65.13	77.72	67.77	64.41	66.92	65.18	69.51	78.15	58.29	54.29	72.56	64.64	66.66
Shanghai	Sd	30.40	27.70	29.68	26.81	22.53	26.81	27.53	24.82	26.86	26.12	22.63	29.74	28.05	23.70	25.87	27.11
(SH)	Median	21	16.5	25	71	82	74	70	71.5	72	76.5	84	62.5	58	78	68	73
	IQR	51.25	40.25	50.25	38	29.25	39	39.25	36	36	35.75	27.25	46.25	47.5	30.25	36	40
Tianjing	Mean	37.51	29.75	39.11	69.40	80.60	72.36	66.47	68.17	63.62	71.51	79.11	64.11	54.58	74.26	67.07	69.85
(TJ)	Sd	32.20	30.32	31.66	29.27	23.77	26.71	29.61	27.78	29.72	26.87	24.47	30.36	29.83	25.71	28.29	28.12

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Province	items	Tim*	Fir*	Wil*	Wat*	Air*	Car*	Hab*	Spi*	Edu*	Rec*	Hum	Nat*	Emp*	Aes*	Noi*	Tem*
	Median	27	20	31	79	89.5	79	70	77	66.5	79	87	69.5	56	80	75	78
	IQR	52.5	40.75	51	50	29.75	43	48.75	40.75	49	41.75	35	51.75	50	38	40	45
Zhejiang (ZJ)	Mean	37.64	30.76	40.98	72.87	79.80	71.55	67.58	68.69	63.15	69.03	77.75	65.41	55.71	74.11	65.84	69.94
	Sd	31.69	29.66	31.50	25.81	22.76	26.14	26.78	25.20	27.54	24.76	23.34	28.12	28.88	23.64	27.01	25.21
	Median	33	21	39.5	79	86	79	73	72.5	66	75	84	70	59	79	71	77
	IQR	55	46.75	55	39.75	27	35	40	36.75	39.75	31.75	30.75	44	45	35	38	36
Chongqing (CQ)	Mean	39.19	32.46	42.51	71.03	79.79	71.62	67.46	70.41	64.79	72.74	78.69	67.53	59.25	76.25	70.04	74.02
	Sd	31.08	28.66	30.17	26.20	22.37	25.23	27.83	24.30	26.96	23.85	22.43	27.46	27.35	22.43	24.97	24.40
	Median	31	22	41	78	85	78	74	75	68	79	83	74	60	80	75	79
	IQR	49.5	41.25	46	43	33	41.5	49	35.25	38.5	36	32	43.25	40.25	34.25	37	35.25

Notes: 1) Abbreviations Tim for Timber, Fir for Firewood, Wil for Wild food, Wat for Water quality and erosion, Air for Air quality, Car for Carbon storage, Hab for Habitat, Spi for Spiritual and cultural, Edu for Education, Rec for Recreation, Hum for Human health, Nat for Natural hazard protection, Emp for Employment, Aes for Aesthetics, Noi for Noise reduction, Tem for Temperature reduction. 2) * means the significance different of ecosystem services value among the provinces by Kruskal-Walis test.

Descriptive statistics results of ecosystem disservices across all woodland types by province

Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
Anhui (AH)	Mean	32.0	37.6	35.6	27.5	38.7	30.4	45.1	40.2	38.4	38.1
	Sd	29.9	33.0	29.1	27.2	29.9	30.3	28.3	28.6	30.2	29.6
	Median	21	23	23	18	31	20	47	29	32	33
	IQR	52	48.5	51.5	35.5	51	40	43	44.5	52	49.5
Beijing (BJ)	Mean	36.0	45.2	40.7	37.0	45.8	38.0	47.2	47.3	39.6	43.3
	Sd	27.0	30.2	30.4	29.6	27.2	29.2	27.3	25.7	28.8	31.9
	Median	35	44.5	35.5	33	52	31	48	42.5	38	39.5
	IQR	40.5	48.25	55.25	46.25	43.25	43.75	42	36	48	49.5
Fujian (FJ)	Mean	32.0	41.7	38.9	34.0	43.3	33.3	44.2	45.3	36.4	41.6
	Sd	25.9	27.0	24.3	28.3	25.4	29.4	24.5	28.6	29.3	28.9
	Median	27	39	35	31	42	28	46	41	22	33
	IQR	30.5	40	29.5	38	37	27	37	50	47.5	44.5
Guangdong (GD)	Mean	31.4	39.1	36.5	30.0	40.5	30.2	46.4	41.7	41.5	42.6
	Sd	24.2	24.6	23.6	24.1	22.9	25.5	26.3	24.7	27.8	27.4

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
	Median	28.5	37	33.5	24.5	38.5	28	47.5	42	38	43
	IQR	30	32	29.5	35	35.75	43	42.5	39.75	52.5	43
Guangxi (GX)	Mean	35.0	41.3	42.7	35.7	47.9	36.4	56.4	46.2	47.4	44.5
	Sd	28.8	29.2	28.4	29.2	27.1	30.5	26.2	28.8	27.7	28.7
	Median	25	36	42	26	49	29	54	45	45	40
	IQR	46	43	41	52	37	52	42	46	40	46
Hebei (HEB)	Mean	33.6	46.7	38.5	34.5	47.3	31.1	44.2	48.4	39.7	35.9
	Sd	27.5	26.7	26.7	29.2	28.5	26.9	27.0	25.3	29.6	26.9
	Median	25.5	43.5	39.5	26	45	27.5	43.5	47	36	33.5
	IQR	42	39	47.75	41.25	42.5	42.75	41.25	40.25	49	36.75
Henan (HEN)	Mean	37.2	43.0	40.1	37.6	41.6	36.3	44.4	41.8	41.4	41.9
	Sd	25.6	24.3	23.8	27.4	25.2	25.3	21.0	23.8	24.3	25.4
	Median	33	40.5	41.5	34	40	34.5	41.5	36	39	42
	IQR	30.75	34.5	37.25	40.5	35	38.5	26	36.25	36	35.25
Hubei (HUB)	Mean	39.7	43.1	45.8	33.7	52.2	33.0	55.9	47.6	49.2	44.2
	Sd	25.5	27.9	27.1	24.2	25.8	24.5	24.3	28.9	31.0	27.4
	Median	38.5	40.5	43	28	52	24	62	49.5	51	40
	IQR	42.75	45.75	40.75	36.5	42.75	41.75	38.5	53.5	54.5	42.75
Hunan (HUN)	Mean	34.9	44.5	34.9	29.9	45.5	30.7	50.2	39.6	43.7	32.1
	Sd	28.7	33.4	26.3	29.0	33.3	31.0	31.7	32.2	35.1	32.9
	Median	31	38.5	34	20	49.5	19.5	50	33.5	40	17
	IQR	38.5	60.5	34	32.75	59.75	48.25	54.25	54.25	63.5	36.25
Jiansu (JS)	Mean	32.0	42.0	35.5	32.4	43.7	32.6	44.2	42.1	38.2	40.0
	Sd	24.4	25.0	25.0	25.8	26.0	24.6	25.4	24.1	26.2	25.0
	Median	24	38	25	25	44	26	46	39	32	39
	IQR	31	41	40	30	43	41	44	39	41	41
Jiangxi (JX)	Mean	40.6	51.5	42.5	39.3	55.0	40.8	57.2	52.4	49.5	42.1
	Sd	24.6	26.8	26.7	24.6	27.9	26.8	26.3	24.5	27.7	27.7
	Median	35	53	40	42	61	39	57	58	55	46
	IQR	36	43	38	41	43	40	37	39	45	43
Shandong (SD)	Mean	39.5	44.5	40.2	35.1	44.5	33.0	43.7	48.9	37.7	44.8
	Sd	24.2	26.5	29.4	25.3	26.9	25.2	28.6	23.9	27.1	27.8

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
	Median	40	43.5	37.5	30.5	44.5	28	45.5	51.5	32	47
	IQR	39.25	31.5	49.5	45.25	31.25	39.5	52.75	27.75	41.25	52.25
Shanxi (SX)	Mean	37.9	43.5	39.0	38.8	39.5	36.9	48.9	45.7	42.3	39.6
	Sd	26.1	27.5	28.0	28.5	24.9	27.1	27.3	22.1	27.1	26.4
	Median	31	46	36	31	39	36	47	45	43	39
	IQR	42.5	49	43	50.5	39.5	35.5	49	36	47	42.5
Shaanxi (SHX)	Mean	39.3	40.1	38.5	35.4	49.7	40.5	48.9	47.9	41.4	46.4
	Sd	30.0	31.5	29.7	32.6	31.4	33.3	29.4	26.5	30.2	28.8
	Median	32	35	25	23	52	39	50	53	36	40
	IQR	50	46	45.5	55.5	59.5	59	53	47	55	52.5
Shanghai (SH)	Mean	34.9	45.0	37.0	34.9	39.7	32.4	49.0	43.7	36.6	38.8
	Sd	23.3	27.3	24.1	26.7	21.6	25.7	23.2	23.5	24.8	28.0
	Median	28.5	39	32.5	27	33	28.5	53.5	39	29	33.5
	IQR	36.75	38	41.25	47.25	30.25	37.5	29.5	36.25	39.5	44.75
Tianjing (TJ)	Mean	35.0	37.7	34.3	31.3	41.3	28.9	44.4	39.7	36.6	39.3
	Sd	28.6	28.3	27.0	29.2	28.0	27.5	33.6	29.7	32.6	31.9
	Median	30	35	31	22	40	22	41	32	25	30
	IQR	39	38	41	43	43	41	57	46	53	50
Zhejiang (ZJ)	Mean	33.1	43.1	41.4	34.9	47.7	32.8	50.3	47.3	40.5	36.0
	Sd	25.9	28.6	28.6	29.0	28.4	28.6	26.9	27.4	28.3	28.4
	Median	28.5	40.5	39.5	22	48.5	22	49.5	50	34	30
	IQR	35.25	49.25	42.25	43.25	44.25	45.75	41.25	46.25	47	44.5
Chongqing (CQ)	Mean	39.7	43.9	42.1	34.7	50.0	30.3	50.7	47.8	46.1	38.1
	Sd	29.5	30.2	27.1	30.8	27.0	26.2	25.8	23.7	29.0	27.4
	Median	40	43	40	22	50	22	48	51	46	34
	IQR	49	41	43.5	43.5	44	41.5	40.5	37	49.5	42.5

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Appendix XX: Results of the multiple linear regression analysis for ecosystem services

Impact of socio-demographic factors on perceptions of ecosystem services (Multiple categorical regression analysis)

Variables	items	Ecosystem services															
		Tim+	Fir+	Wil+	Wat+	Air+	Car+	Hab+	Spi+	Edu+	Rec+	Hum+	Nat+	Emp+	Aes+	Noi+	Tem+
Gender	β	0.01	0.01	0.02*	0.04*	0.02*	0.03*	0.04*	0.02*	0.01	0.02	0.01	0.03*	0.02*	0.02*	0.02*	0.02*
	Relative importance	0.004	0.002	0.016	0.118	0.053	0.083	0.105	0.035	0.009	0.011	0.015	0.046	0.039	0.024	0.028	0.041
Age	β	0.05*	0.02	-0.03	-0.01	-0.03	0.02	-0.01	0.02	0.05*	0.06*	0.04*	-0.02	-0.02	0.04*	0.05*	0.02
	Relative importance	0.077	0.017	0.038	0.026	0.076	0.025	0.009	0.055	0.261	0.260	0.156	0.024	0.044	0.154	0.174	0.035
Education	β	-0.02	-0.04	-0.02	-0.02	0.03	0.04	0.03*	0.03*	0.02	0.04	0.03	0.03*	0.01	0.03	0.04	0.03
	Relative importance	0.037	0.094	0.020	0.018	0.091	0.103	0.053	0.085	0.025	0.088	0.093	0.051	0.013	0.057	0.053	0.047
Income	β	-0.02*	-0.04*	-0.02*	-0.02*	0.03	0.04*	0.03*	0.03*	0.02	0.04	0.03	0.03*	0.01*	0.03*	0.04*	0.03*
	Relative importance	0.422	0.438	0.423	0.095	0.091	0.222	0.252	0.065	0.028	0.021	0.048	0.269	0.272	0.110	0.138	0.115
Region	β	-0.10*	-0.10*	-0.09*	-0.03*	0.03*	-0.06*	-0.06*	-0.03*	-0.03*	-0.03*	-0.03*	-0.07*	-0.05*	-0.04*	-0.04*	-0.03*
	Relative importance	0.303	0.313	0.364	0.649	0.616	0.437	0.526	0.590	0.472	0.278	0.331	0.543	0.532	0.450	0.550	0.620
Liiving year	β	0.00	0.01	0.00	-0.03	-0.01	-0.03	-0.01	0.02	0.01	0.03*	0.00	-0.01	0.01	0.01	0.00	-0.02
	Relative importance	0.001	0.008	0.001	0.076	0.015	0.074	0.015	0.061	0.027	0.106	0.001	0.015	0.004	0.014	-0.001	0.023
Rurality	β	0.05*	0.05*	0.05*	0.02	0.02*	0.03*	0.02*	0.03*	0.05*	0.06*	0.06*	0.03*	0.03*	0.05*	0.03*	0.04*
	Relative importance	0.156	0.128	0.138	0.018	0.057	0.055	0.041	0.111	0.178	0.235	0.358	0.051	0.096	0.191	0.058	0.118

Notes: 1) Abbreviations Tim for Timber, Fir for Firewood, Wil for Wild food, Wat for Water quality and erosion, Air for Air quality, Car for Carbon storage, Hab for Habitat, Spi for Spiritual and cultural, Edu for Education, Rec for Recreation, Hum for Human health, Nat for Natural hazard protection, Emp for Employment, Aes for Aesthetics, Noi for Noise reduction, Tem for Temperature reduction. 2) * means the significance of regression coefficient, p-value＜0.05. 3) + means the multiple categorical regression model had statistical significance, p-value＜0.05.

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The significance of socio-demographic factors effecting on perceptions of ecosystem disservices

Variables	items	Ecosystem disservices									
		Aesthetic issues	Land use issues	Infrastructure issues*	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
Gender	β	0.080	0.040	0.020	0.027	0.063	0.053	0.016	0.036	0.050	0.041
	Relative importance	0.113	0.042	0.010	0.009	0.072	0.034	0.004	0.036	0.042	0.043
Age	β	0.095	0.046	0.086	0.120	-0.052	0.088	-0.060	0.062	0.073	0.072
	Relative importance	0.164	0.097	0.151	0.273	0.027	0.177	0.055	0.131	0.096	0.191
Education	β	0.129	-0.077	0.106	0.129	0.069	0.126	-0.070	0.083	0.104	0.020
	Relative importance	0.237	0.184	0.189	0.292	0.108	0.235	0.083	0.139	0.180	0.015
Income	β	-0.076	0.048	-0.055	-0.076	-0.083	-0.064	-0.064	-0.048	-0.100	-0.069
	Relative importance	0.107	0.090	0.051	0.093	0.140	0.067	0.068	0.064	0.166	0.092
Region	β	0.122	0.120	0.143	0.120	0.175	0.109	0.207	0.133	0.149	0.127
	Relative importance	0.245	0.501	0.349	0.249	0.581	0.209	0.743	0.605	0.429	0.453
Living year	β	0.052	0.021	0.073	0.047	0.050	0.106	0.054	0.004	0.029	0.073
	Relative importance	0.073	0.034	0.145	0.076	0.031	0.246	0.024	0.004	0.026	0.194
Rurality	β	0.074	0.039	0.072	0.024	0.053	0.046	0.044	0.031	0.062	0.026
	Relative importance	0.062	0.052	0.106	0.008	0.041	0.033	0.024	0.022	0.061	0.012

Notes: + means the multiple categorical regression model had statistical significance, p-value＜0.05.

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Appendix XXI Results for descriptive statistics (ES and EDS of different woodland types)

Most important ecosystem services and disservices for most visited parks or forests; and respondents view of forests that do not visiting a park or forest frequently

Items	Forest in the countryside			Forest in or nearby a city			Park in a city			Forests		
	N	Median	IQR	N	Median	IQR	N	Median	IQR	N	Median	IQR
Timber	925	39.00	47.50	3333	24.00	51.00	2262	20.00	46.00	803	72.00	51.00
Firewood	925	30.00	49.00	3333	20.00	40.00	2262	14.00	36.00	803	40.00	58.00
Wild food	925	44.00	52.00	3333	31.00	49.00	2262	20.50	47.00	803	64.00	50.00
Water quality and erosion	925	78.00	41.00	3333	78.00	35.00	2262	72.50	47.00	803	93.00	32.00
Air quality	925	85.00	36.50	3333	86.00	31.00	2262	83.00	34.00	803	98.00	21.00
Carbon storage	925	76.00	39.00	3333	79.00	36.00	2262	75.00	42.00	803	90.00	33.00
Habitat	925	74.00	42.50	3333	73.00	41.00	2262	66.00	48.00	803	89.00	35.00
Spiritual and cultural	925	72.00	39.00	3333	75.00	35.00	2262	78.00	36.00	803	71.00	51.00
Education	925	68.00	42.00	3333	70.00	38.00	2262	65.00	46.00	803	66.00	48.00
Recreation	925	72.00	38.00	3333	79.00	34.00	2262	80.00	37.00	803	62.00	45.00
Human health	925	82.00	37.50	3333	85.00	30.00	2262	86.00	29.00	803	80.00	39.00
Natural hazard protection	925	73.00	43.00	3333	70.00	45.00	2262	62.00	49.00	803	89.00	32.00
Employment	925	62.00	41.00	3333	59.00	44.00	2262	56.00	51.00	803	66.00	49.00
Aesthetics	925	80.00	35.00	3333	80.00	34.00	2262	80.00	35.00	803	79.00	39.00
Noise reduction	925	76.00	39.00	3333	71.00	39.00	2262	70.00	41.00	803	78.00	43.00
Temperature reduction	925	78.00	35.00	3333	78.00	34.00	2262	76.00	39.00	803	84.00	38.00
Aesthetic issues	154	40.00	51.00	337	29.00	39.50	168	26.50	37.75	174	30.00	44.50
Land use issues	154	49.00	52.00	337	39.00	40.00	168	40.00	45.50	174	40.00	44.25
Infrastructure issues	154	45.00	50.25	337	33.00	42.00	168	35.00	40.00	174	36.00	41.25
Local climate	154	38.50	50.00	337	26.00	45.00	168	22.00	44.00	174	23.00	39.25
Security issues	154	46.00	49.25	337	41.00	41.00	168	38.50	37.00	174	53.50	49.25
Air pollution	154	39.00	48.50	337	29.00	45.00	168	21.00	41.75	174	20.00	44.00
Health issues	154	54.00	49.00	337	44.00	36.00	168	41.00	45.50	174	57.50	47.25
Economic issues	154	51.00	45.50	337	45.00	41.50	168	43.00	43.75	174	40.00	46.25
Safety hazard	154	42.00	53.25	337	36.00	48.50	168	27.50	41.50	174	49.50	50.25
Environmental issues	154	42.50	44.00	337	36.00	45.00	168	26.00	41.00	174	46.00	53.00

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Appendix XXII: Results for descriptive statistics (ES and EDS of Forest in the countryside by provinces)

Descriptive statistics results of ecosystem services of rural forest by provinces (n=925)

Province	items	Tim*	Fir*	Wil*	Wat*	Air*	Car*	Hab*	Spi*	Edu*	Rec*	Hum	Nat*	Emp*	Aes*	Noi*	Tem*
AnHui (AH)	Mean	41.67	36.33	42.87	70.33	78.60	68.96	70.48	63.00	66.92	60.23	74.02	62.23	56.60	72.19	61.46	66.90
	SD	29.32	29.04	26.71	29.09	26.30	28.42	28.75	27.00	28.28	25.81	25.85	27.27	27.23	27.38	26.67	27.82
	Median	31.50	28.00	39.50	79.50	89.00	75.00	77.00	66.50	76.00	64.50	79.50	61.50	57.50	79.00	61.00	70.50
	IQR	48.50	41.75	41.50	56.50	36.00	50.00	50.75	40.50	47.00	39.75	43.50	40.25	41.75	44.75	35.25	39.00
BeiJing (BJ)	Mean	34.97	28.21	41.75	70.00	80.66	71.49	67.04	70.51	63.49	68.10	76.18	64.81	59.44	73.31	69.03	69.85
	SD	30.60	25.36	31.13	29.05	23.70	25.85	24.82	26.89	29.64	29.32	26.86	29.64	29.48	27.17	26.32	27.39
	Median	22.00	21.50	35.50	80.00	89.50	80.00	70.00	77.50	74.50	78.00	84.00	76.00	66.50	80.50	77.00	80.00
	IQR	53.75	37.75	50.25	57.75	24.00	30.50	35.00	32.50	43.50	44.50	30.75	48.00	45.75	36.50	36.75	33.00
FuJian (FJ)	Mean	50.42	47.04	52.23	78.33	82.04	71.65	73.50	67.35	66.69	76.31	80.88	72.08	66.81	79.27	72.94	76.19
	SD	30.37	32.13	31.04	21.44	19.13	27.66	26.81	27.01	27.27	20.26	21.67	26.29	26.20	20.33	23.97	21.69
	Median	48.50	41.50	61.50	80.50	86.50	79.50	82.00	67.50	73.00	79.50	91.00	80.00	71.00	85.00	80.00	80.50
	IQR	59.75	57.75	58.50	36.25	28.50	41.25	37.25	39.75	36.00	32.50	29.00	38.50	46.00	32.25	31.25	27.25
GuangDong (GD)	Mean	50.52	42.41	50.29	67.91	76.61	68.05	65.25	63.91	62.43	67.68	73.61	70.04	56.48	72.57	67.11	69.61
	SD	28.98	30.17	30.52	26.61	26.46	27.64	28.11	28.00	28.42	28.54	26.21	26.36	26.21	25.44	27.91	28.33
	Median	49.50	36.50	48.50	71.00	87.50	73.50	67.00	66.00	71.00	78.00	81.00	73.50	55.00	76.50	75.00	76.50
	IQR	51.50	50.50	56.50	47.75	42.75	47.25	41.50	45.75	47.50	46.50	40.50	42.75	38.00	38.00	46.00	53.75
GuangXi (GX)	Mean	48.96	46.41	55.87	69.35	77.46	71.96	71.65	64.87	60.50	66.15	75.37	72.43	66.80	69.98	67.41	73.39
	Sd	29.95	29.39	29.80	26.63	24.49	23.63	26.38	27.27	28.06	27.06	24.74	28.16	29.76	27.24	27.81	24.73
	Median	48.00	49.00	58.00	74.50	85.50	73.50	75.00	67.50	61.50	66.00	80.00	82.00	77.00	73.00	75.00	74.00
	IQR	55.25	55.50	56.25	34.25	39.00	35.50	35.50	33.00	32.50	42.25	38.25	32.25	39.00	47.25	40.00	36.75
HeBei (HEB)	Mean	34.10	31.90	32.58	63.10	76.90	61.90	59.50	62.52	58.46	65.04	70.96	62.04	56.15	71.79	63.10	70.83
	SD	27.23	28.66	25.86	27.89	26.10	30.23	27.85	27.21	27.20	25.53	28.18	29.78	27.18	26.42	27.77	25.56
	Median	28.50	25.00	27.50	64.00	88.50	67.50	59.50	61.00	59.00	69.00	80.00	62.00	60.00	79.50	67.50	78.50
	IQR	43.00	50.25	37.75	48.25	41.25	55.00	41.50	44.50	42.75	35.25	52.00	49.75	46.75	42.25	46.25	42.00
HeNan (HEN)	Mean	40.57	36.84	48.86	75.30	79.75	69.71	70.20	67.68	64.84	72.05	80.14	68.59	59.88	76.59	68.07	70.41
	SD	31.25	31.58	31.62	25.37	21.98	23.89	28.61	27.40	27.64	20.68	18.89	25.83	29.09	20.43	26.08	25.41
	Median	34.00	30.50	49.00	85.00	87.00	78.00	80.50	75.50	63.00	73.00	84.00	75.00	63.00	77.50	74.00	78.00

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	IQR	49.25	54.25	58.25	43.50	32.75	41.50	47.50	46.75	45.25	36.25	32.75	44.25	43.50	36.25	40.50	38.50
HuBei (HUB)	Mean	38.57	32.96	43.22	67.94	74.96	69.12	64.94	61.33	62.18	63.55	73.31	62.88	52.69	71.69	62.67	72.10
	SD	28.22	26.27	31.39	25.56	23.57	25.22	27.77	26.41	24.72	28.34	26.62	28.72	26.68	23.77	26.80	23.87
	Median	38.00	29.00	40.00	77.00	81.00	77.00	68.00	63.00	70.00	72.00	80.00	63.00	59.00	78.00	70.00	77.00
	IQR	46.00	52.50	49.00	42.50	38.50	27.50	28.50	43.50	31.50	42.00	41.00	45.00	43.50	28.00	41.50	25.50
HuNan (HUN)	Mean	41.24	37.98	45.69	70.40	78.82	69.18	71.02	71.07	60.18	65.49	76.58	69.33	62.60	75.36	73.09	74.96
	SD	26.46	28.56	28.69	27.73	24.72	27.74	26.84	25.06	28.06	26.38	26.02	28.45	27.40	24.31	26.68	23.22
	Median	39.00	30.00	50.00	79.00	88.00	73.00	79.00	74.00	60.00	68.00	84.00	76.00	67.00	80.00	79.00	79.00
	IQR	41.50	50.00	47.50	51.00	33.50	49.00	32.00	31.50	49.50	40.00	26.50	46.00	39.00	41.00	37.00	40.00
JiangSu (JS)	Mean	40.56	37.51	51.22	66.31	72.56	62.15	67.35	62.89	60.42	65.47	71.73	60.58	60.49	70.62	61.47	68.31
	SD	28.62	29.44	30.01	29.60	25.75	30.65	26.74	27.31	27.65	26.37	26.01	29.04	28.49	25.59	28.81	27.13
	Median	42.00	26.00	49.00	71.00	81.00	66.00	72.00	73.00	61.00	69.00	81.00	63.00	64.00	77.00	71.00	72.00
	IQR	53.00	54.00	49.00	45.00	33.00	46.00	43.00	42.00	45.00	46.00	37.00	42.00	48.00	37.00	46.00	44.00
JiangXi (JX)	Mean	57.19	51.60	53.72	75.17	82.36	73.23	70.94	72.21	69.96	72.45	79.51	68.36	65.45	77.72	72.79	78.04
	SD	30.64	31.13	32.76	23.37	17.40	22.19	22.81	22.68	24.27	21.75	19.11	23.87	23.97	21.99	22.70	22.27
	Median	61.00	49.00	55.00	82.00	86.00	79.00	79.00	77.00	74.00	75.00	81.00	73.00	68.00	83.00	77.00	85.00
	IQR	49.00	56.00	54.00	37.00	27.00	34.00	40.00	35.00	37.00	37.00	29.00	35.00	41.00	40.00	36.00	36.00
ShanDong (SD)	Mean	43.28	33.83	51.72	72.81	80.87	72.53	68.34	69.36	66.92	65.92	77.25	68.36	63.40	72.62	66.83	67.60
	SD	27.34	28.97	27.60	21.60	19.98	23.53	24.93	23.49	24.09	25.27	22.29	27.43	24.31	22.63	28.20	24.73
	Median	41.00	22.00	53.00	77.00	84.00	72.00	72.00	67.00	73.00	68.00	83.00	74.00	63.00	76.00	75.00	70.00
	IQR	43.50	41.00	39.50	31.50	24.00	35.00	31.00	30.50	33.50	40.00	29.50	41.00	34.50	34.50	42.00	30.50
ShanXi (SX)	Mean	32.68	31.66	40.28	65.68	73.96	69.92	67.40	69.90	62.52	67.34	76.10	64.38	58.48	74.36	70.46	72.60
	SD	28.90	30.54	30.02	29.88	26.21	23.76	25.87	26.38	27.94	27.46	23.51	26.57	26.09	21.24	22.70	22.64
	Median	23.00	22.00	35.00	73.00	80.50	71.00	70.00	78.50	63.50	73.00	79.50	68.50	62.00	79.00	72.00	77.50
	IQR	46.25	48.25	54.75	52.25	40.75	35.25	44.00	44.50	46.00	43.00	29.75	40.75	38.75	18.75	35.00	33.75
ShaanXi (SHX)	Mean	44.04	38.46	50.56	73.82	81.82	71.28	66.89	70.35	69.07	68.23	83.56	69.51	59.74	79.75	68.42	77.21
	SD	29.28	34.28	30.84	25.13	19.01	25.86	28.69	23.25	25.16	25.43	17.80	25.15	27.30	20.93	27.69	23.53
	Median	40.00	23.00	50.00	79.00	84.00	78.00	70.00	75.00	71.00	75.00	88.00	75.00	60.00	81.00	79.00	81.00
	IQR	49.00	55.00	58.00	42.00	30.50	43.50	60.00	38.00	42.50	40.00	25.00	40.00	40.50	30.50	51.00	31.50
ShangHai (SH)	Mean	34.56	29.51	41.07	73.95	80.85	76.40	72.29	69.11	70.07	70.71	81.05	69.16	62.56	73.89	69.40	70.47
	SD	30.14	27.58	30.95	20.43	22.83	23.07	22.76	22.33	24.90	23.01	20.41	26.97	24.20	20.99	25.11	24.56

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	Median	28.00	21.00	40.00	78.00	88.00	83.00	76.00	75.00	78.00	74.00	89.00	74.00	65.00	78.00	79.00	76.00
	IQR	56.00	48.00	48.00	28.00	28.00	29.00	31.00	36.00	34.00	31.00	26.00	50.00	30.00	27.00	34.00	35.00
TianJing (TJ)	Mean	37.25	32.54	43.75	70.88	78.52	70.88	64.79	67.04	59.13	62.50	72.50	61.10	58.33	70.08	68.67	67.42
	SD	30.10	28.97	29.41	28.40	27.31	29.38	31.29	30.62	28.16	30.78	30.61	31.85	30.70	31.10	31.47	32.44
	Median	33.00	22.00	41.00	78.50	92.00	80.50	69.00	78.50	60.50	65.00	81.50	69.50	61.00	82.50	78.50	79.00
	IQR	48.75	42.75	46.75	47.75	37.75	46.50	49.75	39.00	42.50	49.00	43.75	47.25	44.00	50.00	40.00	52.75
ZheJiang (ZJ)	Mean	41.35	38.88	49.86	72.63	77.71	69.65	73.04	65.69	64.61	68.67	76.35	69.80	59.29	77.57	73.69	74.61
	SD	28.66	27.35	27.34	22.76	24.87	27.27	25.34	24.47	26.08	25.37	23.99	23.81	27.45	20.30	22.55	21.56
	Median	39.00	40.00	60.00	76.00	86.00	74.00	80.00	66.00	65.00	75.00	83.00	77.00	67.00	81.00	80.00	80.00
	IQR	46.00	41.00	41.00	43.00	39.00	40.00	45.00	37.00	40.00	34.00	33.00	38.00	49.00	32.00	31.00	31.00
ChongQing (CQ)	Mean	46.12	44.22	48.00	64.54	73.41	65.27	63.44	66.59	61.27	64.59	73.02	63.56	65.32	72.39	70.15	72.49
	SD	29.13	27.26	27.30	26.57	26.10	24.38	30.10	27.98	27.08	24.59	24.73	25.79	27.39	24.56	26.11	23.35
	Median	44.00	42.00	51.00	67.00	81.00	62.00	73.00	74.00	66.00	63.00	80.00	60.00	75.00	79.00	77.00	79.00
	IQR	51.00	41.50	38.00	41.50	43.50	40.50	51.50	51.00	43.50	36.00	39.50	42.00	44.50	42.50	38.50	33.00

Notes: 1) Abbreviations Tim for Timber, Fir for Firewood, Wil for Wild food, Wat for Water quality and erosion, Air for Air quality, Car for Carbon storage, Hab for Habitat, Spi for Spiritual and cultural, Edu for Education, Rec for Recreation, Hum for Human health, Nat for Natural hazard protection, Emp for Employment, Aes for Aesthetics, Noi for Noise reduction, Tem for Temperature reduction. 2) * means the significance different of ecosystem services value among the provinces by Kruskal-Walis test.

Descriptive statistics results of ecosystem disservices of rural forest by provinces (n=154)

Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
Anhui (AH)	Mean	35.22	37.67	33.78	28.11	26.00	25.56	42.11	29.78	32.67	26.11
	Sd	31.82	30.52	24.18	23.00	22.80	25.75	31.32	21.98	33.99	25.88
	Median	33.00	38.00	23.00	27.00	21.00	23.00	39.00	25.00	29.00	17.00
	IQR	62.00	40.00	41.50	32.50	26.50	43.50	51.00	38.00	54.00	48.00
Beijing (BJ)	Mean	41.13	51.47	49.53	44.13	43.33	44.73	49.87	52.20	46.33	50.27
	Sd	22.80	32.06	30.54	25.03	28.38	25.10	28.12	26.77	26.65	28.77
	Median	40.00	34.00	47.00	40.00	44.00	38.00	45.00	50.00	43.00	43.00
	IQR	40.00	65.00	58.00	42.00	37.00	41.00	48.00	39.00	52.00	38.00

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
Fujian (FJ)	Mean	46.67	60.00	61.50	53.50	65.33	50.17	62.33	57.67	51.00	58.67
	Sd	43.40	41.93	34.13	42.88	26.76	43.56	24.78	29.19	34.92	28.53
	Median	51.00	65.00	58.50	61.00	63.00	58.00	62.00	59.50	46.00	57.50
	IQR	82.00	79.50	66.50	82.75	48.50	88.75	39.50	49.75	68.00	53.75
Guangdong (GD)	Mean	32.67	40.92	39.92	31.75	31.33	35.33	43.00	35.00	46.42	31.08
	Sd	27.18	32.04	32.20	31.02	24.53	31.96	33.13	24.54	33.06	26.80
	Median	31.50	33.00	35.00	24.00	36.00	27.00	36.00	44.00	42.00	27.50
	IQR	43.25	48.25	53.25	48.25	44.75	41.00	57.00	42.00	61.75	38.00
Guangxi (GX)	Mean	67.29	61.29	74.29	62.86	76.86	57.43	68.43	60.43	65.00	65.86
	Sd	32.12	33.86	27.64	35.08	28.59	36.23	35.23	38.41	29.03	31.57
	Median	72.00	62.00	87.00	59.00	89.00	66.00	82.00	66.00	59.00	67.00
	IQR	46.00	70.00	24.00	70.00	24.00	74.00	61.00	82.00	46.00	46.00
Hebei (HEB)	Mean	51.55	55.00	53.36	58.64	50.55	45.45	47.36	58.45	47.64	45.45
	Sd	34.41	30.62	29.03	27.33	28.38	29.85	29.50	26.77	29.52	29.04
	Median	57.00	46.00	60.00	51.00	46.00	45.00	46.00	58.00	49.00	41.00
	IQR	66.00	51.00	51.00	49.00	44.00	39.00	40.00	44.00	55.00	44.00
Henan (HEN)	Mean	43.43	59.57	51.43	48.29	50.14	47.57	54.57	48.29	53.43	49.43
	Sd	29.85	28.42	32.28	28.83	32.52	31.33	26.80	32.42	30.30	27.36
	Median	44.00	62.00	56.00	39.00	45.00	40.00	54.00	52.00	58.00	44.00
	IQR	42.00	56.00	61.00	35.00	66.00	59.00	45.00	55.00	60.00	24.00
Hubei (HUB)	Mean	33.33	48.42	43.33	32.83	46.58	29.25	57.25	45.00	51.92	39.50
	Sd	31.57	28.83	27.09	22.67	32.95	22.55	28.82	28.47	31.08	26.10
	Median	22.00	54.50	36.00	35.50	41.00	24.50	67.50	40.50	44.00	36.50
	IQR	62.50	57.00	34.25	36.50	59.50	25.50	50.50	52.00	53.25	49.50
Hunan (HUN)	Mean	63.75	61.25	57.25	62.25	59.75	62.25	66.50	53.75	89.25	59.00
	Sd	23.21	22.05	23.77	24.85	27.83	26.96	32.17	21.78	3.50	32.95
	Median	68.00	69.00	58.00	70.50	60.00	70.00	71.50	59.50	89.50	61.00
	IQR	43.25	38.25	45.25	43.25	53.75	49.25	60.00	39.75	6.75	63.50
Jiansu	Mean	39.18	42.82	43.45	41.09	46.36	48.00	42.82	45.82	48.36	50.27

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
(JS)	Sd	22.89	17.94	25.92	24.46	22.98	20.96	21.26	17.93	22.61	13.59
	Median	33.00	38.00	36.00	33.00	52.00	47.00	42.00	47.00	48.00	49.00
	IQR	43.00	31.00	49.00	48.00	39.00	34.00	44.00	35.00	26.00	28.00
Jiangxi (JX)	Mean	53.57	52.43	45.43	39.71	61.29	48.14	69.14	63.86	53.57	44.43
	Sd	18.72	20.90	17.71	24.76	31.59	26.52	16.96	18.52	30.25	26.73
	Median	51.00	56.00	45.00	43.00	73.00	45.00	70.00	62.00	35.00	49.00
	IQR	33.00	30.00	32.00	39.00	68.00	43.00	21.00	25.00	51.00	41.00
Shandong (SD)	Mean	49.25	55.13	54.38	47.75	53.25	44.63	48.75	50.13	45.63	54.63
	Sd	25.54	29.02	29.27	21.86	24.22	22.20	28.35	20.65	30.78	17.36
	Median	42.00	51.50	57.00	51.50	47.50	40.50	45.50	49.50	33.50	58.00
	IQR	31.50	53.00	52.75	41.75	31.00	41.75	42.50	37.25	50.75	27.75
Shanxi (SX)	Mean	43.18	61.27	49.73	51.64	39.18	45.45	54.91	55.64	38.36	42.36
	Sd	25.53	25.24	26.79	24.86	24.09	36.11	35.45	20.65	28.32	26.14
	Median	31.00	73.00	51.00	60.00	41.00	36.00	67.00	63.00	25.00	39.00
	IQR	51.00	33.00	40.00	46.00	41.00	63.00	77.00	42.00	48.00	42.00
Shaanxi (SHX)	Mean	56.33	46.67	48.83	51.67	61.33	46.00	46.00	57.00	43.33	54.33
	Sd	36.76	35.33	36.73	34.46	31.30	34.62	31.26	34.92	31.78	35.60
	Median	68.50	48.00	48.50	54.50	67.00	42.50	42.50	61.50	40.50	57.50
	IQR	63.25	59.00	70.00	60.75	56.50	57.25	46.25	56.25	30.75	58.75
Shanghai (SH)	Mean	26.83	57.17	28.33	20.83	46.50	24.83	51.83	47.50	27.50	28.67
	Sd	16.30	33.69	14.91	11.21	29.57	16.55	22.16	25.30	12.88	35.14
	Median	24.00	58.50	27.00	17.00	44.50	20.00	50.00	50.50	24.00	16.50
	IQR	20.75	65.50	21.50	18.25	39.50	18.25	41.75	43.50	22.75	26.75
Tianjing (TJ)	Mean	28.50	27.50	38.33	35.17	41.33	28.50	47.17	26.33	32.50	42.67
	Sd	27.45	32.38	30.42	27.56	31.75	21.49	37.27	27.29	29.72	30.46
	Median	21.00	17.00	25.00	22.50	30.00	21.50	34.50	17.50	21.50	30.00
	IQR	32.75	27.25	59.50	33.50	66.00	23.00	78.50	31.75	34.00	58.00
Zhejiang (ZJ)	Mean	39.88	50.50	44.25	40.63	45.13	49.13	56.00	51.63	45.63	48.88
	Sd	28.62	30.16	28.04	30.78	18.10	25.06	28.35	27.01	30.33	28.32

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
	Median	36.00	48.00	40.00	21.00	46.50	53.00	62.50	61.00	37.50	51.50
	IQR	55.50	61.25	58.75	60.75	29.25	46.50	54.75	54.75	58.75	57.50
Chongqing (CQ)	Mean	48.13	64.88	44.25	40.38	64.38	36.50	66.75	50.25	50.63	44.50
	Sd	39.31	38.63	33.91	36.75	32.68	32.92	23.81	30.39	38.68	27.24
	Median	55.50	81.50	47.50	32.00	70.50	29.00	59.00	51.00	42.00	51.00
	IQR	80.75	72.75	58.25	67.75	61.50	56.75	49.00	54.25	80.75	53.00

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Appendix XXIII: Results for descriptive statistics (ES and EDS of Forests in or nearby a city by provinces)

Descriptive statistics results of ecosystem services of suburban forest by provinces (n=3,333)

Province	items	Tim*	Fir*	Wil*	Wat*	Air*	Car*	Hab*	Spi*	Edu*	Rec*	Hum	Nat*	Emp*	Aes*	Noi*	Tem*
AnHui (AH)	Mean	37.17	32.41	39.13	75.50	83.50	72.55	70.63	73.64	69.59	75.54	82.30	66.55	61.39	78.53	71.63	76.14
	SD	31.31	30.47	31.10	24.24	21.44	24.85	27.13	23.11	25.57	23.16	20.25	27.73	26.66	20.93	23.77	23.19
	Median	25.00	21.00	31.00	80.00	91.00	79.00	78.00	79.00	78.00	81.00	87.00	71.00	61.00	80.00	76.00	80.00
	IQR	49.00	47.00	49.00	39.00	22.00	39.00	39.00	34.00	31.00	35.00	30.00	46.00	43.00	30.00	35.00	34.00
BeiJing (BJ)	Mean	27.66	22.35	27.32	66.88	80.72	71.45	65.13	69.99	63.16	73.84	81.42	58.57	51.28	74.31	66.76	69.29
	SD	27.27	24.73	24.07	24.92	20.99	23.61	26.00	23.96	25.24	23.87	19.75	28.05	25.62	23.63	24.91	24.96
	Median	19.00	12.50	20.00	71.50	86.00	78.00	70.00	75.50	63.50	78.00	86.00	61.50	50.00	79.50	70.00	76.00
	IQR	42.25	28.50	35.00	34.75	30.25	34.25	35.75	33.25	35.00	34.00	28.00	45.25	42.25	34.50	38.00	36.25
FuJian (FJ)	Mean	36.97	31.66	37.75	74.39	81.07	74.18	70.51	72.85	64.24	73.64	76.35	69.11	56.05	76.79	68.64	75.57
	SD	33.10	31.24	30.95	26.39	22.00	26.18	27.25	25.39	28.57	24.86	23.04	27.93	27.77	23.54	25.28	24.10
	Median	23.00	21.00	29.00	80.50	89.00	81.00	79.00	79.00	68.00	79.50	80.00	78.00	59.00	82.00	72.00	81.00
	IQR	58.00	49.75	49.25	39.00	28.50	40.00	37.50	44.00	46.25	36.50	33.25	46.00	48.25	37.25	42.25	38.00
GuangDong (GD)	Mean	33.98	28.77	36.67	68.67	76.09	70.02	63.77	64.65	61.46	70.04	75.27	65.73	53.84	68.95	63.26	69.62
	SD	26.46	26.20	29.28	22.76	22.63	23.10	26.23	23.59	25.68	23.16	23.46	24.88	25.41	23.27	25.10	23.75
	Median	28.00	20.50	30.00	73.00	81.00	77.00	69.50	69.50	64.50	73.00	80.00	70.00	55.00	73.00	67.00	76.50
	IQR	46.25	39.25	50.00	25.50	34.00	30.00	36.25	31.00	34.00	30.50	31.00	37.25	34.00	31.00	40.00	35.00
GuangXi (GX)	Mean	41.94	34.84	43.82	73.51	82.28	74.51	74.42	71.10	68.19	70.30	79.20	70.16	63.40	77.29	68.27	75.60
	Sd	31.66	28.76	30.62	26.62	23.90	26.59	26.18	25.28	26.25	26.79	22.85	27.91	27.49	23.66	27.03	23.60
	Median	35.50	23.50	41.00	80.00	92.00	82.50	80.50	79.00	74.50	76.00	84.50	78.50	68.00	85.00	71.50	80.00
	IQR	51.50	47.00	47.25	42.50	23.50	41.75	41.00	36.50	37.50	37.00	32.25	46.25	43.25	33.25	42.00	37.00
HeBei (HEB)	Mean	35.18	27.50	36.65	67.60	77.39	69.74	63.16	67.61	63.21	71.01	78.04	63.99	55.43	76.53	65.45	68.95
	SD	29.35	26.63	28.63	27.04	23.53	26.58	27.74	25.76	26.15	24.50	23.49	26.09	26.16	22.65	27.11	23.76
	Median	26.00	20.00	31.00	77.00	83.00	76.00	66.00	71.00	66.00	76.00	86.00	67.00	57.00	82.00	69.00	72.00
	IQR	50.00	41.00	49.00	42.00	38.00	35.00	45.00	39.00	40.00	36.00	37.00	40.00	39.00	38.00	46.00	35.00
HeNan (HEN)	Mean	30.83	26.31	35.13	68.62	76.95	69.93	63.28	67.43	61.09	71.09	77.17	61.01	54.04	72.25	63.68	68.65
	SD	27.39	28.28	28.35	27.41	24.80	25.70	27.43	25.51	29.11	27.57	23.50	30.00	27.73	23.82	26.24	25.24
	Median	21.00	18.00	30.00	74.50	83.00	74.50	67.00	72.50	65.50	80.00	82.00	66.00	58.00	78.00	65.00	73.00

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	IQR	43.00	34.00	48.75	45.00	35.00	38.00	43.25	31.25	44.50	36.50	33.00	49.50	47.75	32.00	39.50	34.50
HuBei (HUB)	Mean	34.61	27.94	34.81	69.56	78.08	69.41	64.81	69.36	63.70	71.90	77.84	61.17	54.62	72.42	63.69	72.28
	SD	28.34	25.40	28.15	25.02	22.86	24.96	26.77	23.29	26.59	22.55	22.62	26.67	26.25	23.68	26.00	23.33
	Median	28.50	20.00	25.00	77.00	82.50	76.50	70.00	74.50	68.50	76.00	83.00	64.50	55.50	79.00	66.00	78.00
	IQR	50.25	40.75	49.00	33.00	36.75	36.75	41.75	29.50	40.00	27.00	30.00	40.75	43.50	30.00	38.00	30.75
HuNan (HUN)	Mean	34.48	29.71	37.98	72.31	80.40	69.94	68.46	70.97	62.17	71.03	78.39	65.89	55.41	73.74	66.42	72.09
	SD	30.61	29.29	29.32	26.47	23.44	26.81	28.27	26.80	30.33	25.99	25.01	27.98	28.64	24.34	28.50	24.99
	Median	22.00	20.00	35.50	79.00	88.00	78.00	77.00	79.00	67.50	78.00	86.00	71.00	55.50	78.00	74.50	78.00
	IQR	51.25	41.50	44.50	37.00	30.25	38.75	46.75	38.50	52.25	35.75	32.50	40.50	45.00	34.00	44.75	33.00
JiangSu (JS)	Mean	38.04	30.72	38.13	71.39	80.85	69.60	69.59	68.58	64.32	69.85	80.49	66.74	57.57	76.56	69.04	72.24
	SD	30.41	26.29	28.59	26.10	22.03	25.06	25.83	23.06	25.42	26.11	22.54	27.73	27.30	22.88	25.32	24.92
	Median	33.00	22.00	35.00	80.00	88.00	77.00	76.00	73.00	68.00	77.00	88.00	72.00	63.00	81.00	74.00	80.00
	IQR	53.50	42.00	47.50	39.50	27.00	35.50	37.50	31.00	36.00	38.50	26.00	42.00	46.00	28.00	33.00	33.50
JiangXi (JX)	Mean	38.96	33.75	41.65	73.23	81.40	72.22	68.61	69.24	66.37	76.49	80.30	69.37	58.31	76.06	69.84	74.53
	SD	32.80	30.68	33.32	25.72	23.26	27.90	28.58	27.49	28.41	24.64	23.72	28.43	30.08	25.75	27.96	25.10
	Median	28.00	21.50	36.50	80.00	91.00	80.00	78.00	77.50	73.00	80.00	86.00	79.00	60.00	82.00	78.00	81.00
	IQR	52.00	49.75	53.00	39.00	30.75	46.75	49.75	46.50	40.75	33.25	26.50	49.75	53.25	38.00	50.50	39.75
ShanDong (SD)	Mean	35.50	27.48	39.44	75.47	81.08	72.88	67.03	72.35	65.19	73.23	80.80	63.05	56.16	76.25	67.41	73.96
	SD	31.54	27.52	31.36	23.57	21.00	23.49	26.64	22.51	26.23	22.67	21.64	29.58	27.20	23.41	26.04	23.36
	Median	24.00	20.00	30.50	80.00	86.50	79.00	72.00	75.50	70.00	77.00	87.00	69.00	57.50	81.00	71.50	79.00
	IQR	52.75	35.75	55.75	33.00	26.00	34.75	39.50	31.00	32.50	34.00	26.75	47.75	44.00	27.00	37.50	36.00
ShanXi (SX)	Mean	38.14	33.00	43.05	72.43	82.50	75.20	68.95	71.22	68.00	78.18	82.31	70.08	62.06	79.37	72.10	75.29
	SD	32.68	31.36	31.09	23.34	20.02	24.67	26.75	26.15	28.66	21.85	19.57	24.01	28.93	21.72	25.12	23.68
	Median	28.00	20.00	40.00	79.00	87.00	80.00	77.00	78.00	76.00	81.00	87.00	73.00	64.00	84.00	79.00	81.00
	IQR	54.50	53.00	55.50	31.00	24.00	36.50	43.00	40.50	40.00	32.50	28.50	32.00	46.00	28.50	35.50	36.00
ShaanXi (SHX)	Mean	33.14	27.74	36.17	68.66	78.47	69.88	66.94	69.09	63.51	70.72	77.18	63.07	54.70	74.28	69.00	72.03
	SD	30.14	27.79	30.04	27.32	24.60	27.81	30.04	28.29	29.69	28.00	25.31	31.40	30.00	25.84	27.36	28.10
	Median	22.50	20.00	26.00	77.00	87.00	79.00	75.00	78.00	70.00	79.00	85.50	69.00	57.50	80.00	76.00	83.50
	IQR	51.00	37.25	51.25	43.75	34.75	43.25	50.50	42.25	46.75	41.00	34.25	57.25	51.25	34.25	42.25	37.00
ShangHai (SH)	Mean	32.20	28.40	34.28	65.54	77.93	66.98	64.35	69.39	69.34	70.93	78.43	58.65	57.10	72.89	64.93	67.86
	SD	29.42	27.42	28.01	25.03	21.39	25.75	27.12	22.62	24.11	24.95	22.39	28.36	27.02	23.09	24.42	26.26

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	Median	21.50	20.00	28.50	71.00	81.50	71.00	71.00	73.00	76.50	77.50	84.00	62.00	60.00	78.00	68.00	73.00
	IQR	49.00	45.00	47.75	36.75	25.75	36.50	39.75	27.00	30.75	33.50	25.75	40.75	45.00	31.00	33.75	35.75
TianJing (TJ)	Mean	34.75	28.27	36.48	71.43	82.65	72.57	67.10	69.43	67.52	73.59	81.01	64.14	54.57	74.39	67.51	70.93
	SD	29.84	29.23	29.95	26.84	22.40	25.64	27.82	26.57	28.13	24.15	22.12	28.10	28.94	24.08	26.65	27.46
	Median	23.00	20.00	28.00	79.00	93.00	79.00	68.00	78.00	72.00	79.00	89.00	67.00	54.00	80.00	74.00	79.00
	IQR	50.00	36.00	48.00	44.00	26.00	41.00	41.00	40.00	47.00	36.00	33.00	49.00	49.00	38.00	38.00	41.00
ZheJiang (ZJ)	Mean	33.43	28.44	37.35	71.95	79.62	71.09	64.46	67.75	64.17	69.79	78.92	63.37	53.75	72.71	64.61	69.29
	SD	28.84	28.07	29.84	25.58	22.82	25.40	26.10	24.94	25.49	23.65	22.31	26.90	27.59	24.11	26.35	24.19
	Median	28.00	20.00	32.00	78.00	85.00	80.00	69.00	68.00	66.00	75.00	85.00	67.00	59.00	78.00	68.00	77.00
	IQR	52.00	42.00	50.00	33.00	26.00	33.00	38.00	39.00	38.00	30.00	27.00	43.00	48.00	34.00	39.00	35.00
ChongQing (CQ)	Mean	36.58	29.66	39.56	72.03	80.98	70.66	68.27	70.76	65.62	74.55	79.90	67.88	58.68	76.50	69.58	72.60
	SD	30.15	27.61	27.96	24.56	21.00	23.86	25.23	23.31	27.57	22.85	21.75	26.40	26.84	22.05	24.36	24.54
	Median	24.00	21.00	39.00	79.00	85.00	78.00	75.00	75.00	72.00	79.00	85.00	77.00	60.00	80.00	72.00	78.00
	IQR	49.00	32.50	45.50	37.00	30.00	35.00	37.00	31.00	36.50	34.00	25.00	35.00	39.50	33.50	36.50	34.00

Notes: 1) Abbreviations Tim for Timber, Fir for Firewood, Wil for Wild food, Wat for Water quality and erosion, Air for Air quality, Car for Carbon storage, Hab for Habitat, Spi for Spiritual and cultural, Edu for Education, Rec for Recreation, Hum for Human health, Nat for Natural hazard protection, Emp for Employment, Aes for Aesthetics, Noi for Noise reduction, Tem for Temperature reduction. 2) * means the significance different of ecosystem services value among the provinces by Kruskal-Walis test.

Descriptive statistics results of ecosystem disservices of suburban forest by provinces (n=337)

Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
Anhui (AH)	Mean	46.44	46.44	42.33	34.67	42.67	45.33	39.67	49.00	35.33	45.22
	Sd	33.86	35.09	30.01	33.60	31.79	38.34	28.04	31.92	33.14	34.69
	Median	21.00	30.00	42.00	22.00	55.00	42.00	49.00	59.00	21.00	62.00
	IQR	67.00	63.00	53.50	64.00	59.50	79.00	51.50	62.00	60.50	64.50
Beijing (BJ)	Mean	49.50	49.50	48.20	38.30	46.50	38.65	48.35	47.40	44.70	47.70
	Sd	25.30	25.71	27.97	29.45	25.32	25.52	25.34	22.35	26.92	26.87
	Median	45.50	50.00	49.50	35.50	55.50	36.00	52.50	45.00	47.00	49.00
	IQR	45.00	28.00	42.75	45.00	41.25	42.75	39.25	35.75	53.75	38.50

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
Fujian (FJ)	Mean	33.33	33.33	32.93	35.40	33.20	33.40	36.80	36.40	29.13	35.53
	Sd	21.08	15.69	18.62	26.30	23.30	30.49	16.36	23.58	25.63	25.16
	Median	21.00	34.00	35.00	33.00	27.00	29.00	40.00	37.00	20.00	38.00
	IQR	30.00	19.00	29.00	40.00	40.00	35.00	23.00	39.00	32.00	40.00
Guangdong (GD)	Mean	37.00	37.00	32.97	30.48	38.07	29.93	44.34	39.24	40.10	40.97
	Sd	19.22	21.63	17.06	23.61	19.45	23.31	24.08	22.42	25.31	26.80
	Median	24.00	36.00	29.00	28.00	36.00	29.00	47.00	38.00	39.00	41.00
	IQR	31.50	25.00	23.50	40.00	30.50	45.50	31.50	38.00	43.50	43.00
Guangxi (GX)	Mean	40.57	40.57	43.38	35.67	42.33	38.81	55.00	47.71	51.19	43.86
	Sd	27.76	24.39	24.62	24.75	18.33	31.96	25.41	25.31	28.43	27.70
	Median	25.00	34.00	42.00	26.00	47.00	29.00	54.00	45.00	44.00	37.00
	IQR	41.50	47.00	39.50	48.00	31.00	58.50	34.00	43.00	51.00	47.50
Hebei (HEB)	Mean	43.55	43.55	33.45	21.59	42.82	21.00	39.82	42.73	37.09	27.95
	Sd	25.96	25.69	28.64	21.66	29.48	22.53	19.59	26.52	31.25	24.47
	Median	19.00	42.50	27.00	12.00	30.50	14.50	42.50	44.50	36.00	20.00
	IQR	48.50	46.00	51.75	31.75	56.25	35.25	27.75	48.75	63.00	40.25
Henan (HEN)	Mean	37.08	37.08	37.67	37.83	37.25	41.42	48.25	45.75	40.17	46.42
	Sd	30.71	21.66	21.22	28.92	18.36	25.32	20.49	26.25	20.51	27.74
	Median	36.00	38.50	36.00	32.50	34.50	45.50	43.50	40.50	32.00	43.00
	IQR	41.50	37.75	33.50	60.00	25.75	46.50	36.75	53.00	23.75	40.25
Hubei (HUB)	Mean	36.00	36.00	45.39	35.39	49.44	36.06	51.11	47.22	44.33	47.61
	Sd	23.48	25.47	28.94	27.85	24.13	23.95	21.41	24.48	27.96	25.82
	Median	36.50	27.00	43.00	28.00	47.00	32.50	48.00	50.00	46.00	47.50
	IQR	39.00	41.00	46.25	45.50	40.75	42.00	36.75	36.25	41.50	37.50
Hunan (HUN)	Mean	50.14	50.14	30.71	27.00	46.07	32.50	43.29	41.64	38.43	24.29
	Sd	28.08	35.17	22.50	24.88	33.96	32.67	31.19	33.64	32.23	29.64
	Median	35.00	53.50	33.00	17.50	54.50	18.50	35.50	44.00	32.00	11.00
	IQR	44.00	62.75	37.25	31.75	67.50	61.00	59.00	67.00	63.00	30.00
Jiansu	Mean	43.94	43.94	33.89	30.78	40.06	30.61	42.67	37.72	34.72	35.44

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
(JS)	Sd	24.98	27.06	23.53	25.61	26.88	25.90	26.77	20.70	25.05	25.79
	Median	23.50	42.00	22.00	17.00	34.00	24.50	44.50	33.50	27.00	31.50
	IQR	31.75	51.00	40.25	32.75	52.75	40.50	51.25	39.25	46.00	49.00
Jiangxi (JX)	Mean	48.89	48.89	46.11	43.61	59.56	43.78	60.00	57.33	50.50	46.28
	Sd	28.83	28.91	29.37	26.82	23.75	26.95	25.44	27.29	28.93	29.30
	Median	29.50	51.00	44.00	43.50	63.00	41.50	54.50	64.00	55.50	52.00
	IQR	51.75	50.75	51.50	48.00	31.50	43.75	39.25	48.00	43.50	50.50
Shandong (SD)	Mean	42.05	42.05	30.95	26.75	42.10	28.45	37.10	42.25	28.45	33.15
	Sd	23.32	24.90	25.58	27.52	28.66	23.93	27.30	26.15	22.61	24.88
	Median	27.00	43.50	22.00	14.00	40.50	20.50	31.00	43.50	19.50	24.50
	IQR	33.50	45.75	43.25	41.50	37.25	39.00	50.25	45.75	30.75	37.50
Shanxi (SX)	Mean	31.96	31.96	33.26	34.70	33.30	35.43	44.57	46.78	45.70	37.00
	Sd	21.30	22.85	28.67	27.91	22.20	25.62	26.97	20.49	26.82	26.09
	Median	28.00	35.00	27.00	24.00	25.00	38.00	40.00	46.00	45.00	39.00
	IQR	43.00	37.00	32.00	48.00	29.00	36.00	49.00	31.00	47.00	42.00
Shaanxi (SHX)	Mean	38.11	38.11	33.89	30.61	45.94	42.39	44.39	47.67	40.67	43.56
	Sd	24.15	30.08	26.85	28.08	28.25	32.16	25.71	23.25	30.62	24.30
	Median	34.00	32.00	21.50	20.00	44.00	39.00	46.00	55.00	26.50	39.00
	IQR	41.75	49.00	48.75	58.00	45.50	59.50	51.00	44.50	59.75	47.75
Shanghai (SH)	Mean	43.38	43.38	37.19	40.12	39.00	35.85	48.73	45.15	38.96	39.77
	Sd	23.09	24.67	24.03	28.63	20.26	25.85	24.14	24.35	22.99	25.36
	Median	37.50	39.50	34.50	48.00	32.50	34.00	54.50	40.50	38.00	42.00
	IQR	37.00	26.50	43.25	51.50	35.75	43.00	34.00	36.50	40.25	45.50
Tianjing (TJ)	Mean	43.27	43.27	28.33	25.73	32.87	25.47	39.20	38.07	30.00	31.67
	Sd	33.26	28.97	26.97	29.34	23.06	28.15	31.47	26.39	31.46	25.82
	Median	33.00	35.00	24.00	19.00	30.00	21.00	36.00	39.00	19.00	29.00
	IQR	59.00	40.00	32.00	41.00	43.00	47.00	56.00	37.00	32.00	37.00
Zhejiang (ZJ)	Mean	46.00	46.00	45.79	37.54	51.17	37.58	46.58	48.58	43.17	40.46
	Sd	28.69	30.44	32.29	28.96	28.24	31.48	27.15	29.56	30.91	31.77

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
	Median	29.00	48.50	45.50	29.00	58.50	28.50	43.50	52.50	37.50	30.50
	IQR	43.75	55.75	64.50	36.75	45.00	52.50	45.75	44.25	56.50	52.25
Chongqing (CQ)	Mean	39.13	39.13	45.73	36.73	41.07	28.87	40.93	45.73	41.53	32.33
	Sd	23.41	21.79	27.18	31.64	18.16	24.70	22.15	20.47	23.04	25.99
	Median	33.00	37.00	38.00	32.00	41.00	22.00	35.00	49.00	37.00	23.00
	IQR	36.00	37.00	47.00	44.00	40.00	27.00	27.00	35.00	33.00	30.00

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Appendix XXIV: Results for descriptive statistics (ES and EDS of Park by provinces)

Descriptive statistics results of ecosystem services of parks by provinces (n=2,262)

Province	items	Tim*	Fir*	Wil*	Wat*	Air*	Car*	Hab*	Spi*	Edu*	Rec*	Hum	Nat*	Emp*	Aes*	Noi*	Tem*
AnHui (AH)	Mean	35.55	26.82	36.34	68.53	80.56	71.37	65.65	74.60	65.36	77.48	82.58	64.42	54.87	76.36	68.02	72.52
	SD	30.13	27.16	30.27	28.46	20.68	25.99	30.31	28.14	31.80	23.42	22.48	30.22	31.26	22.72	26.09	26.77
	Median	22.50	19.00	25.50	78.00	84.50	79.00	72.00	85.00	78.00	82.00	89.50	72.00	60.00	81.00	73.50	80.00
	IQR	48.50	32.25	51.50	51.75	29.00	37.25	53.25	33.25	49.25	35.25	22.25	50.00	55.00	29.50	33.50	39.25
BeiJing (BJ)	Mean	23.75	17.21	25.87	64.71	79.34	70.61	63.69	74.39	64.14	78.45	81.69	58.07	53.27	77.80	68.05	71.60
	SD	29.68	23.87	29.97	29.13	21.21	24.56	28.03	24.74	28.94	24.16	20.95	31.15	29.32	22.05	24.46	25.45
	Median	10.00	5.00	12.00	70.00	83.00	79.00	70.00	81.00	70.00	88.00	87.00	64.00	57.00	82.00	73.00	79.00
	IQR	42.00	23.00	47.00	49.00	27.00	33.00	46.00	38.00	39.00	35.00	24.00	52.00	44.00	31.00	32.00	35.00
FuJian (FJ)	Mean	34.03	28.91	34.16	71.06	80.10	73.71	64.04	74.43	66.55	75.62	81.29	67.64	54.07	79.57	67.33	70.83
	SD	32.91	31.33	31.13	28.39	22.67	27.51	30.45	23.95	30.20	25.18	21.10	28.67	32.21	20.05	27.51	29.02
	Median	21.00	20.00	21.00	79.00	85.00	81.00	72.00	79.00	78.00	81.00	84.00	78.00	59.00	81.00	72.00	80.00
	IQR	59.00	42.00	48.00	37.00	27.00	40.00	52.00	34.00	43.00	28.00	25.00	49.00	59.00	26.00	32.00	36.00
GuangDong (GD)	Mean	25.50	20.66	23.89	64.28	75.06	66.29	58.13	63.85	57.97	68.91	78.69	58.30	48.65	68.55	56.46	66.34
	SD	27.56	23.97	26.24	27.00	24.37	25.47	27.57	24.54	25.40	26.54	21.39	27.55	25.03	24.43	26.51	25.02
	Median	18.00	12.50	18.50	69.50	84.00	73.50	62.00	69.50	60.00	75.00	84.50	59.00	52.50	72.50	61.50	73.00
	IQR	41.75	28.25	33.50	35.50	34.25	37.50	39.75	33.00	35.75	37.75	29.00	43.75	34.75	31.25	42.75	36.25
GuangXi (GX)	Mean	36.67	30.78	38.68	69.70	82.33	66.98	65.20	72.10	64.69	75.76	82.80	63.54	57.85	78.35	67.23	71.54
	Sd	32.18	29.11	32.31	28.75	22.50	29.27	30.34	27.10	31.30	25.78	21.67	30.96	29.70	23.04	29.37	26.91
	Median	26.00	21.00	35.00	78.00	90.00	78.00	74.00	79.00	70.00	80.00	90.00	71.00	61.00	81.00	74.00	77.00
	IQR	51.00	49.00	61.00	44.00	25.00	43.00	51.00	40.00	50.00	38.00	24.00	44.00	49.00	31.00	43.00	42.00
HeBei (HEB)	Mean	26.42	22.35	29.69	62.22	74.41	62.11	56.63	70.07	56.56	77.43	79.03	49.79	50.11	74.03	57.32	63.46
	SD	28.55	27.20	30.19	28.48	24.56	29.18	30.64	25.39	31.86	23.55	21.90	30.06	29.89	23.22	29.24	28.35
	Median	19.00	12.00	20.00	61.00	80.00	65.00	60.00	75.00	60.00	81.00	86.00	54.00	46.00	78.00	58.00	70.00
	IQR	39.00	34.50	42.50	46.50	31.00	47.50	52.50	41.50	56.00	37.00	31.00	51.50	50.50	35.00	42.50	42.50
HeNan (HEN)	Mean	30.76	27.30	32.59	65.12	77.82	66.98	60.34	71.70	59.66	75.61	78.30	61.92	51.16	75.99	67.30	69.34
	SD	29.94	28.86	31.12	31.28	24.28	30.04	31.13	26.88	31.63	26.30	25.20	30.86	30.78	25.43	28.65	29.12
	Median	21.00	19.00	20.00	72.00	84.00	78.00	62.00	76.00	61.00	83.00	86.00	63.00	50.00	82.00	71.00	78.00

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	IQR	42.00	36.00	43.00	53.00	39.50	60.00	56.50	37.00	54.50	40.00	37.00	50.00	55.00	38.00	50.50	50.00
HuBei (HUB)	Mean	26.89	26.56	30.73	65.20	76.70	65.62	59.52	70.58	61.94	76.17	77.82	57.14	53.10	76.19	64.18	68.01
	SD	27.10	27.07	28.19	27.22	23.89	29.19	29.87	25.35	28.65	25.36	24.99	29.90	30.58	25.59	28.28	28.76
	Median	19.50	20.00	21.00	74.00	83.00	74.50	63.00	79.00	65.50	80.00	84.50	61.50	60.00	81.00	68.50	76.00
	IQR	39.00	36.25	45.75	43.50	38.00	41.00	42.25	34.00	43.25	37.25	32.25	46.50	55.00	28.75	35.25	45.00
HuNan (HUN)	Mean	30.87	21.73	31.77	67.35	78.27	67.90	66.43	72.03	59.54	70.96	79.37	62.26	51.26	73.93	65.87	70.81
	SD	29.65	23.51	29.04	27.25	22.56	28.54	29.21	24.94	30.57	24.53	21.53	31.44	30.95	24.13	28.28	26.47
	Median	21.00	15.00	23.00	75.00	82.00	73.00	72.00	78.00	62.00	77.00	82.00	65.00	57.00	79.00	70.00	78.00
	IQR	52.00	30.00	52.00	42.00	38.00	53.00	55.00	36.00	47.00	37.00	29.00	53.00	57.00	39.00	40.00	47.00
JiangSu (JS)	Mean	24.79	19.98	29.60	64.45	78.36	66.69	59.43	70.84	59.54	77.50	79.72	58.27	53.39	73.91	68.96	71.12
	SD	25.42	23.69	30.12	28.94	21.41	27.16	30.67	24.45	30.20	22.70	23.16	31.76	29.65	23.65	24.34	25.24
	Median	16.00	12.00	20.00	68.00	85.00	71.00	62.00	78.00	65.00	81.00	85.00	66.00	54.00	80.00	73.00	77.00
	IQR	37.00	29.00	40.50	47.00	30.00	44.00	53.50	39.50	54.50	31.00	28.00	53.50	51.00	27.50	36.00	32.50
JiangXi (JX)	Mean	38.23	28.96	35.93	67.63	76.68	67.58	65.87	72.57	63.66	75.55	79.05	63.63	54.29	74.41	64.71	69.78
	SD	33.53	29.87	32.01	28.39	25.93	28.66	29.98	25.54	30.35	23.00	22.71	31.96	28.84	24.32	30.27	26.59
	Median	22.00	20.00	23.00	77.00	81.00	76.00	78.00	79.00	70.00	79.00	86.00	72.00	53.00	80.00	74.00	79.00
	IQR	65.00	39.00	49.00	41.00	30.00	44.00	52.00	42.00	48.00	30.00	30.00	62.00	50.00	35.00	52.00	32.00
ShanDong (SD)	Mean	27.90	24.17	26.01	68.34	80.29	68.28	59.66	70.28	63.13	77.57	81.72	59.22	52.66	78.45	65.38	72.39
	SD	30.67	27.60	27.06	27.03	21.19	27.88	29.98	23.01	27.91	22.93	18.10	28.62	28.63	19.92	25.28	22.46
	Median	19.50	11.50	16.50	76.00	85.50	73.00	61.50	76.00	67.00	84.00	84.00	62.00	56.00	82.50	65.50	75.00
	IQR	50.75	38.75	40.00	44.75	32.75	38.50	48.75	30.75	36.50	36.00	27.75	45.00	47.75	26.75	37.00	31.75
ShanXi (SX)	Mean	30.25	27.83	31.92	68.26	79.75	71.75	63.96	69.94	60.89	74.00	80.83	63.43	54.63	77.46	68.89	71.54
	SD	31.81	32.12	32.95	30.87	24.92	29.19	32.35	27.80	32.32	27.03	23.09	31.68	33.20	24.86	29.62	26.39
	Median	20.00	13.50	20.00	79.00	87.50	81.00	70.50	79.00	63.50	81.50	88.50	71.00	53.00	82.50	74.00	78.00
	IQR	43.50	38.00	52.25	54.00	28.25	43.00	58.25	42.75	61.25	40.00	29.00	52.50	60.75	40.00	55.50	44.25
ShaanXi (SHX)	Mean	32.41	29.42	32.94	67.88	77.33	65.65	60.81	72.03	57.28	76.89	78.86	59.45	52.65	76.65	62.45	66.72
	SD	30.81	30.18	30.83	28.91	26.21	28.66	31.73	25.38	29.82	24.46	24.83	31.34	28.64	24.17	27.37	26.84
	Median	21.00	19.00	24.00	72.00	87.00	74.00	66.00	78.00	60.00	83.00	87.00	62.00	54.00	80.00	63.00	73.00
	IQR	51.50	50.00	50.50	40.00	38.50	46.50	50.50	39.00	44.00	36.50	36.50	50.50	47.50	39.00	40.50	41.50
ShangHai (SH)	Mean	18.85	16.69	21.21	55.90	74.27	62.62	57.33	65.83	57.63	72.52	79.89	47.73	45.27	73.52	62.01	61.20
	SD	24.72	23.80	26.84	29.83	24.39	28.96	29.41	26.64	30.55	26.58	21.66	29.84	29.27	23.84	27.77	28.59

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	Median	9.00	7.00	10.00	60.00	80.00	70.00	60.00	71.00	62.50	80.50	85.50	50.50	49.50	79.50	67.00	70.00
	IQR	25.00	21.00	34.75	49.50	32.50	42.25	41.50	38.50	42.75	35.75	28.00	51.50	49.75	31.50	39.50	46.00
TianJing (TJ)	Mean	30.62	24.52	30.27	60.48	76.70	67.27	60.32	68.04	61.53	76.30	81.13	57.52	50.79	76.50	65.54	66.81
	SD	31.10	27.69	28.86	31.57	23.80	27.43	31.14	27.21	30.47	24.77	23.13	32.27	29.87	24.83	29.87	27.64
	Median	21.00	14.00	21.00	67.50	81.50	76.00	68.00	76.50	65.00	82.50	89.00	60.00	51.00	84.00	77.50	74.00
	IQR	49.00	37.00	41.00	53.25	35.50	43.25	49.75	38.75	50.75	37.50	26.75	55.00	52.75	38.25	46.50	39.50
ZheJiang (ZJ)	Mean	28.49	23.27	31.82	68.68	76.42	68.09	63.70	72.66	59.49	72.47	77.24	57.85	52.54	75.08	60.38	64.56
	SD	29.78	27.36	29.63	27.44	23.60	27.22	27.82	24.58	30.13	22.96	25.76	30.39	30.37	22.34	28.72	26.96
	Median	20.00	13.00	22.00	74.00	81.00	75.00	69.00	79.00	62.00	78.00	87.00	62.00	55.00	80.00	63.00	71.00
	IQR	49.00	36.00	49.00	45.00	37.50	37.00	43.50	30.50	47.50	30.50	34.00	49.00	48.00	31.00	43.50	38.50
ChongQing (CQ)	Mean	30.24	25.44	33.04	66.12	76.49	68.84	59.57	71.62	63.96	76.48	79.53	61.14	54.92	77.32	67.53	73.71
	SD	27.56	25.31	28.66	26.87	21.99	26.68	29.11	23.69	25.81	21.46	21.80	28.87	25.94	21.37	25.55	23.52
	Median	21.00	18.00	23.00	70.50	79.00	72.00	61.50	77.00	65.00	80.00	83.50	63.50	59.00	80.00	73.00	79.00
	IQR	49.00	33.75	46.50	50.00	35.00	46.00	44.75	30.75	38.25	37.50	32.50	44.25	40.00	30.00	33.25	31.75

Notes: 1) Abbreviations Tim for Timber, Fir for Firewood, Wil for Wild food, Wat for Water quality and erosion, Air for Air quality, Car for Carbon storage, Hab for Habitat, Spi for Spiritual and cultural, Edu for Education, Rec for Recreation, Hum for Human health, Nat for Natural hazard protection, Emp for Employment, Aes for Aesthetics, Noi for Noise reduction, Tem for Temperature reduction. 2) * means the significance different of ecosystem services value among the provinces by Kruskal-Walis test.

Descriptive statistics results of ecosystem disservices of parks by provinces (n=168)

Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
Anhui (AH)	Mean	20.70	27.50	19.80	17.00	30.20	18.50	36.50	39.10	29.20	30.20
	Sd	18.28	28.77	15.67	13.73	21.30	17.19	21.29	23.19	20.35	27.02
	Median	19.50	16.00	15.50	10.00	28.50	12.50	36.00	39.00	29.00	27.50
	IQR	22.25	37.75	33.00	15.50	40.50	18.25	38.00	35.75	43.25	44.25
Beijing (BJ)	Mean	35.93	41.80	29.73	36.07	41.93	38.67	42.60	47.27	32.33	36.20
	Sd	33.91	33.04	32.41	36.38	30.87	37.41	32.94	31.98	33.39	42.74
	Median	25.00	48.00	22.00	21.00	30.00	27.00	32.00	42.00	25.00	12.00
	IQR	65.00	70.00	52.00	71.00	62.00	80.00	58.00	59.00	56.00	90.00

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
Fujian (FJ)	Mean	28.67	45.00	30.67	14.00	40.50	24.17	48.50	45.33	38.50	30.83
	Sd	28.23	30.72	25.73	16.98	26.58	24.14	31.24	28.49	27.98	20.82
	Median	23.00	44.50	26.50	9.50	44.00	19.50	61.50	48.50	35.00	30.00
	IQR	51.00	59.75	55.25	26.25	49.25	45.00	56.00	55.75	55.25	24.25
Guangdong (GD)	Mean	35.00	37.36	40.82	36.64	41.36	37.64	43.18	46.00	33.27	47.45
	Sd	26.42	25.77	27.24	24.45	21.75	27.30	24.53	24.77	19.22	23.28
	Median	29.00	37.00	36.00	34.00	35.00	42.00	39.00	47.00	35.00	45.00
	IQR	48.00	47.00	48.00	42.00	39.00	54.00	42.00	48.00	20.00	50.00
Guangxi (GX)	Mean	26.00	29.50	31.17	27.50	33.33	27.17	40.33	31.00	30.17	30.00
	Sd	18.86	21.30	16.22	22.61	19.00	20.83	20.60	14.90	24.93	20.76
	Median	26.50	35.50	37.00	26.00	39.00	25.00	34.00	34.00	28.50	33.50
	IQR	36.25	37.50	21.25	38.25	32.00	37.75	21.00	28.00	42.50	40.75
Hebei (HEB)	Mean	24.47	38.82	33.71	35.47	44.59	28.12	37.41	45.29	30.06	28.65
	Sd	19.44	22.41	23.25	31.41	24.26	23.62	26.13	22.05	22.69	25.30
	Median	24.00	42.00	35.00	26.00	50.00	27.00	36.00	47.00	22.00	23.00
	IQR	37.50	40.50	39.00	65.50	31.00	42.00	45.50	38.00	31.00	34.00
Henan (HEN)	Mean	29.09	39.45	31.55	33.73	40.00	27.73	34.82	31.18	30.82	29.55
	Sd	17.29	18.99	17.91	27.74	27.81	19.96	14.91	16.19	19.58	23.47
	Median	27.00	42.00	37.00	23.00	35.00	19.00	38.00	27.00	39.00	20.00
	IQR	26.00	41.00	29.00	41.00	43.00	35.00	29.00	27.00	31.00	40.00
Hubei (HUB)	Mean	41.09	42.27	51.45	32.36	53.09	35.64	49.36	36.55	48.27	42.45
	Sd	22.16	32.27	24.70	27.48	24.48	30.55	25.62	30.27	34.68	31.24
	Median	39.00	37.00	47.00	28.00	56.00	42.00	48.00	28.00	63.00	51.00
	IQR	22.00	59.00	36.00	50.00	42.00	47.00	37.00	56.00	62.00	60.00
Hunan (HUN)	Mean	22.75	38.25	30.25	25.38	34.00	18.75	45.50	40.63	27.75	17.13
	Sd	16.74	30.73	24.60	26.52	25.39	12.87	30.39	34.76	25.95	16.18
	Median	22.00	31.00	26.00	18.50	34.00	21.00	46.00	33.50	23.50	10.50
	IQR	30.50	44.50	40.25	27.00	53.00	26.25	60.50	62.75	45.75	28.75
Jiansu	Mean	21.43	29.43	20.14	18.43	31.86	16.57	34.43	33.43	14.14	22.29

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
(JS)	Sd	23.92	27.37	21.72	16.71	19.29	14.49	21.88	32.72	14.06	20.61
	Median	12.00	18.00	14.00	16.00	38.00	10.00	25.00	11.00	14.00	20.00
	IQR	10.00	55.00	28.00	32.00	40.00	28.00	44.00	56.00	16.00	26.00
Jiangxi (JX)	Mean	42.17	46.00	34.83	28.33	27.33	24.50	37.50	37.00	31.67	28.83
	Sd	19.83	28.15	25.58	27.05	23.13	25.74	30.63	24.36	25.13	27.59
	Median	44.50	55.00	37.00	25.50	25.00	17.00	45.00	36.00	28.00	23.00
	IQR	31.50	49.50	47.75	52.75	47.50	49.25	63.75	37.50	50.50	49.75
Shandong (SD)	Mean	46.00	61.00	57.67	37.67	39.00	46.00	42.33	56.67	42.67	44.33
	Sd	12.49	30.64	13.58	24.79	19.08	24.25	36.83	10.26	29.26	30.24
	Median	42.00	48.00	65.00	42.00	49.00	60.00	60.00	54.00	57.00	56.00
	IQR	-	-	-	-	-	-	-	-	-	-
Shanxi (SX)	Mean	46.33	47.50	55.00	40.83	44.67	31.33	62.33	54.83	40.33	34.67
	Sd	29.82	28.26	27.46	36.36	33.36	22.46	18.47	22.46	28.89	31.82
	Median	42.50	52.50	51.00	24.00	43.00	22.50	64.00	47.00	41.50	28.50
	IQR	60.25	42.50	56.50	69.25	65.50	27.25	34.00	40.25	52.25	65.75
Shaanxi (SHX)	Mean	45.60	59.20	51.40	42.80	57.60	39.60	58.80	43.00	47.80	54.00
	Sd	40.07	31.95	36.78	49.47	43.59	43.55	40.52	31.41	34.43	40.99
	Median	32.00	46.00	42.00	22.00	83.00	21.00	71.00	50.00	31.00	72.00
	IQR	77.00	60.00	72.50	96.00	80.50	84.50	79.50	60.50	66.00	78.00
Shanghai (SH)	Mean	26.67	41.89	35.56	29.67	35.78	28.11	46.22	37.67	24.56	27.00
	Sd	25.30	35.13	29.64	26.66	23.93	29.80	24.04	22.95	24.68	28.61
	Median	22.00	28.00	26.00	26.00	28.00	18.00	53.00	25.00	23.00	24.00
	IQR	38.50	61.50	49.00	52.00	22.50	46.00	34.00	29.00	33.50	38.00
Tianjing (TJ)	Mean	36.31	42.54	40.31	38.08	42.54	33.92	47.69	46.15	40.23	42.85
	Sd	28.87	32.46	32.52	33.59	29.36	29.28	38.53	32.57	37.74	35.34
	Median	36.00	46.00	49.00	34.00	43.00	31.00	48.00	42.00	22.00	39.00
	IQR	37.50	60.50	54.00	59.50	38.50	56.50	79.00	61.00	71.50	72.50
Zhejiang (ZJ)	Mean	26.00	39.88	35.06	32.25	37.19	26.75	46.25	51.81	29.69	27.06
	Sd	22.68	27.60	21.68	28.75	28.90	25.15	27.16	22.23	22.14	18.80

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
	Median	24.50	33.00	33.00	20.00	34.50	21.50	46.50	57.50	29.50	25.50
	IQR	21.75	53.50	31.25	49.50	46.50	41.25	38.00	38.50	22.00	30.25
Chongqing (CQ)	Mean	46.50	44.38	40.75	37.38	48.25	34.38	46.50	53.50	37.50	31.75
	Sd	32.95	29.36	30.56	33.67	32.35	32.35	24.73	26.67	34.28	31.05
	Median	55.00	47.50	41.50	26.00	42.00	18.00	38.00	56.00	32.00	14.50
	IQR	48.75	35.50	53.50	56.75	57.75	52.25	32.50	41.75	62.75	56.25

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Appendix XXV: Results for descriptive statistics (ES and EDS of general forest/park by provinces)

Descriptive statistics results of ecosystem services of general forest/park by provinces (n=803)

Province	items	Tim*	Fir*	Wil*	Wat*	Air*	Car*	Hab*	Spi*	Edu*	Rec*	Hum	Nat*	Emp*	Aes*	Noi*	Tem*
AnHui (AH)	Mean	59.05	46.84	60.16	80.18	85.66	80.03	84.55	69.74	68.18	62.55	72.61	77.84	65.76	70.18	76.18	75.29
	SD	33.43	37.03	30.77	29.83	25.44	29.00	24.06	28.29	30.51	29.35	28.15	28.54	30.48	28.57	28.48	29.87
	Median	60.00	36.00	60.50	94.50	99.00	96.50	96.50	75.50	77.00	66.00	78.50	93.00	69.00	74.00	82.50	89.50
	IQR	61.50	75.00	47.75	26.50	19.50	25.00	22.00	51.75	51.75	43.50	44.50	36.25	58.25	43.00	38.25	48.50
BeiJing (BJ)	Mean	53.56	33.12	53.26	78.15	85.59	79.94	73.47	57.82	57.94	62.68	75.50	74.06	58.76	64.71	63.74	77.06
	SD	35.26	30.31	30.09	26.90	17.53	22.53	27.74	25.47	29.22	26.88	24.80	27.08	28.24	27.36	25.48	23.27
	Median	62.00	21.50	54.00	89.00	93.00	85.50	80.00	56.50	60.00	65.00	80.00	81.50	60.00	66.00	67.00	85.50
	IQR	62.00	58.50	44.75	38.50	21.75	31.50	43.50	35.50	44.75	44.75	30.25	49.25	50.75	54.25	40.25	38.25
FuJian (FJ)	Mean	61.37	48.39	65.25	76.35	80.98	74.73	73.94	67.24	67.88	64.18	70.96	76.80	66.63	72.80	70.22	75.43
	SD	30.23	32.33	30.63	27.86	25.28	26.55	27.99	28.20	27.89	30.89	27.15	25.96	27.71	26.75	27.58	25.93
	Median	61.00	40.00	69.00	85.00	92.00	80.00	80.00	74.00	71.00	70.00	77.00	83.00	73.00	73.00	79.00	78.00
	IQR	45.00	56.00	60.00	40.00	25.00	43.00	45.00	54.00	51.00	56.00	45.00	40.00	52.00	39.00	48.00	40.00
GuangDong (GD)	Mean	74.91	61.03	70.17	81.54	87.97	83.20	82.40	60.77	60.86	55.03	78.31	85.74	61.97	73.46	72.11	79.91
	SD	22.27	29.34	25.55	25.29	20.47	22.10	19.88	24.42	26.74	26.78	19.56	18.22	26.65	24.16	24.74	24.81
	Median	80.00	72.00	80.00	93.00	100.00	94.00	85.00	66.00	60.00	52.00	80.00	91.00	64.00	82.00	79.00	86.00
	IQR	29.00	42.00	40.00	27.00	21.00	26.00	27.00	36.00	38.00	34.00	32.00	20.00	43.00	36.00	41.00	24.00
GuangXi (GX)	Mean	64.90	48.31	62.26	77.87	84.32	78.08	77.21	63.73	63.18	60.21	71.34	75.17	58.18	71.71	66.97	74.68
	Sd	29.64	33.00	28.53	25.48	23.20	24.85	28.03	29.68	29.73	31.37	23.77	25.01	29.13	25.76	29.71	27.06
	Median	70.00	52.00	61.00	82.00	98.00	81.00	86.00	62.00	66.00	60.00	72.00	80.00	59.00	76.00	68.00	79.00
	IQR	52.50	58.00	41.00	39.00	21.00	38.00	36.00	58.00	48.50	56.00	38.50	40.00	41.50	42.50	55.50	38.00
HeBei (HEB)	Mean	69.65	40.21	63.79	78.38	82.24	73.09	75.91	56.68	55.41	55.88	75.26	69.82	54.59	68.56	58.50	75.47
	SD	28.64	31.70	28.54	26.55	24.11	28.90	23.46	27.75	27.87	27.06	21.31	28.11	29.71	27.44	25.53	24.92
	Median	70.50	37.00	61.50	83.00	94.00	84.50	82.50	58.50	50.00	59.00	76.00	73.50	57.50	74.00	60.00	81.00
	IQR	40.25	50.75	46.00	29.25	30.75	47.25	39.25	41.50	41.00	47.00	37.25	37.50	51.75	47.00	45.50	39.50
HeNan (HEN)	Mean	69.80	52.40	68.09	81.31	86.67	80.29	80.22	69.67	70.00	66.96	78.24	81.71	73.38	79.58	75.02	78.04
	SD	28.26	31.78	28.79	25.61	18.27	21.99	26.19	26.35	26.18	29.92	22.16	22.62	21.63	24.40	25.23	23.75
	Median	79.00	51.00	78.00	96.00	97.00	83.00	95.00	71.00	74.00	75.00	83.00	88.00	75.00	87.00	80.00	83.00

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	IQR	40.50	59.00	50.00	32.00	22.00	37.50	37.50	43.50	47.50	47.50	40.00	30.00	31.50	27.50	44.00	35.50
HuBei (HUB)	Mean	69.91	59.50	72.16	86.25	88.31	84.91	85.69	73.69	68.66	64.47	80.19	87.38	75.47	75.78	75.56	84.78
	SD	29.28	34.16	25.65	24.41	21.74	22.79	22.67	24.38	26.28	28.68	20.77	19.55	25.14	24.06	21.46	18.37
	Median	76.50	62.50	78.50	100.00	100.00	98.00	98.50	78.50	76.00	68.50	79.00	99.00	81.00	78.50	77.50	93.50
	IQR	45.50	71.25	48.50	12.50	9.75	22.50	18.50	45.75	41.50	41.25	31.50	21.50	41.50	33.75	38.00	27.75
HuNan (HUN)	Mean	60.40	46.86	62.84	78.63	87.63	77.67	77.30	68.95	67.51	64.40	77.02	81.00	62.51	77.09	72.88	76.26
	SD	31.15	31.49	29.51	26.37	23.64	25.00	27.04	28.75	28.27	28.03	27.96	25.34	31.65	26.69	25.84	25.74
	Median	61.00	41.00	69.00	90.00	100.00	85.00	86.00	72.00	72.00	66.00	88.00	91.00	65.00	84.00	82.00	85.00
	IQR	60.00	58.00	56.00	40.00	11.00	39.00	36.00	57.00	54.00	52.00	39.00	24.00	55.00	31.00	32.00	40.00
JiangSu (JS)	Mean	59.42	38.39	55.06	72.09	83.06	75.91	73.33	58.91	56.64	50.88	74.58	74.36	56.97	72.82	66.82	68.00
	SD	26.67	29.91	28.57	25.28	20.62	25.49	28.39	33.02	26.94	30.81	21.30	25.96	30.99	27.77	29.09	28.66
	Median	60.00	25.00	59.00	77.00	92.00	85.00	80.00	69.00	57.00	43.00	79.00	81.00	57.00	79.00	76.00	77.00
	IQR	40.00	44.00	51.00	40.50	25.50	38.50	40.00	72.00	40.50	51.00	30.50	42.50	61.00	41.50	64.50	55.50
JiangXi (JX)	Mean	67.66	50.98	65.77	84.09	89.89	83.14	79.34	76.30	68.07	67.64	83.82	83.86	69.16	74.59	74.91	81.09
	SD	25.88	31.45	28.31	20.92	15.68	21.50	24.32	21.48	26.55	23.95	19.45	20.24	26.00	25.04	22.56	21.83
	Median	74.50	40.50	64.00	97.50	100.00	95.50	90.00	76.00	63.50	61.50	91.00	91.00	70.00	79.50	78.50	89.50
	IQR	42.00	54.25	58.25	35.00	20.00	29.75	39.00	40.75	51.75	50.25	25.00	24.25	56.25	39.75	39.75	37.50
ShanDong (SD)	Mean	72.42	43.21	59.09	85.94	85.85	83.48	79.12	76.45	67.70	62.36	78.61	83.33	66.06	71.48	80.12	82.03
	SD	23.26	30.79	30.72	20.46	21.31	23.91	24.69	24.30	24.82	28.85	20.74	19.72	25.67	26.49	20.77	21.03
	Median	79.00	38.00	61.00	99.00	98.00	97.00	89.00	80.00	66.00	66.00	81.00	90.00	69.00	80.00	83.00	90.00
	IQR	33.00	50.50	53.50	22.00	24.00	29.50	35.50	41.50	45.50	48.00	36.50	23.50	44.50	41.00	32.50	31.00
ShanXi (SX)	Mean	63.00	45.04	57.84	79.89	83.00	77.39	78.84	68.04	66.44	63.88	80.42	79.26	64.19	75.88	74.11	78.88
	SD	34.70	34.04	31.13	27.18	24.86	28.33	26.15	31.21	28.70	26.39	20.99	24.51	28.01	22.91	21.70	24.08
	Median	73.00	39.00	57.00	97.00	97.00	92.00	90.00	80.00	71.00	61.00	81.00	90.00	60.00	79.00	75.00	84.00
	IQR	72.00	60.00	51.50	34.50	27.50	50.00	39.50	57.50	48.00	41.00	27.50	39.50	44.50	40.00	41.00	31.50
ShaanXi (SHX)	Mean	59.98	43.92	58.30	82.10	89.60	80.64	78.78	67.34	65.66	64.04	80.24	83.68	64.58	78.04	77.94	80.90
	SD	28.56	32.60	31.60	26.05	19.39	24.55	26.39	27.67	30.62	28.20	23.01	21.43	28.26	20.73	22.99	23.66
	Median	60.00	36.50	61.00	93.00	99.00	89.50	86.00	76.50	77.50	68.00	85.50	94.00	70.00	80.00	81.50	92.50
	IQR	48.00	60.00	59.75	23.00	14.25	26.25	28.50	48.00	53.50	43.50	34.25	23.00	48.25	40.25	37.00	28.50
ShangHai (SH)	Mean	63.76	39.78	58.05	80.61	83.44	77.39	76.98	53.07	58.54	49.90	67.07	75.63	55.85	65.80	64.98	72.02
	SD	27.89	32.40	27.27	23.18	21.25	26.06	22.49	29.92	26.18	27.93	27.14	27.95	28.52	29.42	28.67	28.45

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	Median	74.00	29.00	60.00	84.00	93.00	84.00	79.00	50.00	60.00	45.00	72.00	85.00	59.00	74.00	70.00	81.00
	IQR	39.00	58.50	41.50	29.00	28.50	34.00	35.50	55.50	37.00	48.00	30.50	34.00	52.00	28.00	49.50	38.50
TianJing (TJ)	Mean	64.45	45.16	65.65	82.41	84.71	85.35	80.69	65.02	58.92	60.88	73.65	82.88	60.29	72.29	67.71	75.67
	SD	32.27	36.54	32.14	26.88	24.05	22.01	25.99	30.98	33.67	32.53	27.86	24.50	31.59	28.04	27.59	26.94
	Median	61.00	33.00	75.00	100.00	100.00	100.00	97.00	66.00	60.00	62.00	81.00	100.00	61.00	80.00	64.00	86.00
	IQR	60.00	68.00	62.00	39.00	20.00	24.00	40.00	60.00	69.00	57.00	41.00	39.00	60.00	40.00	50.00	41.00
ZheJiang (ZJ)	Mean	73.15	49.83	68.60	87.28	91.23	84.09	83.72	65.77	66.62	57.87	75.91	87.60	67.51	73.51	75.79	80.89
	SD	25.92	34.25	29.82	20.94	12.89	21.83	21.69	28.01	30.06	29.88	20.59	18.32	29.13	28.11	25.82	24.73
	Median	79.00	49.00	77.00	100.00	98.00	93.00	91.00	66.00	77.00	60.00	79.00	98.00	75.00	80.00	79.00	89.00
	IQR	42.00	61.00	48.00	21.00	17.00	24.00	22.00	48.00	42.00	48.00	30.00	21.00	51.00	41.00	34.00	25.00
ChongQing (CQ)	Mean	60.62	47.00	67.00	82.81	87.59	84.71	84.22	69.53	66.55	65.36	77.34	82.48	65.64	76.00	76.55	79.98
	SD	31.80	32.11	28.25	25.70	22.30	22.86	23.60	25.97	27.75	28.21	23.92	23.22	30.28	24.35	24.26	26.17
	Median	60.50	40.00	71.00	98.50	100.00	97.50	97.50	67.00	63.00	65.00	79.50	95.50	68.00	79.00	81.50	88.50
	IQR	62.75	59.00	47.25	22.50	15.00	23.25	29.00	51.25	53.50	55.75	35.50	35.25	60.25	39.25	41.00	25.25

Notes: 1) Abbreviations Tim for Timber, Fir for Firewood, Wil for Wild food, Wat for Water quality and erosion, Air for Air quality, Car for Carbon storage, Hab for Habitat, Spi for Spiritual and cultural, Edu for Education, Rec for Recreation, Hum for Human health, Nat for Natural hazard protection, Emp for Employment, Aes for Aesthetics, Noi for Noise reduction, Tem for Temperature reduction. 2) * means the significance different of ecosystem services value among the provinces by Kruskal-Walis test.

Descriptive statistics results of ecosystem disservices of general forest/park by provinces (n=174)

Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
Anhui (AH)	Mean	42.43	40.71	51.86	32.43	62.00	34.57	68.14	44.00	62.71	55.57
	Sd	36.62	41.86	40.47	37.50	36.19	35.69	26.37	39.10	25.46	25.02
	Median	26.00	36.00	68.00	18.00	70.00	20.00	64.00	50.00	64.00	48.00
	IQR	60.00	95.00	80.00	59.00	75.00	59.00	40.00	67.00	40.00	42.00
Beijing (BJ)	Mean	16.00	23.50	21.17	16.83	59.17	17.00	48.33	34.50	23.50	28.50
	Sd	18.21	28.29	19.79	15.52	21.81	23.63	20.61	15.60	22.84	20.14
	Median	11.50	13.00	16.50	18.00	62.50	5.50	49.00	29.00	25.00	21.00
	IQR	36.25	50.75	27.00	28.75	29.00	39.75	29.50	25.75	37.75	22.75

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
Fujian (FJ)	Mean	33.50	41.38	39.38	31.63	47.63	27.25	41.25	52.75	37.38	48.13
	Sd	14.48	25.94	17.57	17.87	19.03	14.87	28.43	36.03	33.43	37.65
	Median	31.50	47.50	36.00	32.50	44.00	22.00	27.00	47.00	29.00	39.00
	IQR	21.25	47.00	30.25	32.00	33.25	25.50	56.00	69.50	67.00	74.00
Guangdong (GD)	Mean	33.60	45.20	37.70	19.00	57.50	16.70	59.90	52.10	48.50	55.90
	Sd	33.00	24.00	26.24	13.48	25.56	18.03	24.88	30.54	36.31	31.17
	Median	22.50	44.00	31.00	20.50	63.00	9.00	72.50	60.50	52.00	62.00
	IQR	40.75	43.75	30.50	23.75	45.25	29.25	42.75	61.50	72.25	63.00
Guangxi (GX)	Mean	25.30	39.04	35.48	29.65	47.96	30.22	58.13	44.39	43.17	42.35
	Sd	24.24	32.32	28.84	29.60	30.15	27.95	24.55	30.77	25.23	28.72
	Median	18.00	36.00	30.00	21.00	50.00	22.00	55.00	39.00	44.00	40.00
	IQR	39.00	55.00	43.00	41.00	50.00	49.00	43.00	51.00	40.00	53.00
Hebei (HEB)	Mean	39.90	57.60	41.20	34.70	58.40	42.30	62.00	55.10	53.20	54.90
	Sd	27.08	28.83	21.78	28.02	33.54	30.55	34.63	25.24	33.50	22.30
	Median	38.50	60.50	41.50	27.50	54.00	45.50	74.50	64.50	56.50	59.00
	IQR	52.25	45.00	34.75	44.75	61.00	52.00	68.75	40.00	60.50	28.25
Henan (HEN)	Mean	33.17	41.83	47.33	32.00	43.50	28.67	42.50	45.67	49.50	47.00
	Sd	23.58	30.36	25.87	25.70	26.94	24.90	21.93	17.47	28.43	17.64
	Median	26.00	36.50	42.00	29.00	38.50	28.50	48.50	38.00	61.50	44.00
	IQR	35.75	37.50	48.50	49.50	46.50	40.75	38.00	30.00	44.00	30.00
Hubei (HUB)	Mean	44.38	48.69	43.69	33.15	60.31	29.85	66.62	60.08	54.15	45.38
	Sd	26.44	27.55	28.84	19.66	22.45	23.65	21.05	32.30	34.47	29.98
	Median	40.00	42.00	43.00	27.00	60.00	21.00	78.00	61.00	60.00	36.00
	IQR	47.50	44.00	52.00	32.50	36.00	49.00	38.50	57.00	74.50	58.50
Hunan (HUN)	Mean	25.88	32.50	35.88	23.38	48.75	23.88	58.88	27.75	46.25	47.25
	Sd	33.85	37.04	33.44	34.20	42.76	35.67	34.59	32.88	40.79	40.96
	Median	15.50	22.00	20.50	10.50	38.50	10.00	63.00	17.00	46.50	38.00
	IQR	39.00	59.50	48.50	37.50	86.75	44.75	74.00	38.50	86.75	84.50
Jiansu	Mean	43.00	50.40	45.40	38.80	67.80	28.60	66.80	61.80	62.40	58.40

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
(JS)	Sd	24.41	28.96	27.86	36.85	27.37	25.49	27.33	29.18	23.44	30.79
	Median	32.00	59.00	47.00	25.00	79.00	20.00	67.00	55.00	55.00	61.00
	IQR	45.50	54.50	53.00	69.50	46.00	49.50	49.50	55.00	40.50	49.50
Jiangxi (JX)	Mean	31.10	58.90	38.60	38.00	59.20	40.10	55.70	44.90	55.50	40.90
	Sd	20.76	28.07	29.76	20.07	28.99	27.11	27.43	18.30	24.40	27.07
	Median	23.00	56.00	30.50	41.50	68.50	38.00	52.00	53.00	59.00	41.50
	IQR	45.75	44.75	48.25	39.00	50.50	47.75	52.25	32.00	39.75	49.25
Shandong (SD)	Mean	44.22	34.78	42.44	41.56	43.78	28.44	54.11	60.11	49.67	62.11
	Sd	26.30	25.26	36.42	19.33	29.29	29.89	30.28	21.85	29.76	32.25
	Median	60.00	28.00	30.00	42.00	45.00	20.00	68.00	52.00	40.00	73.00
	IQR	49.50	29.00	67.50	29.00	44.00	48.00	58.00	36.00	50.00	56.00
Shanxi (SX)	Mean	40.64	47.45	31.64	33.36	49.73	34.45	44.55	28.64	40.27	45.09
	Sd	33.86	30.08	24.60	28.31	25.64	23.88	22.01	18.91	28.68	26.93
	Median	39.00	48.00	36.00	26.00	55.00	41.00	47.00	27.00	56.00	42.00
	IQR	55.00	60.00	47.00	53.00	29.00	46.00	45.00	14.00	58.00	40.00
Shaanxi (SHX)	Mean	25.33	23.83	31.17	27.50	42.50	30.33	56.83	43.50	36.33	40.83
	Sd	29.17	29.27	26.16	29.28	34.02	33.81	32.90	28.28	30.99	28.51
	Median	18.00	17.00	27.00	19.00	48.00	19.50	57.50	36.00	36.50	25.00
	IQR	41.00	40.75	25.75	32.25	68.25	63.25	68.00	52.75	49.75	56.75
Shanghai (SH)	Mean	43.57	44.57	45.71	34.00	41.71	31.57	50.86	42.57	51.43	59.00
	Sd	26.26	23.57	24.62	27.48	19.02	29.06	24.31	23.06	33.08	23.86
	Median	46.00	39.00	50.00	27.00	36.00	28.00	60.00	35.00	62.00	66.00
	IQR	54.00	37.00	46.00	51.00	25.00	55.00	35.00	42.00	54.00	51.00
Tianjing (TJ)	Mean	36.60	32.13	33.40	29.60	48.53	28.13	45.53	40.93	41.80	42.60
	Sd	26.34	22.34	21.48	27.35	30.50	29.40	32.76	32.25	32.13	36.50
	Median	38.00	38.00	36.00	22.00	46.00	15.00	41.00	40.00	34.00	41.00
	IQR	33.00	34.00	35.00	46.00	49.00	42.00	62.00	52.00	57.00	62.00
Zhejiang (ZJ)	Mean	34.63	33.63	37.88	26.88	60.63	14.00	64.13	30.25	48.75	27.38
	Sd	21.30	25.03	32.18	31.54	33.31	18.31	22.81	28.72	27.86	30.91

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues
	Median	41.50	37.00	35.00	13.00	61.50	8.50	64.50	20.00	57.00	19.00
	IQR	37.75	46.75	66.50	57.00	68.75	20.75	44.00	56.75	46.00	55.75
Chongqing (CQ)	Mean	32.58	35.50	36.92	26.58	52.67	25.17	54.92	45.08	54.67	45.33
	Sd	28.35	31.00	21.93	25.62	27.28	20.40	28.58	23.04	25.52	27.70
	Median	23.00	30.00	39.50	21.50	53.00	21.00	63.00	47.50	60.50	48.50
	IQR	60.00	55.25	30.50	48.00	49.75	34.25	52.75	34.50	50.25	51.25

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Appendix XXVI: Results for descriptive statistics (ES and EDS across all trees types)

Description of ecosystem service (ES) across all trees types (N=7,323)

Categories	Ecosystem service	Median	IQR
Provisioning ES	Firewood	13.00	36.00
	Wild food	20.00	43.00
Regulating ES	Water quality and erosion	68.00	46.00
	Air quality	85.00	31.00
	Carbon storage	78.00	36.00
	Habitat	59.00	54.00
	Natural hazard protection	67.00	46.00
	Noise reduction	79.00	35.00
	Temperature reduction	81.00	34.00
Cultural ES	Spiritual and cultural	69.00	42.00
	Recreation	68.00	48.00
	Human health	82.00	33.00
	Aesthetics	83.00	31.00

Description of ecosystem service (EDS) across all trees types (N=1,643)

Ecosystem disservice	Median	IQR
Aesthetic issues	33.00	41.00
Land use issues	35.00	41.00
Infrastructure issues	41.00	40.00
Local climate	26.00	40.00
Safety hazard	40.00	41.00
Air pollution	23.00	38.00
Health issues	43.00	46.00
Economic issues	48.00	42.00
Security issues	35.00	43.00
Environmental issues	30.00	47.00
Cleanliness issues	43.00	44.00

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Appendix XXVII: Results for descriptive statistics (ES and EDS across all trees types by provinces)

Descriptive statistics results of ecosystem services across all trees types by provinces (N=7,323)

Province	items	Fir*	Wil*	Wat*	Air*	Car*	Hab*	Spi*	Rec*	Hum*	Nat*	Aes*	Noi*	Tem*
Anhui	Median	16.00	20.00	72.00	87.00	80.00	60.00	70.00	67.00	82.00	72.00	85.00	79.00	81.00
(AH)	IQR	37.00	48.00	47.00	32.00	34.00	51.00	40.00	47.00	31.00	43.00	28.00	30.00	30.00
Beijing	Median	8.00	11.00	61.00	82.00	77.00	57.00	64.00	64.00	81.00	61.00	82.00	79.00	80.00
(BJ)	IQR	25.00	33.00	50.00	34.00	40.00	58.00	44.00	51.00	32.00	51.00	30.00	37.00	32.00
Fujian	Median	17.50	21.00	75.00	86.00	81.00	60.00	73.00	71.00	83.00	73.50	85.00	79.00	82.50
(FJ)	IQR	38.00	44.00	42.75	25.75	37.00	55.75	43.50	49.00	29.75	47.50	31.00	35.00	32.00
Guangdong	Median	13.00	16.00	63.00	85.00	75.00	53.00	64.00	63.00	78.00	64.00	80.00	76.00	79.00
(GD)	IQR	36.00	39.00	43.00	32.00	33.00	54.00	40.00	51.50	32.50	43.00	30.00	37.50	32.00
Guangxi	Median	20.50	25.50	75.00	89.50	81.00	64.50	72.50	70.50	84.00	74.50	84.00	80.00	83.00
(GX)	IQR	45.75	53.00	44.75	31.75	37.00	50.00	40.50	50.00	37.00	45.00	35.50	33.00	32.00
Hebei	Median	12.00	19.50	63.00	83.00	73.00	54.00	64.50	65.00	81.00	64.00	80.50	75.00	77.00
(HEB)	IQR	38.00	46.00	42.25	35.00	34.00	54.25	41.00	44.00	37.00	45.50	35.00	40.00	37.00
Henan	Median	12.00	20.00	68.00	85.00	78.00	55.00	68.00	62.50	80.00	65.00	82.50	79.00	82.00
(HEN)	IQR	32.50	40.00	49.00	34.25	38.00	59.00	40.00	47.25	34.25	49.00	32.00	39.00	36.00
Hubei	Median	14.00	17.00	64.00	83.00	75.00	55.00	68.00	62.00	80.00	62.00	81.00	76.00	79.00
(HUB)	IQR	37.00	41.00	43.00	32.00	39.00	55.00	39.00	51.00	31.00	45.00	33.00	34.00	34.00
Hunan	Median	12.00	18.00	69.00	86.00	79.00	58.00	68.00	64.00	82.00	66.00	84.00	80.00	79.00
(HUN)	IQR	28.00	37.00	48.00	32.00	40.00	56.00	46.00	55.00	34.00	48.00	31.00	40.00	35.00
Jiangsu	Median	12.50	20.00	68.00	85.00	79.00	60.00	69.00	66.00	83.00	70.00	83.00	80.00	82.00
(JS)	IQR	31.25	43.00	41.00	29.00	40.00	52.25	41.00	49.25	36.25	47.00	30.25	32.25	32.00
Jiangxi	Median	21.00	31.00	78.50	88.00	80.00	60.00	73.50	74.00	82.00	75.00	84.00	80.00	86.00
(JX)	IQR	46.25	56.00	44.25	28.00	39.00	54.25	47.25	49.00	35.00	42.25	33.50	37.00	33.25
Shandong	Median	11.00	16.00	72.50	86.00	78.00	58.50	71.00	72.00	84.00	68.00	85.00	80.00	82.00
(SD)	IQR	25.25	35.25	40.50	27.25	33.00	55.00	40.00	49.00	30.25	45.00	30.25	35.00	33.00
Shanxi	Median	16.00	21.00	72.50	86.00	79.00	64.00	74.00	74.50	85.00	69.50	85.00	80.00	81.00
(SX)	IQR	36.00	50.25	48.00	28.25	37.00	53.25	41.00	44.00	35.00	44.00	30.00	35.25	34.00
Shaanxi	Median	12.00	19.00	69.00	86.00	77.00	59.00	73.00	76.50	84.50	70.00	84.00	81.50	84.50

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Province	items	Fir*	Wil*	Wat*	Air*	Car*	Hab*	Spi*	Rec*	Hum*	Nat*	Aes*	Noi*	Tem*
(SHX)	IQR	37.00	45.00	51.25	28.00	39.00	60.25	42.00	43.25	30.00	45.00	30.00	34.00	29.00
Shanghai	Median	10.00	11.00	61.00	83.50	74.00	53.00	64.00	64.00	81.00	60.00	81.00	78.00	79.00
(SH)	IQR	34.00	41.00	51.75	31.75	38.00	57.00	43.75	45.75	31.00	47.00	26.00	30.75	31.75
Tianjing	Median	12.00	16.00	65.00	83.50	77.00	57.00	70.00	70.00	83.00	68.00	83.50	80.00	83.00
(TJ)	IQR	27.25	37.00	47.25	33.25	40.00	58.00	46.25	55.25	36.25	50.25	35.00	43.00	39.00
Zhejiang	Median	12.00	19.50	69.50	85.00	78.00	57.00	63.00	66.00	80.50	67.00	84.00	78.00	78.00
(ZJ)	IQR	39.00	43.50	40.00	30.00	38.25	54.00	47.00	53.25	31.25	44.00	30.25	36.00	32.00
Chongqing	Median	18.00	22.00	67.50	86.00	79.00	55.00	74.50	71.00	83.00	68.00	84.00	81.00	83.00
(CQ)	IQR	34.00	47.00	40.75	28.00	38.00	52.00	39.75	48.00	31.75	44.00	28.00	32.75	33.75

Notes: 1) Abbreviations Fir for Firewood, Wil for Wild food, Wat for Water quality and erosion, Air for Air quality, Car for Carbon storage, Hab for Habitat, Spi for Spiritual and cultural, Edu for Education, Rec for Recreation, Hum for Human health, Nat for Natural hazard protection, Emp for Employment, Aes for Aesthetics, Noi for Noise reduction, Tem for Temperature reduction. 2) * means the significance different of ecosystem services value among the provinces by Kruskal-Walis test.

Descriptive statistics results of ecosystem disservices across all trees types by province (N=1,643)

Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues	Cleanliness issues
Anhui	Median	53.00	58.00	61.50	40.50	61.50	42.50	61.50	66.50	55.50	57.50	67.50
(AH)	IQR	40.00	44.50	43.00	30.00	46.50	35.00	42.50	47.00	43.00	49.00	47.50
Beijing	Median	62.00	59.00	68.00	57.00	62.00	57.00	66.00	68.00	61.00	62.00	61.00
(BJ)	IQR	46.00	45.00	48.00	49.00	42.00	48.00	50.00	48.00	46.00	51.00	37.00
Fujian	Median	52.00	57.00	55.00	47.75	57.75	44.00	62.00	63.50	64.00	59.00	70.00
(FJ)	IQR	36.75	37.00	37.25	37.75	45.50	33.00	44.75	45.50	45.75	45.00	47.00
Guangdong	Median	53.75	53.25	60.00	47.00	64.75	39.75	66.00	63.75	51.50	57.75	65.75
(GD)	IQR	35.50	38.25	36.25	35.75	39.25	31.75	44.00	39.50	35.50	47.75	40.50
Guangxi	Median	52.50	62.00	67.00	55.50	64.00	44.50	73.50	65.50	63.00	56.50	72.50
(GX)	IQR	36.50	43.00	40.50	47.50	36.50	36.50	53.00	42.50	46.00	45.00	50.50
Hebei	Median	57.00	54.00	61.00	46.00	60.00	47.00	62.00	66.00	59.00	61.00	62.00
(HEB)	IQR	40.00	39.00	39.00	38.00	39.00	37.00	38.00	38.00	46.00	47.00	41.00
Henan	Median	50.00	54.00	65.00	48.00	61.00	56.00	65.00	62.00	56.00	56.00	61.00

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Province	items	Aesthetic issues	Land use issues	Infrastructure issues	Local climate	Safety hazard	Air pollution	Health issues	Economic issues	Security issues	Environmental issues	Cleanliness issues
(HEN)	IQR	37.00	38.00	42.00	38.00	42.00	45.00	46.00	35.00	36.00	41.00	41.00
Hubei	Median	61.25	60.25	69.00	53.00	70.00	52.75	71.25	75.50	58.00	65.25	71.50
(HUB)	IQR	44.25	43.25	44.50	43.00	49.00	42.75	44.50	45.50	41.25	47.50	48.75
Hunan	Median	51.00	59.00	61.00	48.00	60.75	46.00	65.75	68.50	60.50	51.25	63.75
(HUN)	IQR	34.50	37.00	39.75	38.50	40.75	36.75	47.25	43.50	46.75	42.00	42.75
Jiansu	Median	56.25	59.75	61.25	60.25	59.25	45.00	63.25	74.25	60.00	57.00	65.00
(JS)	IQR	37.50	44.00	41.25	47.25	42.50	36.00	48.50	46.25	41.00	44.25	41.75
Jiangxi	Median	59.25	61.00	63.25	58.25	69.25	57.25	75.00	70.00	62.25	72.25	73.25
(JX)	IQR	44.50	46.25	35.25	46.50	52.50	45.50	55.00	48.25	44.75	59.25	51.25
Shandong	Median	58.50	60.00	65.50	47.00	66.00	48.00	66.50	68.50	62.50	61.50	70.00
(SD)	IQR	43.50	43.50	44.00	35.00	51.00	39.00	46.00	43.50	46.50	48.50	42.50
Shanxi	Median	61.00	54.50	65.25	55.50	63.50	51.25	68.75	61.50	63.25	54.75	64.25
(SX)	IQR	48.00	40.00	46.25	45.50	43.50	43.50	44.50	35.50	43.75	38.75	44.25
Shaanxi	Median	53.75	52.25	63.75	50.75	57.75	53.00	62.25	68.75	66.25	63.75	70.00
(SHX)	IQR	36.50	40.50	43.75	37.50	35.75	43.00	40.25	36.75	46.25	49.25	48.50
Shanghai	Median	60.00	56.25	56.25	38.25	60.00	35.25	60.25	65.00	56.50	44.00	60.00
(SH)	IQR	43.25	38.75	36.50	30.25	50.00	30.50	40.50	35.50	46.50	35.25	39.00
Tianjing	Median	55.75	49.50	59.25	47.25	60.75	40.50	67.75	70.00	49.00	51.75	58.75
(TJ)	IQR	40.75	37.50	40.25	36.25	41.50	34.50	48.75	48.00	38.00	40.75	40.00
Zhejiang	Median	59.00	60.00	64.00	49.00	55.00	41.75	66.00	68.00	59.00	48.25	61.00
(ZJ)	IQR	40.25	40.00	41.25	40.25	37.25	34.75	43.50	39.00	43.25	34.50	40.25
Chongqing	Median	50.00	53.00	59.00	56.00	60.00	51.00	62.00	62.00	59.00	60.00	53.00
(CQ)	IQR	34.00	41.00	43.00	46.00	44.00	45.00	41.00	35.00	45.00	50.00	37.00

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