ACT

Environmental KAP Survey in Georgia

Knowledge, attitudes and practices (KAP) related to the management of natural resources and safeguarding of ecosystem services for sustainable rural development in Georgia

Final Report

February 2020

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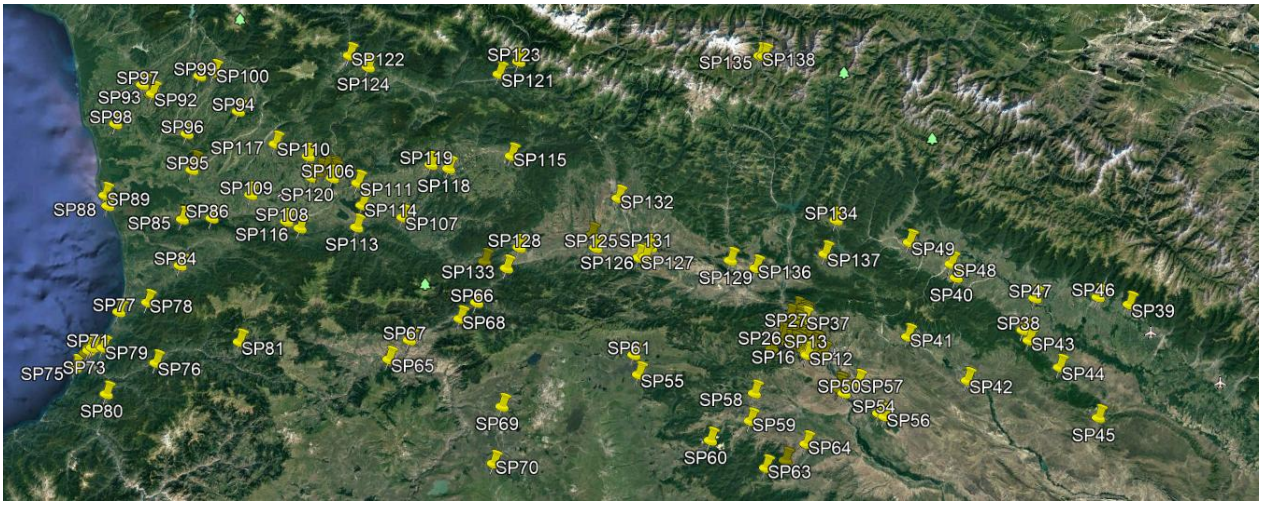
Administrative map of Georgia with primary sampling units based on GPS coordinates



Abbreviations

BMZ	German Federal Ministry of Economic Cooperation and Development
CAPI	Computer-assisted personal interviewing
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
GORBI	Georgian Opinion Research Business International
KAP	Knowledge, attitudes and practices
PAPI	Pen and paper personal interviewing
PSU	Primary sampling unit
resp.	respectively
SSU	Secondary sampling unit
TSU	Tertiary sampling unit

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Executive Summary

Humans and Nature

The environmental awareness survey was commissioned by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH as part of the ECOserve program in the South Caucasus in 2019, and was implemented by ACT Assist from Germany and GORBI from Georgia. ECOserve aims at improving the sustainable use of natural resources and fostering biodiversity conservation and climate protection, especially for the benefit of the rural population. Moreover, the program strives to increase the use of renewable energies in the energy mix and to raise energy efficiency.

At 56%, a majority of Georgians, especially villagers, state that the conditions of natural resources in their area has worsened over the last 2-3 years. As only 41% of respondents said so in 2016, this indicates a decline in the public's perception of the state of the environment in Georgia. Especially older respondents are concerned about air and water quality, and the loss of species.

Respondents' willingness to engage in environmental protection is generally higher now than in 2016, e.g. in terms of saving water and energy, or using an organic bin. But more than half of the people interviewed never or rarely engage in environment-friendly practices such as buying organic products, using non-plastic shopping bags or helping insect pollinators or wildlife survive. Two thirds of respondents see all citizens as mainly responsible for protecting the environment, not just the government. The 18-30 year-olds put environmental protection and preventing the extinction of animals and plants higher on the agenda than older respondents. But in general, protecting the environment, preventing the extinction of animals and plants, or adapting to climate change are among the lowest rated categories of what the Georgian government should deal with.

Biodiversity

Especially villagers are very concerned about the loss of biodiversity in grassland/ pastures and cropland ecosystems, but less in forests, mountains, rivers and lakes. At least 80% see air and water pollution, forest and grassland fires, man-made disasters and people's careless attitudes towards nature as the highest threats for biodiversity, while only 1/3 thinks so about heating and cooking with firewood. In comparison with 2016, the trend in public perception went down for deforestation and infrastructure as a threat but up for intensive farming, overhunting, water and air pollution, and man-made disasters. Respondents perceive air, water and soil pollution, natural disasters, no access to drinking water, and loss of arable land as highest risks to their families' livelihood. This is less so concerning deforestation, extinction of species, or climate change.

Climate change

The knowledge about climate change is confused at best with Georgians interviewed as many mix up climate with weather or believe that the climate in their country will not change because it is protected by mountains. Regarding extreme weather events in Georgia over the last 5-10 years, respondents observed that cold snaps and heat waves as well as droughts and wildfires got more, while snowfall got a lot less.

Forests

Georgians interviewed do not have much of a direct relation to the forest: Almost 50% never spent time in the forest or in a natural environment with their children during the last twelve months. The wide majority of respondents has never seen or heard a wild goat, cat or pig, a bear or a wolf. More than 50% of the respondents do not know any people who work with wood in handicraft enterprises, furniture production etc. Interestingly, the benefits and services of forests such as fresh air, firewood or wind protection are appreciated even more by urban than rural respondents. More than 2/3 of the respondents regard forest fires and illegal logging as the most pressing problems for forests in Georgia, while firewood extraction is considered a lesser problem.

Respondents who use firewood almost exclusively live in villages and regional cities. Almost all of them state they know that dry firewood burns better and with less smoke, but only about half of them actually uses dry firewood. Half of the latter claims that moist firewood burns longer and 1/4 states that drying firewood for a year or two takes too long. Even in case gas is available, respondents who use a firewood stove state that it heats the house or the kitchen better, reduces the costs for gas, or that food cooked on a firewood stove tastes better. Firewood is overwhelmingly needed for heating in winter and enough to heat their homes. The willingness to pay for better-quality, dry firewood is very low, possibly because every sixth person claims doing this already. But a cheaper price is the top incentive why 2/3 of respondents would switch from firewood to other energy sources. Knowledge about the harmful effects of burning firewood on people's health is limited at best.

The existing practice of receiving firewood from the state is rated controversially: Urban respondents want regulations to be stricter so that less people have direct access to forests to receive firewood, while rural ones want the existing practice be liberalized so that more people receive cheap firewood.

Rural respondents generally trust forest-related authorities more than urban ones. The Agency of Protected Areas is trusted the most, with the National Forest Agency ranking second, while the Georgian Forest Fund is least trusted and least known. Across the board, hardly anybody knows about the ongoing forest sector reform and the new draft forest law.

Energy efficiency

The energy sources used for heating and cooking are overwhelmingly dominated by gas, but villagers also use firewood a lot, and electricity plays a role for cooking. In general, convenience, time and cleanliness trump costs and efficiency as reasons why energy sources are used. Urban respondents would switch to other energy sources for environmental reasons, while for villagers price comes before environment. Access to finance to invest in an improvement of the energy situation at home is not available to 1/3 of respondents. Less than 1/3 relies on savings and bank loans for this purpose. Only 10% of the people interviewed does receive a subsidy on energy sources from the government. In terms of energy efficiency measures, respondents switch lights off when not needed, and use energy efficient bulbs and windows, but very few have their house thermally insulated.

The majority of the people interviewed has 3-5 rooms in their main residence, but thermal insulation of roofs or walls, in contrast to insulated windows, is widely absent. 80% have one or two rooms heated by means other than a centralized heating system, which may have to do with the fact that less than a third of urban and almost none of rural respondents have a centralized household heating system. Yet, more than a third of the people interviewed feel that the room temperature in their home in winter is "very comfortable". Gas, firewood and electricity are respondents' main sources of energy used for heating their homes, while the use of improved firewood or briquettes is irrelevant.

For heating, village respondents predominantly use locally produced conventional firewood stoves and energy-efficient Svanetian stoves while 2/3 of urban ones use gas stoves and 1/4 uses centralized heating systems. For cooking, all respondents use gas stoves much more than any other type, only 1/4 of villagers uses locally produced and energy-efficient Svanetian stoves. The willingness to pay more for an improved firewood stove that lasts longer, heats more and/or uses less firewood is very low in rural areas, where almost all of the 478 respondents using firewood live: Almost a third is willing to pay nothing more, and another quarter states 10% more.

Sources and channels of information

Respondents' three main channels of information about the environment and energy were TV, the Internet, and social media. Interpersonal communication with family, friends, neighbors or colleagues came next while print media played a lesser role, both in 2019 and 2016. The national and local governments, scientists and environmental protection associations were rated as most trusted sources of information on these issues but, again, individuals were not far behind.

1. Introduction

ECOserve Program The environmental KAP surveys in Armenia, Azerbaijan and Georgia were commissioned by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH as part of the ECOserve program - Management of natural resources and safeguarding of ecosystem services for sustainable rural development in the South Caucasus. The program aims at improving the sustainable use of natural resources and to foster biodiversity conservation and climate protection, especially for the benefit of the rural population. Moreover, it strives to increase the percentage share of renewable energies in the energy mix and to raise energy efficiency.

Public awareness on issues related to the environment and energy are a key to success in related policy fields and projects. Therefore, the 2019 KAP surveys will be the baseline for monitoring ECOserve objectives and it will, to a limited extent, show changes in knowledge, attitudes and practices in comparison to a another environmental KAP survey GIZ commissioned in 2016.

KAP Survey Methodology The KAP surveys in 2019 were managed by ACT Assist GmbH (Germany), while field work in the three countries was organized by GORBI (Georgia). The fieldwork in Georgia with a sample size of 1,400 interviews was implemented between 20 Sept and 16 Oct, 2019.

The nationwide survey in Georgia was implemented by using Computer-Assisted Personal Interviewing (CAPI) by means of tablets. Interview data and GPS coordinates were transferred to a GORBI server on a daily basis. Primary sampling units (PSUs) were voting precincts because they are relatively similar in size across the country, and divided the country into urban and rural strata. Secondary sampling units (SSUs) were households, selected via random route sampling, which approximate a simple random sample (SRS). Tertiary sampling units (TSUs) were individuals. The stratification desired at this stage of selection is male vs. female and younger vs. older adults. As requested by GIZ, the desired confidence level was set to 80%.

The questionnaire, including 63 questions and up to 18 variables per question, was developed by ACT Assist and GORBI. It was translated from English into Georgian and Russian, as well as tested and confirmed by GORBI. Before the start of the fieldwork, GORBI organized pilot interviews in order to understand potential problems with the questionnaire such as incomprehensible terminology, too many questions and/or variables etc. Interviewers were introduced to the questionnaire and the sample peculiarities during a training, and conducted pilot interviews thereafter. Based on the pilot interview results, the questionnaire was revised and finalized (see **Annex 1** for details).

At 1,400 respondents, the weighted sample is nationally representative and statistically significant. In Tbilisi, 399 interviews were held, 418 in cities and regions, and 583 in villages. Out of the total sample, 755 were male and 645 female, and the distribution across age groups was as follows:

18-30	31-45	46-60	61+
307	403	349	342

In the analysis of survey findings across the thematic sections below, mostly the aggregated results are referred to while data on demographic cross tabs (male/female, young/old and urban/rural) are only specified if anomalies or deviations in comparison with the average value occur, or if data seem particularly striking so that they deserve to be highlighted.

As most of the male/female and young/old cross tabs do not show significant differences from the average value, it is mostly the urban/rural cross tabs that are referred to for deviations from the average.

2. Humans and nature

A majority of Georgians (56%[1]), especially villagers (64%), state that the **conditions of natural resources** in their area has worsened over the last 2-3 years (Question N&N1, the average results of which are shown in Fig. 1), a view that is aggravated the older the respondents are (e.g. 62% of the 61+ cohort). In 2016, when GORBI completed a similar KAP survey, only 41% of respondents said so. While only 27% believed the situation remained the same in 2019, this opinion was held by 45% in 2016. This clearly shows a decline in the public's perception of the state of the environment in Georgia.

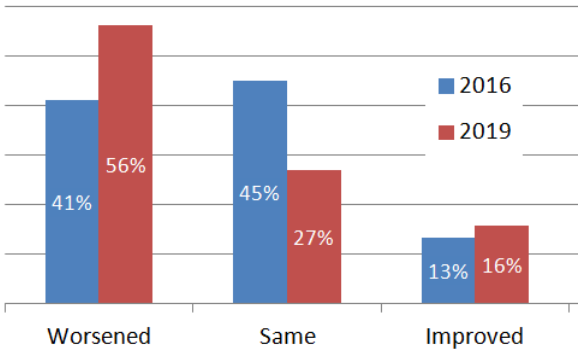


Fig. 1 Change of natural resource conditions in area of residence in the past 2-3 years (comparison 2016 - 2019)

In observations made over the last 5-10 years (N&N3), respondents found that the **situation of natural resources** has worsened a lot or a bit, particularly in relation with air quality for Tbilisi respondents (82%), while water quality remained unchanged overall (43%). The situation of rivers, lakes, mountains, and the Black sea have reportedly worsened in general as well, but to a much lower extent and with an unusually high proportion of "Don't know" answers between 16-35%. According to these observations, there are about as many people who saw a decrease of animal and plant species, and green spaces in urban areas as others who estimate an increase or no change at all. This is different for forests, as 66% of respondents stated they got a lot or a bit less, interestingly more so in Tbilisi (74%) than in villages (61%). Old respondents (61+) are "a lot" more concerned about air and water quality, and the loss of animal and plant species (between 3-9% more) than other age groups.

Given this bleak picture regarding the state of the environment in Georgia in the public eye: What do Georgians think about measures to protect the natural environment taken up by citizens and policy makers?

When it comes to respective **action at home** (N&N4), respondents were given a wide range of 15 options and were asked whether they always, often, rarely or never engaged in them. It turned out that village residents are more engaged than Tbilisi ones in always separating household waste (37% vs 11%), using an organic bin (61% vs 31%), and composting organic materials (16% vs 2%). Average results are shown in Fig. 2a.

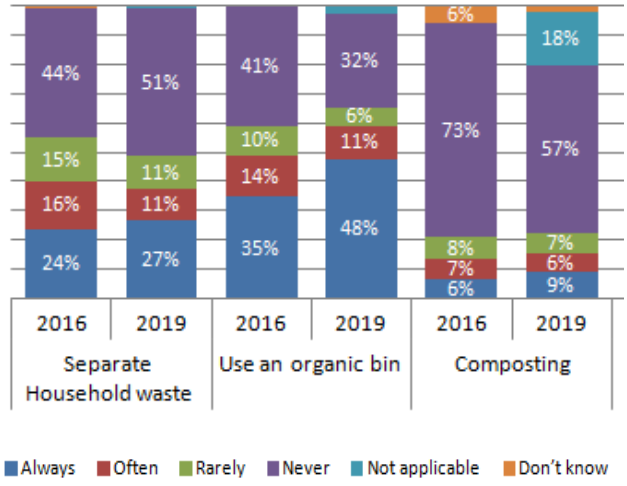


Fig. 2a Selected action at home to help protect the natural environment (comparison 2016 - 2019)

In respect with saving energy and resources, average results presented in Fig. 2b show that the highest increase was in the percentage of respondents engaging in saving water (+10%) and switching lights off (17%). The use energy-efficient building materials, however, decreased a lot, e.g. 46% never use it in 2019 in comparison to 25% in 2016. Differences across the different demographic groups, especially between urban and rural residents, are not that significant.

[1] all percentages have been rounded up or down

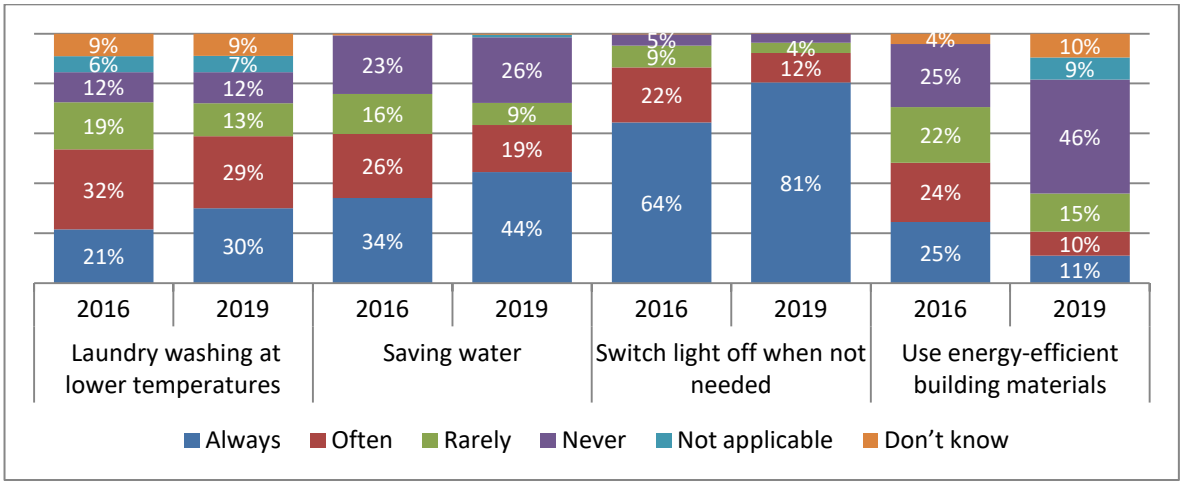


Fig. 2b Selected action at home to help protect the natural environment (comparison 2016 - 2019)

Tbilisi respondents always use energy efficient bulbs (46% vs 39%), wash their laundry at lower temperatures (38% vs 23%), use energy-efficient building materials (50% vs 43%), and saving water (46% vs 44%).

In terms of sustainable lifestyles, Tbilisi residents lead in practices such as always using non-plastic carrier bags when shopping (24% vs 16%) or refraining from burning leaves and waste (66% vs 37%), while villagers are ahead in buying environmentally-friendly or organic products (37% vs 32%), and level with at using products with less packaging. Growing plants that attract insect pollinators, or attracting wildlife by means of feeders and nesting boxes is not yet too popular in Georgia: 53% resp. 66% of respondents never did this, and only 20% resp. 5% always engage in it.

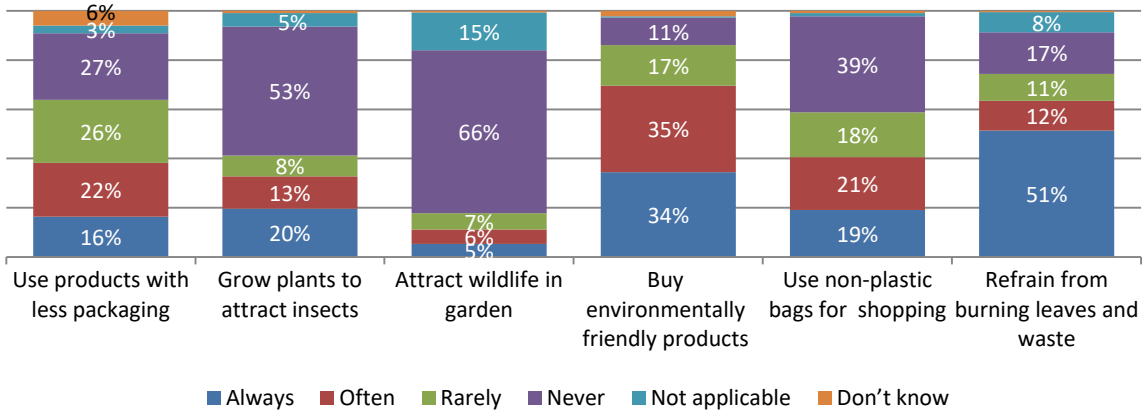


Fig. 2c Selected action at home to help protect the natural environment

Interestingly, the older respondents are the more do they engage in switching lights off and saving water (e.g. 87% resp. 52% of the 61+ group), even though this does not lead to higher ratings in energy efficiency in general when comparing the old to the young.

In 2016, citizens' willingness to engage in environmental protection was less on average. For example, household waste was always separated by only 24% of respondents, organic bins by 35%, composting by 6%, or use of fewer fertilizers by 19%. The same accounts for always using energy efficient bulbs (29%), laundry washing at lower temperatures (22%), using energy-efficient building materials (25%), or saving water (34%).

A similar picture shows as related to what respondents think can be done in order to **protect nature** in Georgia (N&N5). A majority votes for improving waste management (63%), followed by greening urban public and private spaces (53%), ban single-use plastics (49%), and heavy fines for

environmental polluters (45%). Mitigating and adapting to climate change (10%), and promoting eco-tourism or the recreational value of nature (both 12%) are less preferred.

Among the topics the **Georgian government** generally should deal with (N&N6), adapting to climate change (2%), preventing the extinction of animals and plants (8%), and protecting the environment (20%) are among the lowest rated categories in comparison to improving the quality of education (54%) or healthcare (42%), job creation (43%), reducing crime (39%) and corruption (28%). Comparing the youngest cohort (18-30) to the oldest (61+), the young put environmental protection (27" vs 13%) and preventing the extinction of animals and plants (14% vs 6%) higher on the agenda than the old who favor to fight corruption (36% vs 18%) and to improve healthcare (48% vs 34%).

On a more positive note, 64% of people interviewed state that all citizens should be **mainly responsible** for protecting the environment (N&N7), and not just the government (21%). To most people (58%), **sustainable development** (N&N8) means taking into consideration the economic, social and environmental needs of future generations (58%), and not providing the most jobs (29%). But in both cases, these views clearly correlate with age: The younger the more environmentally friendly.

3. Biodiversity

Most respondents are "very concerned" about the **loss of biodiversity** across the six ecosystems mentioned below (74-84%). Specific ecosystems are generally more of a concern for villagers than Tbilisi or other cities/urban area residents. This particularly holds true for grassland/pastures (79% villagers vs 69-70% cities) and cropland (83% vs 73-74%), but less for forests, mountains, rivers and lakes where differences are minimal (B1).

Most Georgians consider "very much" the highest **threat for biodiversity and the natural environment** (B3) in air and water pollution (89% resp. 85%), especially in Tbilisi (94% resp. 92%). Forest and grassland fires (84%), man-made disasters and people's careless attitudes towards nature (both 80%), poor wastewater and waste management (78% rep. 75%), the overuse of forest resources (70%), climate change (69%) and the loss of species (68%) range next. Overhunting/overfishing (59%), large-scale hydropower (52%), intensive farming (49%), use of natural areas for infrastructure (39%), heating and cooking with firewood (33%), and invasive species (32%) are to a lesser extent but still "very much" believed to be a threat. The negative impacts of tourism and heating and cooking with firewood are the only two categories that have relatively high ratings for "not very much/not at all" being a threat: 43% for tourism resp. 30% for firewood.

As this question was also asked in the 2016 KAP survey, some changes in public perception can be observed. For example, the trend went down for deforestation as a threat (76% "very much" in 2016 vs 70% in 2019) and infrastructure (54% vs 39%), while the trend went up for intensive farming (24% then vs 49% today), overhunting (39% vs 59%), water and air pollution (76% vs 89/85%), and man-made disasters (70% vs 80%). The other categories remained more or less the same or could not be compared.

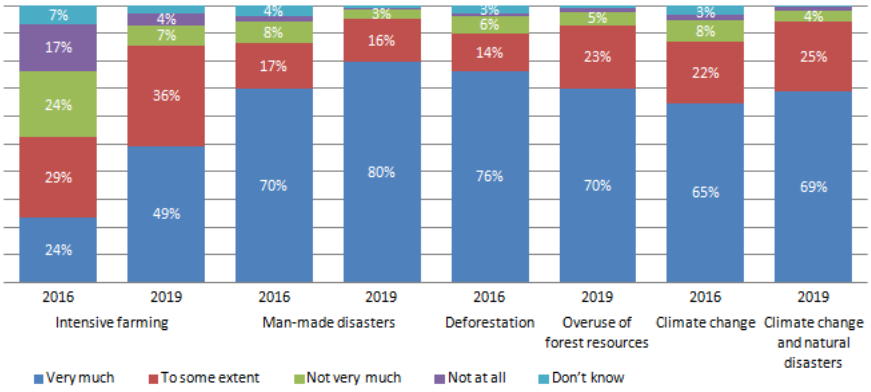


Fig. 3a Selected aspects threatening biodiversity and the natural environment in Georgia (comparison 2016 - 2019)

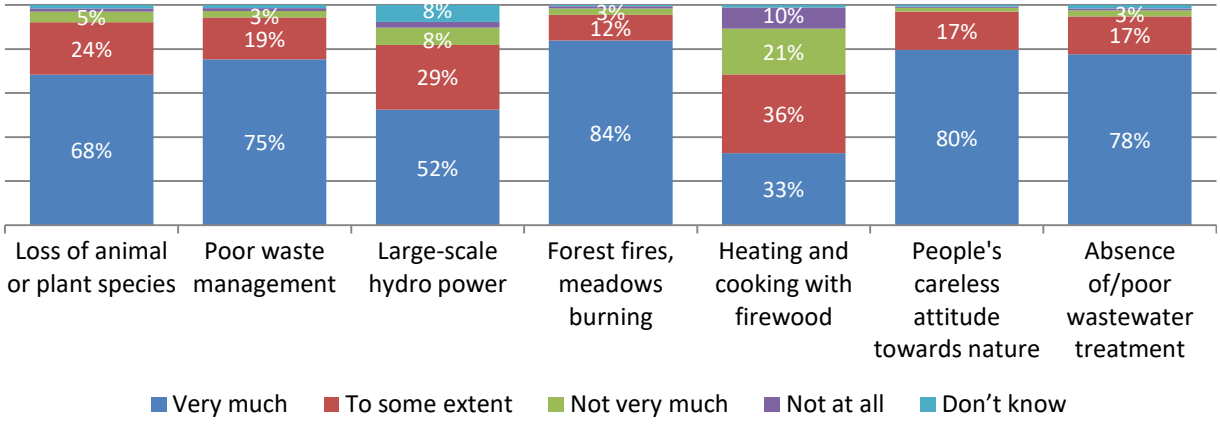


Fig. 3b Selected aspects threatening biodiversity and the natural environment in Georgia

When presented seven **tree species** on a set of show cards (B4.1), respondents had great difficulties identifying their names. Chestnuts received the highest recognition (84%) when shown the picture, spruces (63%) and oaks (61%) ran second and third. Beeches had the highest proportion of "don't know" answers (44%), while firs were often mixed up with spruce (53%), hornbeams with oaks (23%), as well as spruces with pines (22%). Asked which ones of these trees is on the **red list of endangered species** (B4.2), 33% of respondents did not know, and the rest did not provide a clear picture. But, at least, oaks (35%) and chestnuts (22%), the corrects answers, received the highest scores. In general, men did significantly better than women, but results are inconclusive for the young/old comparison.

Many environmental and other factors can pose a **risk to families' livelihood** (B5). On a list of 16 such factors, respondents perceive the highest risks in air, water and soil pollution (85% "very high risk" and "high risk"), natural disasters (77%), no access to drinking water (72%), and loss of arable land (71%), health and hotter temperatures (both 70%). Other risks such as, in an ascending order, conflict over natural resources, climate change, extinction of species, deforestation, livestock disease, use of pesticides/herbicides, urban problems, or growing waste volume score lower in the "very high risk" and "high risk" categories (53-68%). Villagers are significantly more concerned about loss of land and livestock, but also the effects of climate change on temperature and natural disasters. Only overpopulation is regarded "no risk" (61%), especially in villages (70%).

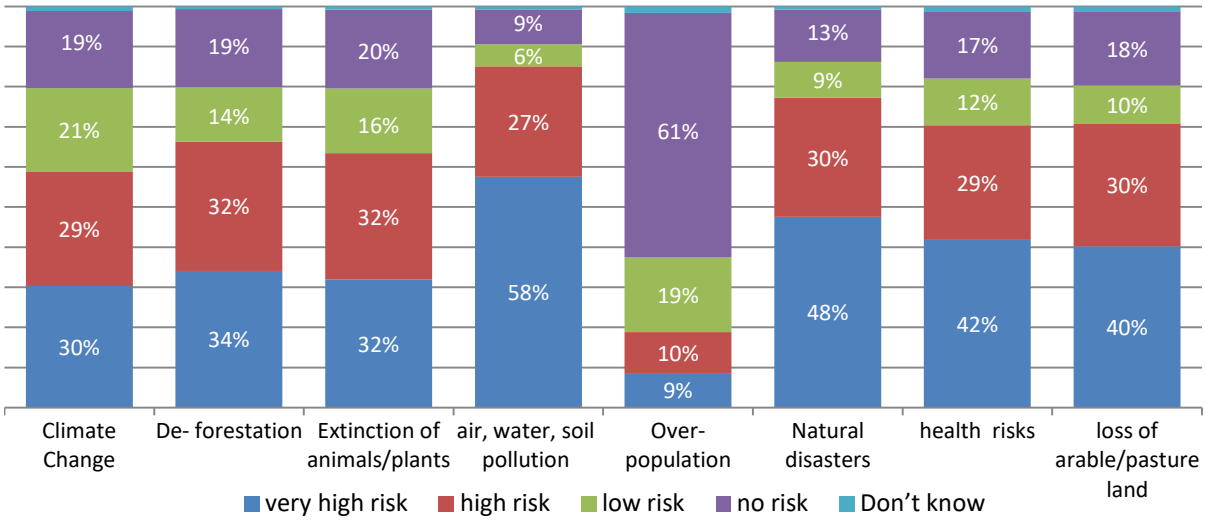


Fig. 4 Selected problems posing a risk to families' livelihood

4. Climate change

The **knowledge about climate change** (CC1) is confused at best: On the one hand, 67%-87% of respondents across the board are on target with the four correct answers (marked ✓) but 78%-91%, at the same time, also ticked the four incorrect ones (marked ✗). Tbilisi residents do a bit better with the correct "no" answer related to water supply (28% vs 19% cities and 16% villagers). The younger the respondents are the more correct are their answers related to forests and mountains, while the opposite is true for the frequency of extreme weather events.

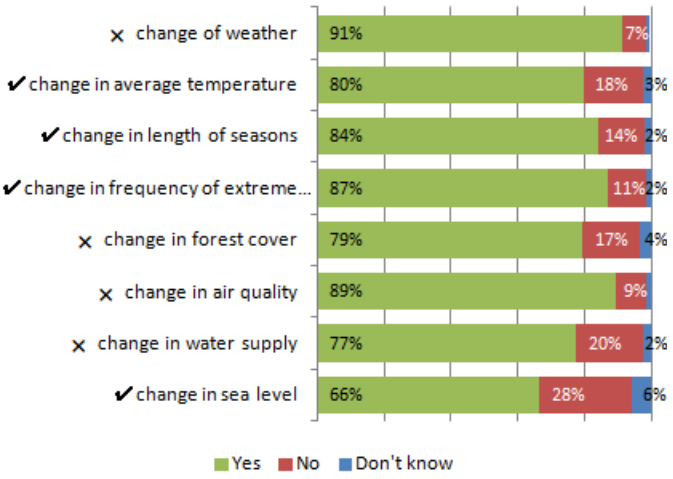


Fig. 5 Respondents' meaning of climate change

This trend is also reflected in the statements about **climate change in Georgia** (CC2): The two correct answers (marked ✓) are checked by 74%, respectively 84% of all respondents but the incorrect ones (marked ✗) are ticked by 25-82% as well. Here, Tbilisi respondents do significantly better with the correct "no" answers related to mountains, weather, and rain, but are no wiser in the other answer options.

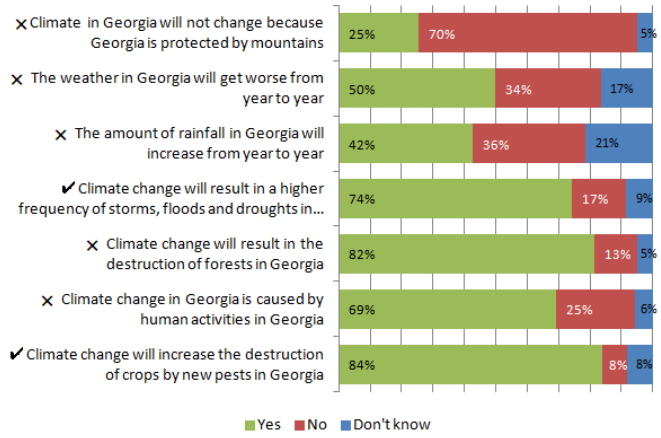


Fig. 6 Statements about climate change in Georgia

Respondents also reported about their observations regarding **extreme weather events in Georgia** over the last 5-10 years (CC3). Cold snaps and heat waves "got a bit" or "a lot more" (73% resp. 71%), similar to droughts and wildfires (both 71%), while the most dramatic change was snowfall, which 60% reported "got a lot less" and 22% "a bit less". Droughts are experienced "a lot more" by villagers (40%) than in or near cities (25%) or Tbilisi (21%), while it is the other way around with wildfires that are observed "a lot more" in Tbilisi (51%) than in or near cities (40%) and villages (38%).

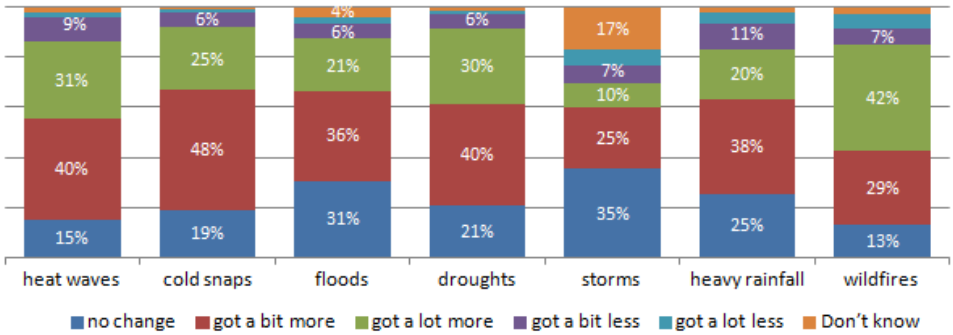


Fig. 7 Observations on extreme weather events in Georgia

5. Forest

As for the **benefits and services of forests** (F1), most of respondents (82%) mention fresh air, the beauty of nature (55%), firewood (45%) and wind protection (42%), all of which urban residents appreciate even more than their rural fellow citizens. While 61+ respondents mention firewood more than average (50% vs 45%), for the youngest group (18-30) this is recreation and picnic (49% vs 36%).

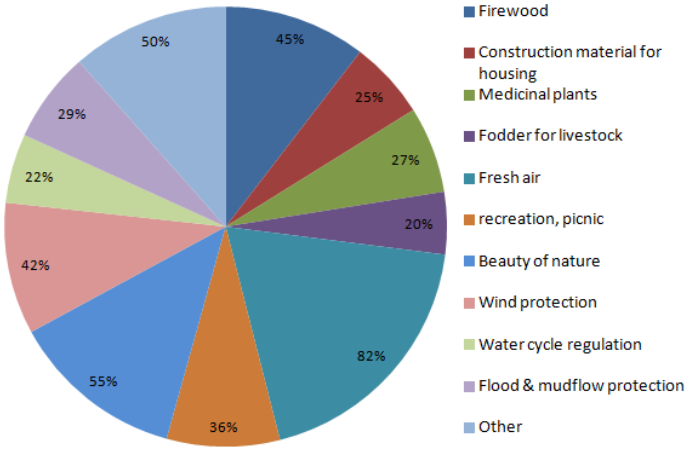


Fig. 8 Benefits and services the forest provides

Regarding the most **pressing problems for forests** in Georgia (F3), forest fires are mentioned most (71%), especially by Tbilisi respondents (82%), closely followed by illegal logging (68%) and, to a lesser degree, pest and diseases (33%). Firewood extraction (19%) is considered less of a problem. The 18-30 year-olds see subsistence logging (13% vs 8%), firewood extraction (28% vs 19%), and waste (16% vs 8%) as more of a problem than the average.

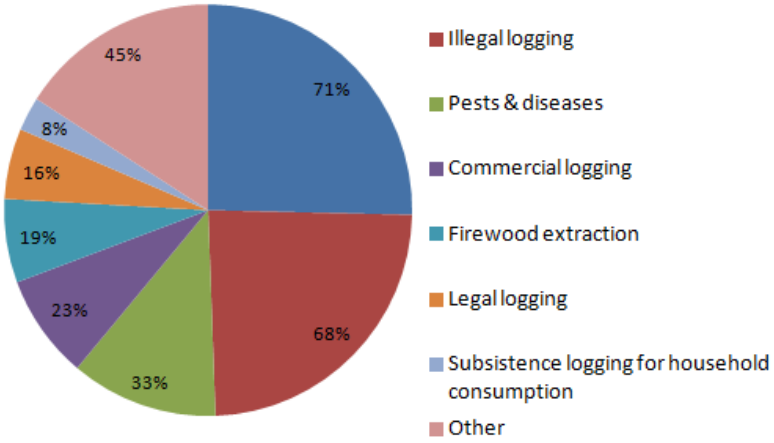


Fig. 9 Most pressing problems for forests in Georgia

On a positive note once more, all citizens (57%) are held **responsible for maintaining healthy forests** (F4), even more so than the government (26%). But there is a clear age gap: 64% of the 18-30 year-olds see citizens, 37% of the 61+ cohort the government in the driver's seat.

In an attempt to probe respondents' direct relation to the forest, they were asked how many people they know whose **jobs are related to the forest and to wood processing** (F6). More than half of respondents (52%) do not know any, and only 19% know more than five people such as wood cutters, foresters, rangers, carpenters, or others who work with wood in handicraft enterprises, furniture production etc. Many more men than women know more than five persons in these professions (28% vs 11%).

Also, 42% of the people interviewed had never **spend time in the forest or in a natural environment** with their children under the age of 18 during the last twelve months (F7). Only 10% had done this on more than five occasions, even though it has to be conceded that 33% of the respondents do not have children that age. The 31-45 year-olds spend much more time in the open on more than 3-5 or more occasions than the average (29% vs 16%).

The same accounts for the **sighting or hearing of wild animals** in their natural environment during the last twelve months (F8): The wide majority of respondents has never seen/heard a wild goat (98%), cat (96%) or pig (84%), a bear (94%) or a wolf (80%). The only exception are jackals which people interviewed saw/heard more than five times in villages (53%), Tbilisi (18%) and other cities (32%).

6. Energy

The **energy sources** used for heating and cooking (E1.GE) are dominated by gas, in cities (98-99%) even more so than in villages (94%), but villagers also use firewood a lot (71%) which city dwellers (1% in Tbilisi resp. 18% in other cities) do not (see Fig. 10). Another significant energy source is electricity, used more in cities (43% resp. 27%) than in villages (24%). **Briquettes** (E4) are only used by a very few respondents (1-2%) because, inter alia, they are too expensive (29%) and inconvenient to use (20%).

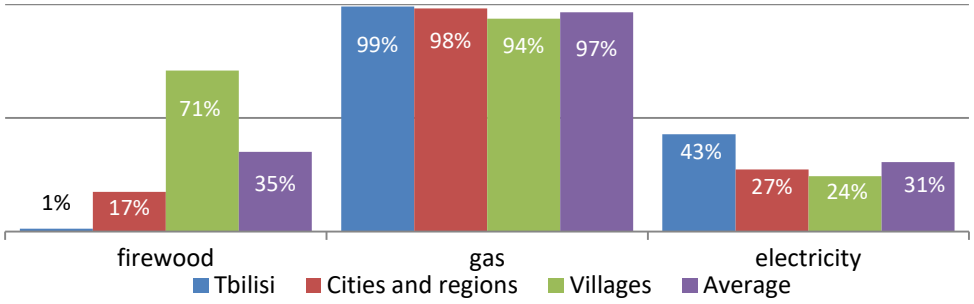


Fig. 10 Energy sources for heating and cooking by type of settlement

Fig. 11 below correlates the **energy sources** with the **reasons** why they are used (E3). In general, convenience, time and cleanliness trump costs and efficiency.

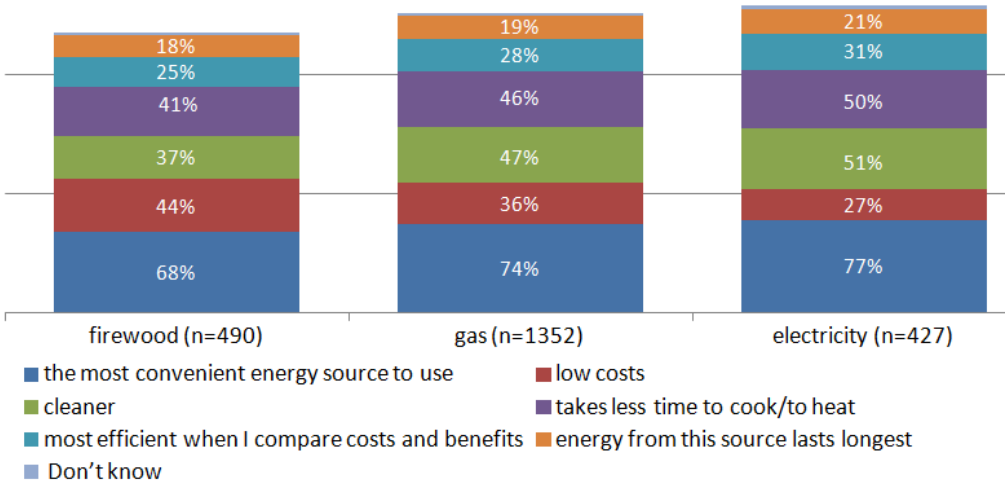


Fig. 11 Relation by type of settlement between energy sources for heating and cooking and the reasons for their use

In line with preferred energy sources, respondents' **know** (E5) about gas, firewood and electricity (49-51% "very much"), but very little about briquettes, dung, nuclear, geothermal, solar, wind, hydropower or energy (33-52%). Knowledge about oil and district heating is balanced, and solar and wind energy, as well as in-river hydropower are better known in villages than cities. The older respondents are the more they know "very much" about firewood: 56% of the 61+ compared to 39% of the 18-30 year-olds.

Urban respondents would **switch to other available energy sources** (E6) for environmental reasons (36-48%), while for villagers price (41%) comes before environment (37%). The same holds true for the very young (18-30: 48%) compared to the very old (61+: 35%)

Access to finance (E7) to invest in an improvement of the energy situation at home is not available to 34% of respondents, even in Tbilisi (42%), least of all to the older strata of the respondents. Another 27% rely on savings and 23% on bank loans. At the same time, 88% of people interviewed do not receive any kind of **subsidy on energy** sources from the government (E8.GE), even in villages (84%).

Energy efficiency measures (E9.GE) respondents do engage in switching lights off when not needed (90%), using energy efficient bulbs (61%) and windows (53%), using dry firewood for heating (31%), but not so much thermal insulation (9%) as shown in Fig. 12 below.

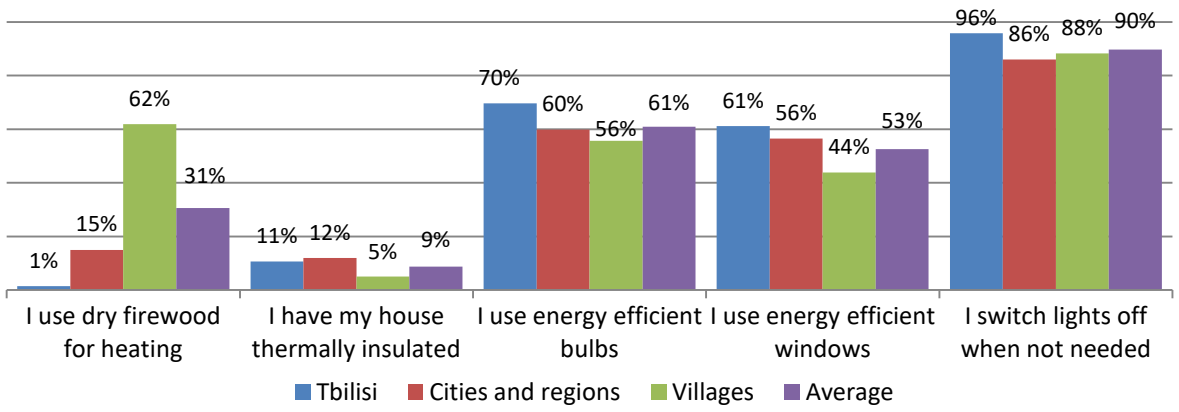


Fig. 12 Efficient energy use

7. Firewood

Even though 98% of respondents who use firewood - almost all of them in villages and regional cities - know that **dry firewood** burns better and with less smoke (Fw3), only 53% of them actually use dry firewood. Among the reasons why some people do not **use dry firewood** (Fw2), 49% claim that moist firewood burns longer and 24% state that drying firewood over 1-2 years takes too long.

Even in case gas is available, respondents state that the **use of a firewood** stove (Fw4) heats the house (40%) or the kitchen (21%) better, reduces the costs for gas (31%), or that food cooked on a firewood stove tastes better (19%).

As shown in Fig. 13, the **consumption of firewood** is different in winter and summer and whether for cooking or for heating (Fw5). Firewood is overwhelmingly needed for heating in winter: 57% of respondents need 3.1-10 m^3. For cooking in winter, 47% of respondents need 0.1-7 m^3 of firewood; in summer, it is 23% who need this amount. Zero consumption of firewood for cooking relates to 70% of people interviewed as far as summer is concerned, and 28% in relation with winter.

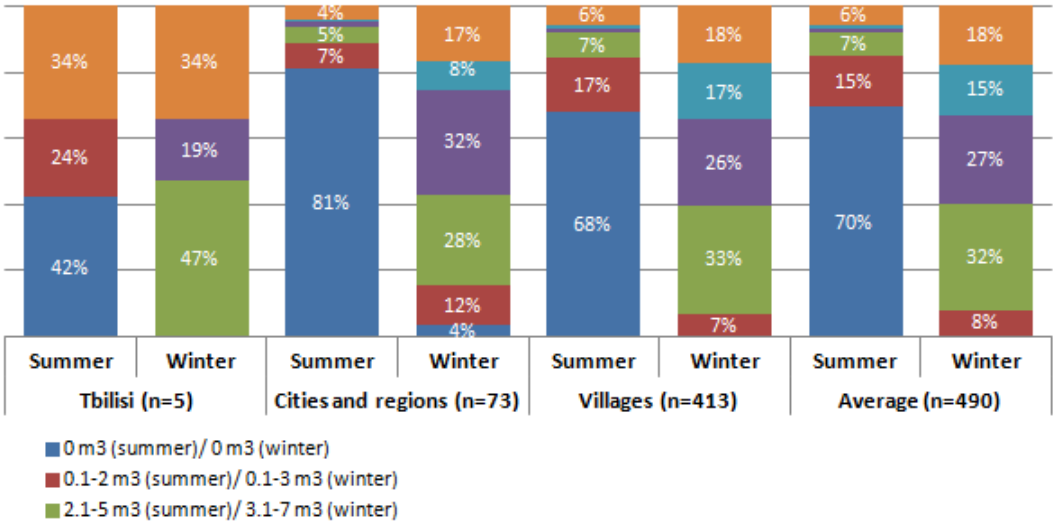


Fig. 13 Firewood consumption for cooking and heating

The question whether the **amount of firewood** (Fw6) purchased, received by the state or collected or cut by people themselves was enough to heat their homes was overwhelmingly (87%) answered "Yes". The majority prefers buying firewood (65%) in comparison to cutting firewood by themselves in the forest (37%).

Fig. 14 presents the **price of firewood** people interviewed actually pay for 1 m^3 of firewood (Fw8) in comparison to how much they would be **willing to pay** for 1 m^3 of better-quality, dry firewood (Fw9), but responses are mixed and the proportion of "Don't know" answer is very high at around 36%. Almost 35% of respondents actually pay more than 61 GEL/m^3 of firewood while only 18% are willing to pay this much for better-quality, dry firewood, and 14% claim they are already buying better-quality, dry firewood.

Actual price	n	%
0 GEL/m3	57	4,1
1 -5 GEL/m3	8	,6
6-20 GEL/m3	26	1,8
21-40GEL/m3	25	1,8
41-60 GEL /m3	41	2,9
61-80 GEL /m3	65	4,7
81-100 GEL /m3	49	3,5
100< GEL /m3	61	4,4
Don't know	159	11,4
Total*	490	35,0

Willingness to pay	n	%
0 GEL/m3	38	2,7
1 -5 GEL/m3	12	,9
6-20 GEL/m3	32	2,3
21-40GEL/m3	49	3,5
41-60 GEL /m3	38	2,7
61-80 GEL /m3	26	1,9
81-100 GEL /m3	27	2,0
100< GEL /m3	34	2,4
Don't know	167	11,9
I am buying high-quality firewood, dry firewood already	68	4,8
Total*	490	35,0

* only respondents using firewood

Fig. 14 Firewood prices and willingness to pay

A cheaper price is the top incentive (62%) why respondents would **switch from firewood to other energy sources** (Fw10), while environmental (43%) or health reasons (42%) rank lower. However, these preferences depend on age: The younger the more environmentally friendly and health-conscious by a difference of about 20% across the age spectrum.

8. Housing

Answers to the question to what degree **thermal insulation** could make a home warmer (H1a) deliver no more than an educated guess: 39% of respondents do not know and 24% believe insulation would make their homes 20-40% warmer.

The majority of the people interviewed has 3-5 (54%) **rooms in their main residence** (H1b). Many (37%) have more than five rooms, in villages this is even 48%. But **thermal insulation** of roofs or walls (H1c) is widely absent with village (53%) and urban (31-40%) of respondents. But 59-67% of urban and 45% of village residents report that windows at their home are insulated.

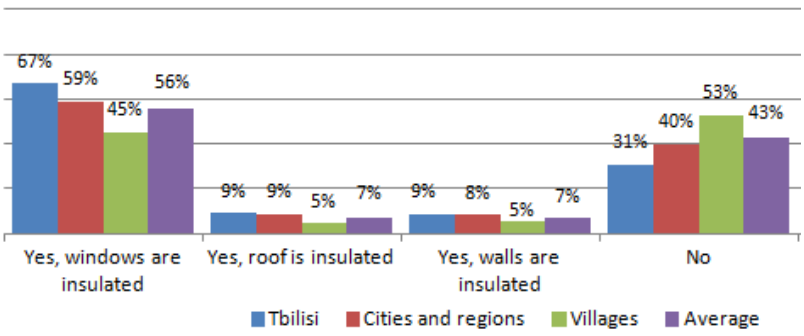


Fig. 15 Extent of thermal insulation

Around 74% of the people interviewed have 1-4 **rooms insulated** in their main residence (H1d). Only for five rooms and more, or a whole house, the percentage goes down.

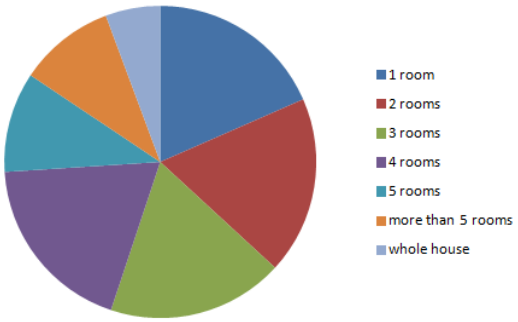


Fig. 16 Number of rooms insulated

This may have to do with the fact that only 27% of Tbilisi and 3% of village respondents have a **centralized household heating system** (H2a), while 73% resp. 97% have none. A majority of respondents, therefore, have one (55%) or two (20%) **rooms heated by means other than a centralized heating system** (H2b).

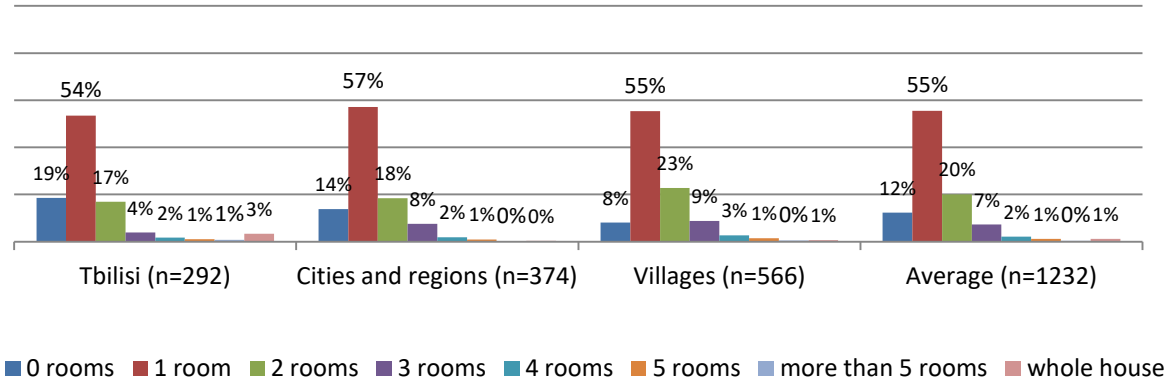


Fig. 17 Number of rooms heated by means other than centralized heating

On a scale from 1-10, 38% of people interviewed feel that the **room temperature** in their home (H3) in winter is "very comfortable" (=10), while only 4% feel "not comfortable at all" (=1).

Knowledge about the **harmful effects of burning firewood on people's health** (H4) is limited at best: On a scale from 1-10, less than 10% of respondents state they "know very much about it" (=10), while 16% say they " know nothing about it" (=0). Almost half of the respondents (46%), however, express their view that they do not consider firewood as harmful to their health.

In line with energy consumption in general (see E1.GE), gas (68%), firewood (35%) and electricity (14%) are respondents' **main sources of energy used for heating** their homes (H5), while the use of improved firewood (2%) or briquettes (0.1%) is irrelevant.

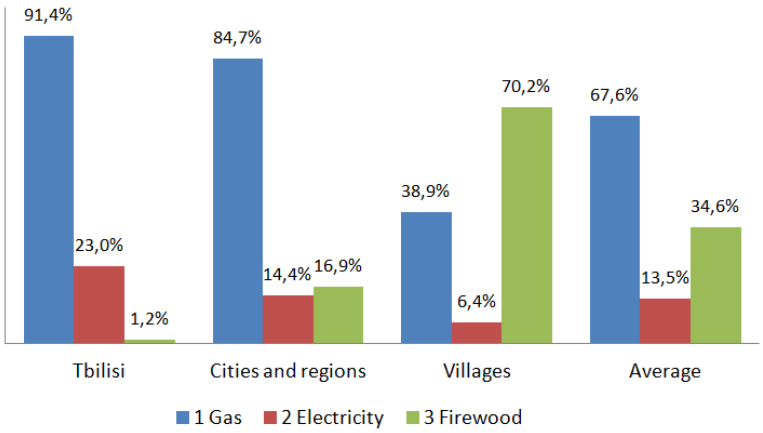


Fig. 18 Sources of energy for heating

Preferences as far as an **improved stove for heating** their homes are concerned (H6) vary between urban and rural areas: Villagers go for a better stove that heats more (61%) while residents in Tbilisi (43%) and other cities (52%) would choose a better stove that uses less energy.

The same holds true for the **type of stove for heating** used by respondents (H5.GE). In line with energy consumption in general (see E1.GE), villagers use locally produced conventional firewood stoves and

energy-efficient Svanetian stoves (59%) more than gas stoves (33%). Residents in Tbilisi and other cities more often use gas stoves (63% resp. 75%) and centralized heating systems (27% resp. 11%). All other types of stoves incl. imported energy-efficient firewood stoves are irrelevant (0.1-1.2%).

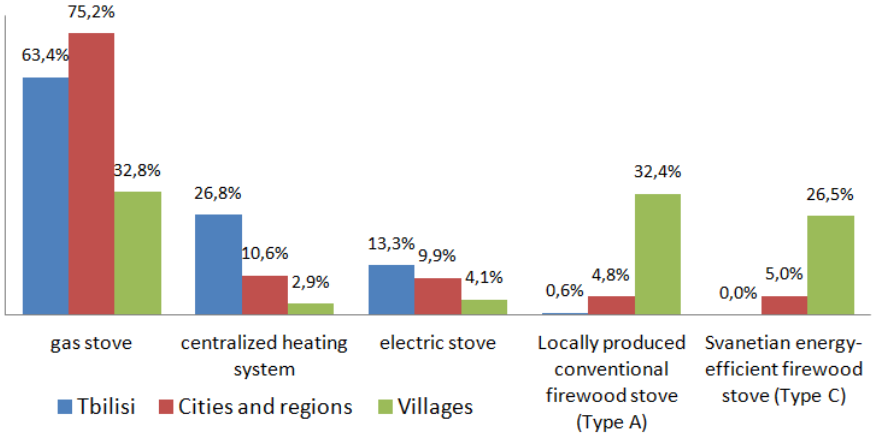


Fig. 19a Type of stove used for heating

In terms of the **stoves for cooking**, all respondents use gas stoves much more than any other type: villagers (76%) and Tbilisi (95%) and other cities (89%). Another 27% of villagers uses locally produced and energy-efficient Svanetian firewood stoves for cooking, around 10% across the country also electric stoves and combined gas/electric stoves (6%).

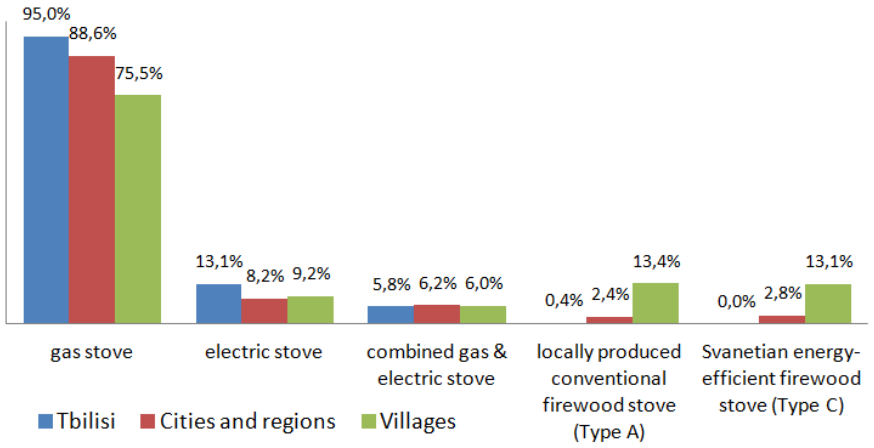


Fig. 19b Type of stove used for cooking

Many respondents do not know how much they **paid for their current stove** used for heating and/or cooking (H7). The three price ranges most often mentioned indicate payment between 101 – 500 GEL and more for heating stoves (64%) resp. cooking stoves (55%). The same uncertainty applies to the **willingness to pay more for an improved firewood stove** that lasts longer, heats more and/or uses less firewood (H8): 22% do not know and 31% in rural areas, where almost all respondents using firewood live, 31% state "nothing", 24% state "10% more", and 8% state "25% more".

Price paid	**heating** (%)	**cooking** (%)	**Willingness to pay**	%
0 GEL	5,2	4,8	nothing	31,3
1 -100 GEL	10,2	11,1	10% more	24,1
101 – 300 GEL	21,8	16,9	15% more	6,9
301 – 500 GEL	21,1	17,2	20% more	7,7
501 GEL and more	21,4	21,2	25% more	8,1
Don't know	20,2	28,7	Don't know	21,8
Total (n=1,400)	100,0	100,0	Total (n=478)	100,0

Fig. 20 Price and willingness to pay for stoves used for heating and cooking

9. Forest sector reform

It turns out that rural respondents generally **trust forest-related authorities** more than urban ones (FSR1). The Agency of Protected Areas is trusted the most (53%), with the National Forest Agency ranking second (44%). Across the board, hardly anybody (7%) knows about the **ongoing forest sector reform** and new draft forest law (FSR4), which partly affects the mentioned authorities. In general, men trust the authorities less than women. By mistake, one of the organization listed does not exist in Georgia, namely the Georgian Forest Fund.

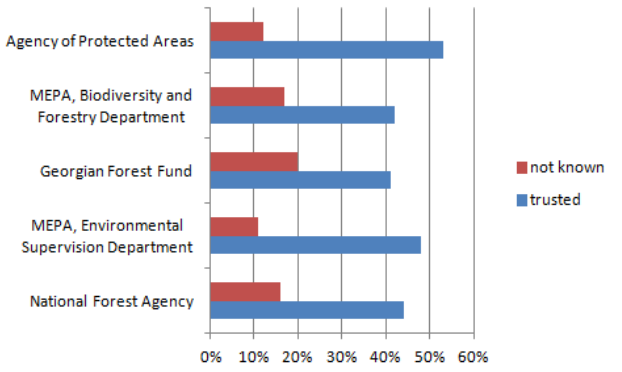


Fig. 21 Forest-related authorities, trusted and not known

The existing **practice of receiving firewood** from the state (FSR3) is rated differently by urban in comparison to rural people interviewed: 55% of respondents in Tbilisi and 42% in other cities in comparison to only 29% of villagers want regulations to be stricter so that less people have direct access to forests to receive firewood, and instead should receive firewood from NFA Business Service Yards. To the contrary, 32% of villages respondents in comparison to only 15% resp. 25% in cities want the existing practice be liberalized so that more people receive firewood at reduced prices. More people do not know about the existing practice (21%) than people who agree that the existing practice should be kept as it is now (14%).

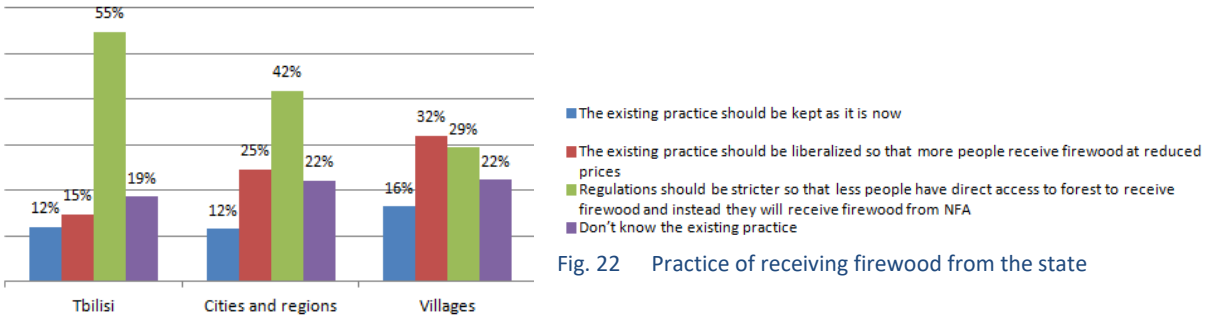


Fig. 22 Practice of receiving firewood from the state

10. Sources of information

Respondents' three main **channels of information** about the environment and energy during the last 12 months (SoI1) were TV (83% resp. 81%), the Internet (36% resp. 35%), and social media (27% resp. 26%), the latter two mass media even more so for urban than rural people interviewed. Interpersonal communication with family, friends, neighbors or colleagues comes next (19% resp. 18%) while print media play a lesser role (16%). Age plays a role, however: The younger respondents are the more Internet and social media do they use, while TV and print media are preferred by the older groups.

In 2016, when channels and sources of information were not distinguished, TV news and films made for 96% of respondents' main sources of information about the biodiversity and nature, followed by the Internet, which included social media (42%) at the time, and print media (35%). Interestingly, interpersonal sources of information with family, friends, neighbors or colleagues also scored at 19% then, the only stable variable.

	2016		2019
Newspapers	18%	publications, incl. newspapers, magazines, books	14%
Magazines	9%	TV	83%
Television news	76%	Radio	6%
The radio	5%	Films and documentaries	6%
Films and documentaries on television	19%	Conversations with family/friends/neighbors/colleagues	19%
Conversations with family/friends/neighbors/colleagues	19%	Internet, incl. official websites, online newsletters, etc.	36%
Books	5%	Social media	27%
The Internet (social media)	42%	Posters, leaflets, brochures or similar information material	2%
Publications/Brochures/information and material	3%	9 Trainings	1%
Events (conferences, fairs/exhibitions, festivals, etc.)	3%	Events (conferences, fairs/exhibitions, festivals, etc.)	1%
Visits to protected areas	3%	Visits to protected areas	2%

Fig. 23 Sources of information on environmental issues (comparison 2016 - 2019)

Regarding the most **trusted sources of information** on environmental and energy issues (SoI2), the national and regional/local government account for 49% resp. 51%, scientists for 40% resp. 37%, and environmental protection associations for 38% resp. 32%. Here, too, individuals such as family members, friends, neighbors or colleagues are trusted by 20% resp. 19%. The 18-30 year-olds trust academic sources (47% vs 35%) and environmental protection associations (46% vs 31%) more than the 61+ cohort.

In 2016, TV (45%) also led as a source of information followed by the Internet, including social media (20%), and print media (17%). Interpersonal communication with family, friends, neighbors or colleagues (9%) also played a role.

11. Preliminary Conclusions

Survey findings show that Georgians see the environment worse off today than in 2016, while their willingness to engage in environmental protection is generally higher today, e.g. in terms of saving water and energy. Rural respondents engage more in recycling, urban ones lead in sustainable lifestyle matters. On a positive note, two thirds of respondents see all citizens as mainly responsible for protecting the environment, not just the government. Environmental protection, wildlife conservation or climate change adaptation are among the lowest rated categories the Georgian government is believed it should deal with. Improving waste management, greening urban spaces, and banning single-use plastics, and heavy fines for environmental polluters are prefered measures to protect nature.

Respondents perceive air, water and soil pollution, natural disasters, no access to drinking water, and loss of arable land as highest risks to their families' livelihood. Only 33% thinks heating and cooking with firewood is a threat for biodiversity, in comparison to forest fires and illegal logging. Almost all respondents state they know that dry firewood burns better and with less smoke, but only about 50% actually use dry firewood. The willingness to pay for better-quality, dry firewood is very low. The same accounts for improved firewood stoves. Almost 50% of respondents express that they do not consider

firewood as harmful to their health. Georgians have a split opinion whether the practice of receiving firewood from the state should be stricter or more liberal.

Energy sources used for heating and cooking are dominated by gas, but villagers also use firewood a lot, and electricity plays a role for cooking. Convenience, time and cleanliness trump costs and efficiency as reasons why energy sources are used. Access to finance to invest in energy efficiency is not available to a third of respondents. Less than 10% of them have their house thermally insulated, and less than a third of urban and almost none of rural respondents have a centralized heating system.

Respondents' three main channels of information about the environment and energy were TV, the internet, and social media. Interpersonal communication with family, friends, neighbors or colleagues came next, both in 2019 and 2016. Rural respondents generally trust forest-related authorities more than urban ones. Across the board, hardly anybody knows about the ongoing forest sector reform and the new draft forest law.

Hence, the preliminary conclusions that can be drawn from the KAP 2019 Survey in Georgia can be summarized as outlined below:

- Enhance awareness on the little-known root causes and impacts of climate change and the causal correlations of ecosystem services and humans.
- Raise awareness on the risks of deforestation, extinction of species, and climate change to families' livelihood.
- Increase Georgians' relation to the forest, e.g. by recognition of people who work with wood in handicraft enterprises, furniture production etc.
- Improve access to finance for investments in energy efficiency, e.g. for thermal house insulation - especially regarding walls and roofs.
- Make citizens, especially older people, aware of the environmental and health advantages when switching from firewood to other energy sources by pointing out the harmful effects of firewood to health.
- Increase citizens' willingness to pay more for improved firewood stoves through $4P^2$-based social marketing campaigns, stressing the price.
- Improve information and increase knowledge and positive attitudes related to the forest sector reform and the new draft forest law by pointing out major benefits and incentives of the reform for specific target groups and Georgian society at large.
- Improve the trustworthiness and public image of forest sector organizations by increased and better public relations and reliable information useful to specific target groups.

[2] 4 Ps Product – Price – Place – Promotion

ANNEX 1 – TECHNICAL & METHODOLOGICAL APPROACH AND ISSUES

Part 1: Sample Design

Primary Sampling Units

As in the previous survey of 2016, primary sampling units (PSUs) were voting precincts. Voting precincts are ideal for this purpose because they are relatively similar in size across the country, thus eliminating the need for additional stages of selection before the household. If settlements (villages, towns, and cities) are selected as PSUs then large PSUs must be subsequently divided into smaller units and those must be sampled. With voting precincts, however, large settlements consist of multiple PSUs while small villages consist of only one. A city itself is not sampled but rather a small geographical area within that city, and additional stages of selection are unnecessary.

At the PSU level the countries were divided into urban and rural strata, and sampled separately from each. As the number of interviews per PSU was held constant, PSUs were selected with probability proportional to size (PPS) in order to equalize household selection probabilities between PSUs and maximize the precision of estimates based on the data collected.

Secondary Sampling Units

As in the previous survey of 2016, secondary sampling units (SSUs) are households, and were selected via random route sampling. GORBI has a well-developed random walk protocol, which is adapted the parameters of each survey and to the local context to each country. The protocol for Georgia is included in the appendix as well. Sampling via random walk is widely accepted as adequately approximating a simple random sample (SRS), and data is treated as such.

Tertiary Sampling Units

As in the previous survey of 2016, tertiary sampling units (TSUs) and the units of observation were individuals. In order to ensure maximum comparability with baseline survey TSUs were selected using the same quota system as before, with each gender broken down into six age groups. As the client desired 12 age/gender categories but PSU sample sizes of no more than 10, the solution was as follows: First, the demographic groups were ordered and numbered:

Demographic Group	Gender	Age Category
1	Male	18-24 years
2	Male	25-34 years
3	Male	35-44 years
4	Male	45-54 years
5	Male	55-64 years
6	Male	65+ years
7	Female	18-24 years
8	Female	25-34 years
9	Female	35-44 years
10	Female	45-54 years
11	Female	55-64 years
12	Female	65+ years

As the PSU sample selection algorithm conducted selection both with probability proportional to size (PPS) and systematically, the list of sampled PSUs was by default ordered by stratum and then by geographic location within strata. Moving through the list the assigned quotas rotated, shifting by two each time. As an example, if PSU #97 had a quota for all groups except 6 and 7, then PSU #98 would have a quota for all groups except 8 and 9. The reason for the shift of two rather than one was to ensure that the same demographic group was not missed in two nearby PSUs.

An additional issue arose, which was that allocation to some strata was necessarily small. If only a single PSU was allocated to a stratum and two interviews within that stratum were missed, then those two demographic groups would be entirely un-represented there. The solution was twofold: firstly, the minimum number of PSUs sampled per stratum was set to two. Secondly, in PSUs with only two strata, per-stratum sample sizes were increased to 12 and no demographic groups were missed. The result was that each stratum had a quota of at least two members of each demographic group, and is summarized in the following table:

Georgia				
Stratum		**Voters**	**PSUs**	**Quota per PSU**
1	Tbilisi	984,233	37	10
2	Kakheti Urban	66,437	3	10
3	Kakheti Rural	241,121	9	10
4	Kvemo Kartli Urban	157,903	6	10
5	Kvemo Kartli Rural	242,137	9	10
6	Samtskhe-Javakheti Urban	46,959	2	12
7	Samtskhe-Javakheti Rural	99,201	4	10
8	Adjara Urban	165,375	6	10
9	Adjara Rural	143,131	5	10
10	Guria Urban	22,579	2	12
11	Guria Rural	88,611	4	10
12	Samegrelo-Zemo Svaneti Urban	154,434	6	10
13	Samegrelo-Zemo Svaneti Rural	192,489	7	10
14	Imereti Urban	274,974	10	10
15	Imereti Rural	272,818	10	10
16	Racha-Lechkhumi-Kvemo Svaneti Urban	7,776	2	12
17	Racha-Lechkhumi-Kvemo Svaneti Rural	27,372	2	12
18	Shida Kartli Urban	94,516	4	10
19	Shida Kartli Rural	144,780	5	10
20	Mtskheta-Mtianeti Urban	18,176	2	12
21	Mtskheta-Mtianeti Rural	68,862	3	10
Total		**3,513,884**	**138**	

Within each household, interviewers were instructed to identify the demographic group which (A) had a household member available, (B) they had not yet conducted an interview with in that PSU, and (C) they generally have the most difficulty locating as a respondent. If that household member was unwilling to conduct an interview, then interviewers were permitted to target a household member of the next-highest priority demographic group still unfilled in the PSU.

Sampling Weights

Sampling weights were calculated in multiple stages. The stage 1 sampling weight is the inverse of the PSU selection probability,

$$w_{1,i,S} = \frac{\sum_i V_{i,S}}{n_S V_{i,S}}$$

Otherwise stated, the stage 1 sampling weight for PSU *i* in stratum *S* is equal to the total number of registered voters in all voting precincts in stratum *i* ($\sum_i V_{i,S}$), divided by the product of the number of precincts sampled in the stratum (n_S) and the number of registered voters in PSU *i* ($V_{i,S}$).

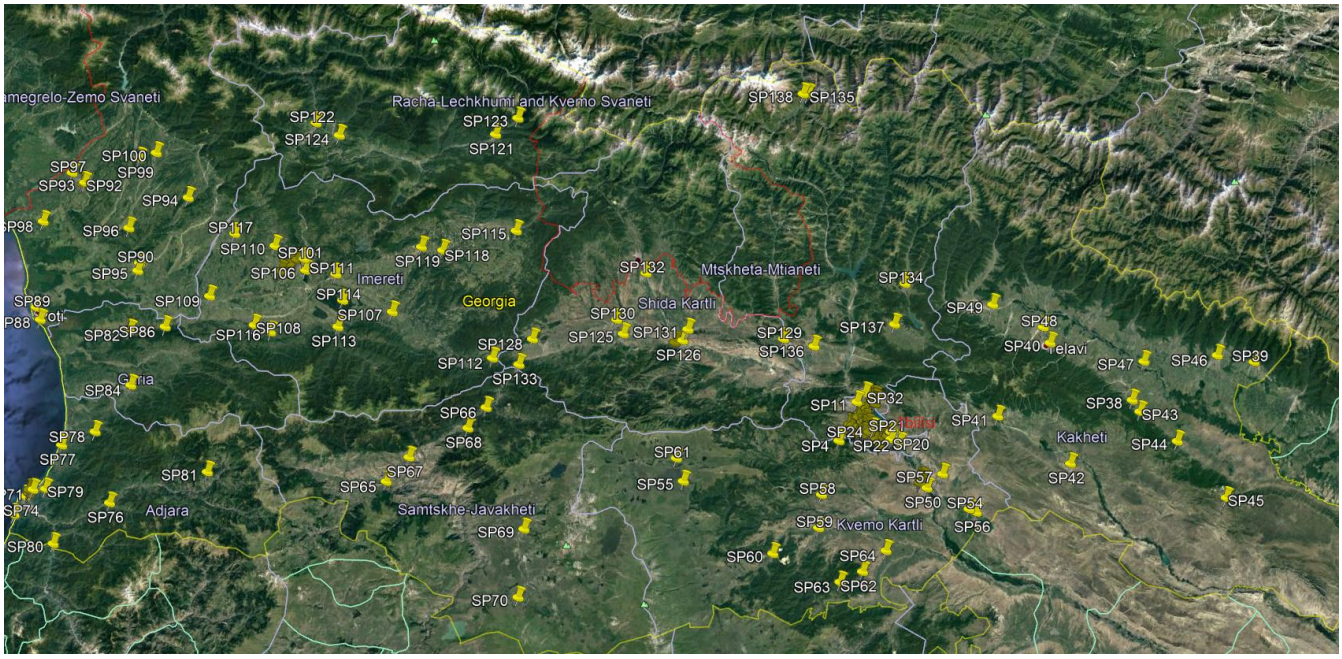
The stage 2 sampling weight is the inverse of the estimated selection probability for a member of each individual demographic group in each PSU. As demographic group-specific population totals were unknown, they were estimated using the number of registered voters in the PSU and census data on the proportions of each age group in the adult population.

$$w_{2,j,i} = \frac{\widehat{M_{J,\iota}}}{1}$$

Otherwise stated, the stage 2 sampling weight for an individual in demographic group *j* in PSU *i* is equal to the estimated number of individuals in demographic group *j* in PSU *i* ($\widehat{M_{j,1}}$) divided by the number sampled.

Base weights were calculated as the sum of the stage 1 and the stage 2 weights. Voting precinct size in the denominator of the stage 1 weight balances that used to calculate the numerator of the stage 2 weight, helping to reduce the variability in sampling weights. hey were then trimmed at the 99th percentile, and were scaled to the total sample size.

Map of PSUs



Part 2: Random Walk Protocol

Starting locations in urban areas are polling stations; interviewers will receive the polling station address along with their sampling point assignments. The interviewer begins facing the building assigned as the starting point, turns to the right, and begins counting households.

The units counted on the random walk are households, the definition of which is a group of people (related or unrelated) who habitually share the same dwelling and who share basic living expenses. This means that each building or courtyard will be entered and the doors to individual residences will be counted, regardless of whether the next selected household will be within that building or not. In the event that an apartment building is inaccessible (a security guard does not permit the interviewer or the interviewer rings all of the buzzers but no tenant opens the door), the interviewer will document this address as being inaccessible. If the interviewer finds multiple residences in the building, he or she will attempt an interview in the first household encountered on his or her right upon entering the building or courtyard. If an interviewer is unable to enter a building and the next household to be counted will not have an interview attempt (i.e. will be number 1-6 in Tbilisi or 1-4 outside of Tbilisi) then it will simply be counted as a single residence and count will continue at the next address. Businesses and construction sites where no one is currently living are not included in the counts.

Step sizes are seven in Tbilisi, the capitol city, which contains more than one quarter of the country's population. Outside of the capitol the step size is five in urban areas, and is three in rural villages. Step sizes are the same regardless of the type of building (apartment building, private home, etc.), in order to avoid bias towards or against residents of a particular type of building.

Figure 1. Gates to private residences in Tbilisi, where every residence encountered will be included in the count and interviews will be attempted at every seventh residence.

However, if the interviews are being conducted in an area where all of the buildings are of the same multi-residence type, the following protocol will be observed in order to increase the geographic spread of the interviews conducted: When finished counting the residences in an Italian yard, larger apartment building, or Soviet-era corpus, the interviewer will skip the next two buildings entirely.

Figure 2. The green arrow in the foreground indicates an entrance to an Italian yard. If households in that yard were counted then the next two entrances to Italian yards (marked with red arrows) would be skipped and the count would resume again at the apartment building in the background (also marked with a green arrow).

Additionally, when counting residences in the corpuses, which are enormous, the interviewer will skip two entrances to the buildings in between each entrance entered.

Figure 3. Entrances to a Soviet-era corpus. If the apartments accessible via the entrance circled in green were sampled then the entrance circled in red and the subsequent entrance would be skipped before the apartments in the following entrance were counted.

Substitution of households will not be permitted. In the event that an interviewer is unable to complete an interview in a targeted household, he or she will make a full step on the random walk path before attempting the next interview.

The path to be followed on the random walks will be as follows: After beginning at the polling station and turning to the right while facing the building, the interviewers will continue to walk straight as long as possible. In the event that the street ends and there is a perpendicular street branching out from it, the interviewers will turn onto this street. If the perpendicular street runs in both directions,

the interviewers will turn right. Every time an interviewer turns onto a new street, he or she will continue the random walk on the right side of that street.

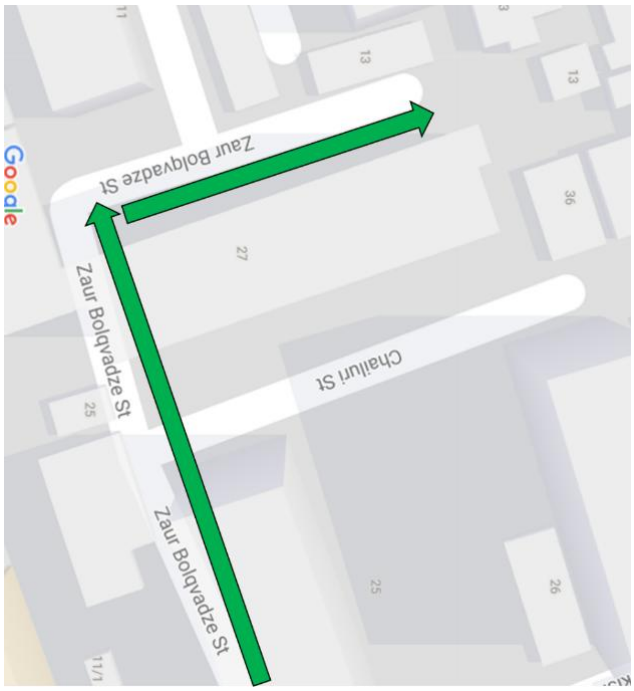


Figure 4. In this example the interviewer continues straight to the end of Bolqvadze Street but it branches to the right so he or she continues counting households on that branch.

In the event that a street dead-ends and there is no perpendicular street, the interviewers will temporarily stop counting households, will return to the last perpendicular street where they could have taken a right (which will now be a left), will follow that to first street parallel to that which dead-ended, and will resume the walk on its right side.

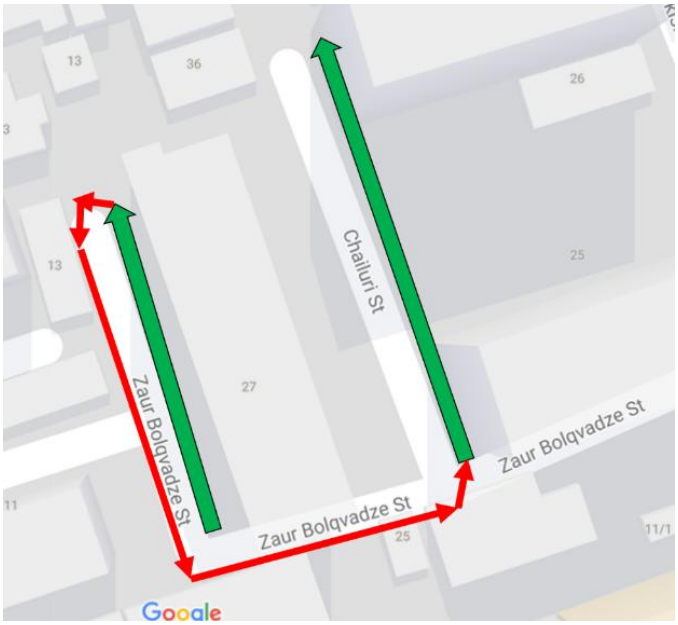


Figure 5. In this example the interviewer reaches the end of Bolqvadze Street and there is a true dead end. The interviewer returns to the last place where he or she could have taken a right (which now the first left encountered), walks to the nearest parallel street, and continues the random walk on that street. In between the dead end and the parallel street the interviewer does not count households.

Inside apartment buildings the interviewers will go to the top floor, will start with the first apartment encountered on his or her right, and will circle the floor counting all apartments.

Figure 6. The top-floor apartments in a corpus entrance (the stairs leading upwards don't lead to more apartments). The first apartment counted is that on the interviewer's right-hand side, and then he or she circles the floor which in this case only means counting a second apartment because there are only two apartments per floor accessible through each entrance.

They will repeat this process on each floor below until reaching the ground.

Figure 7. The second floor from the top in the same entrance (the last floor served by the elevator). The interviewer descends the stairs to this floor, counts the first apartment to his or her right, and then circles the floor in a counter-clockwise direction which in this case only means counting the apartment oppose because there are only two apartments per floor accessible through each entrance.

Inside Italian yards interviewers will count the first household on the right and then move from lower to upper residences counter-clockwise around the yard.

Figure 8. This view of an Italian yard is panoramic - in reality the entrance and the first apartment are in a straight line into the yard.

Figure 9. The first apartment encountered to the right is the first in the count, then the interviewer climbs the staircase and counts apartments on the way up, then the entrance behind the stairs, then the blue door, and then continues around the yard in a counter-clockwise direction.

Making Contact with the Household

Contact with the household may be unsuccessful for a number of reasons:

- The dwelling may turn out to be non-residential, such as an apartment used as an office;
- No one is at home;
- The door is not opened, or you are simply unable to get into the building;
- A household member refuses.

In any of these cases, you must continue along the route. You cannot simply choose the next apartment, but must make a complete step size before the next interview attempt. If the door is opened and you are not refused, then you must select a household member for interview.

Quota Assignments

Please refer to your individual quota assignment. The assignments vary by sampling point. In some sampling points outside the capital there is one interview required with each demographic group. In most sampling points, however, you will be assigned 10 of the 12 total demographic groups.

You should first identify the adult household members available for interview. You should then refer to your assigned list and identify the demographic group which (A) has a household member available,

(B) you have not yet conducted an interview with, and (C) generally have the most difficulty locating as a respondent. If this household member is unwilling to conduct an interview, then you may choose from other available household members. However, if you are unable to conduct an interview in the targeted household, then you must make a complete step (7 in Tbilisi, 5 in other urban areas, and 3 in rural villages) before attempting contact with another.

Part 3: Technical and Methodological Approach

Technological Approach

The technology and approach GORBI uses for surveys is competitive and unrivalled in this region. The organization has grown tremendously due to its focus on adopting the newest technologies available. For example, the IT Department is equipped with local and off-site data management and storage, CAPI, CATI, and CAWI collection methodologies, fieldwork quality control via GPS capabilities in seven countries, as well as focus group facilities with the ability to provide clients a live view of related fieldwork.

GORBI has pioneered the use of GPS methodology in the Caucasus, Central Asia, Moldova, and Belarus, and provides a real-time data collection method when data collection is conducted by tablets powered by GSM. The company has also developed special software that synchronizes GPS readings with interview IDs, times of conducted interviews, and other important variables. GORBI maintains over three hundred netbooks and tablets in Georgia that serve as hardware for these proprietary programs known collectively as GORBI Computer Assisted Entry Software Suite (G-CAESS). The software also has the ability to immediately upload data from the field, record interview timing, and integrate directly with GPS devices. In 2008, GORBI was the first research firm in the South Caucasus region to use GPS devices during fieldwork.

Data Collection Technology

GORBI has developed significantly in terms of experience, sophistication and technology over the past 25 years. The use of hand-held devices in survey research encouraged the company to invest in both hardware and software solutions. GORBI has developed its own proprietary in-house software for data processing that exceeds technological requirements used by the international survey industry. All of the interviews in Georgia were conducted using the Computer Assisted Personal Interview method (CAPI). GORBI scripted questionnaires in languages required and installed survey modules on the tablets. Comprehensive tests were run prior to trainings for staff conducting pilot interviews.

Data Security

All data from the field are channeled to GORBI's primary server room in Tbilisi. The IT department possesses state-of-the-art technology and is staffed with IT specialists capable of **ECOserve** - Management of natural resources utilizing these tools during all stages of data collection. In 2016, GORBI overhauled its entire IT infrastructure in order to create a safer and more secure data warehouse, incl. a new dedicated secure-access server room and high-powered servers protected with advanced firewall and VPN tunneling technology. This allows for data to be directly transferred from the field to GORBI's office. The system is monitored at all times to assure maximum performance and security.

Methodological Approach

Questionnaire Development

In close cooperation with GIZ, ACT Assist and GORBI developed the questionnaire, which includes country-specific as well as location specific variables and variables based on GIZ intended interventions as well as making sure that, where applicable, survey results allow for comparison with the 2016 KAP Survey.

Once the draft survey was agreed upon and scripted, the pilot interviews were conduct. The pilot interviews were held between 25-26 August. In total 20 interviews were conducted. Please find the feedback and corresponding outcomes (decided upon in cooperation with GIZ) for the questionnaire in the table below.

QUESTION NUMBER	PILOT FEEDBACK	OUTCOME
General	Survey is too long (average duration is 42 minutes)	Questions B2, F2, F5, Fw1 and FSR2 were deleted.
H&N1.1	needs SHOW CARD for better understanding	SHOW CARD added
H&N3.	"10. animal species" – the respondents have mentioned that some species are almost extinct, and some predators have increased in numbers.	Interviewers received instruction during training that if respondents believe a species is extinct, they should choose "got a lot less "
H&N4.	On statement "Separate Household waste (glass, plastic, paper and cans)" many answer that they are willing to do so, but since there is no relevant infrastructure, they can't practice it	Interviewers received instruction during training that this is a 'P' (=Practice/action) question, not an 'A' (=attitude/willingness) questions; so the answer in this case would be " rarely/never/ not applicable".
H&N4.	A definition for "3. Composting" needs to be included	Definition included: "Composting, i.e. recycling organic materials (e.g. food or garden waste) for improving soil with nutrients"
H&N5.	needs SHOW CARD for better understanding	SHOW CARD added
H&N6.	needs SHOW CARD for better understanding	SHOW CARD added
H&N8.	needs SHOW CARD for better understanding	SHOW CARD added
B1	needs SHOW CARD for better understanding	SHOW CARD added
B2	What to consider under "Medicine"	Examples included: "Medicine, e.g. tea, herbs, and other medicinal plants"
B4a	Unclear how the respondents should identify the trees	Interviewers received instruction during training that respondents should be able to identify the trees from the show card
B5	needs SHOW CARD for better understanding	SHOW CARD added
B5	Not clear "7. health risks in general"	Description and examples included: "health risks in general, something that harms or affects your health, e.g. alcohol use, unsafe sex, high blood pressure etc."
CC3.	needs SHOW CARD for better understanding	SHOW CARD added
F3.	needs SHOW CARD for better understanding	SHOW CARD added

QUESTION NUMBER	PILOT FEEDBACK	OUTCOME
F7	If the respondent doesn't have children, however have been in the forest	Interviewers received instruction during training that in this case they should select the answer: "don't have children under the age of 18"
E1	It's unclear to respondents what "briquette" means	SHOW CARD added with explanation: "briquette: a compressed block of coal dust, charcoal, sawdust, wood chips, peat, or paper"
H8	Confusion about what type of stove is discussed, since people may be using different types of stove as well.	Interviewers received instruction during training that the question only concerns firewood stoves In addition, specification "firewood stoves" was added
F1	needs SHOW CARD for better understanding	SHOW CARD added
F3	needs SHOW CARD for better understanding	SHOW CARD added
Fw2.	Some people are using dry firewood	Answer option added: "I use dry firewood"
Fw5.	In answer options, for both seasons should be added "0". E.g. if household use gas stove for cooking and firewood for heating. For cooking they will have to mark 0 m^3 firewood	Answer option added: "0"
Fw9.	All respondents are already buying good quality firewood.	Answer option added: "I am buying high-quality firewood, dry firewood already "
H2b.	Some respondents don't heat any room.	Answer option added: "I do not heat any room"
H4	The answer of some respondents was "I don't consider the firewood has a harmful effect on the health"	Answer option added: "I don't consider that firewood has harmful effects on my health"
H5 – H8	Not clear enough whether the question concerns heating or cooking stove	differentiation has been added to H5.GE and H7
H5.	Respondents use more than one type of energy source: multiple answers should be possible	Created a multiple response question
H5.	Some respondents don't use a stove, answer option : "I don't use a stove for this purpose" should be included.	Answer option added: "I don't use a stove for this purpose"
H5.GE	Respondents use multiple kinds of stoves: multiple answers should be possible	Created a multiple response question
H5.GE	Respondents use an electric stove and central heating system, these options should be added. "electric stove"	Answer options added: "electric stove" and "centralized heating system
H5.GE	needs SHOW CARD for better understanding	SHOW CARD added
H7.	Misunderstanding about what should be included: the whole *centralized heating system,* or just *stove*	Interviewers received instruction during training that only the stove should be included

QUESTION NUMBER	PILOT FEEDBACK	OUTCOME
F8	During the last year the respondent have seen roe deer in Europe. Does it count?	Interviewers received instruction during training that only animals in Georgia count
E3	needs SHOW CARD for better understanding	SHOW CARD added
E4	Better not to read the answer option out loud	Instruction added: if no spontaneous answer, read out
E4	It's unclear to respondents what "briquette" means	SHOW CARD added with explanation: "briquette: a compressed block of coal dust, charcoal, sawdust, wood chips, peat, or paper"
E5	It is unclear what "long-distance heating" means	Description and examples included: district heating, i.e. distributing heat generated in a centralized location through a system of insulated pipes
E5	Should "0=haven't heard about this source of energy"?	Interviewers received instruction during training that DK can be selected in case respondents hasn't heard about a source of energy.
E7	What to do if the respondent has access to all the options, but doesn't want and need to invest in improvement of energy situation of his/her HH	Answer option added: "I have access to finance but do not want to invest"
FSR3.	For clarification, would be good to add: ".....receiving firewood from state"?	Clarification added
FSR3.	needs SHOW CARD for better understanding	SHOW CARD added

Training and Supervision of Interviewers

While evaluating candidates for fieldwork, GORBI considered three minimum selection criteria: previous experience in CAPI techniques and surveys with similar topics and organization; level of education, especially in relevant fields; and availability throughout the duration of the fieldwork.

All interviewers and supervisors participated in a face to face briefing, which was took place from 19 to 23 of September at GORBI's headquarters in Tbilisi and from 24 to 26 of September in four regions of Georgia: Adjara, Samegrelo, Imereti and Kakheti. The training sessions with the interviewers were conducted by the country manager and in regions by supervisors that were trained by the country manager. The trainings covered the following topics:

- Debriefing on the objectives of the study, quality control mechanisms and overall conduct of the project
- Detailed explanation of each question so that enumerators are able to interpret all questions consistently and ask all questions in the prescribed manner with informed explanations to help respondents in case of difficulties
- Instruction on how to properly use CAPI during the interview process (convention for numeric variables, importance of legal values, how to differentiate and record replies such as for open ended questions, non-applicable, refusal to answer, don't know, etc.)
- Techniques to secure participation, interviewing techniques, how to handle difficult situations and common occurrences, probing, etc.
- Mock interviews

- Comprehension test
- Logistics and schedules.

During the fieldwork, supervisors monitored the progress made by interviewers, maintaining constant communication with the country manager. Every morning the country manager received a report regarding the current situation of filed questionnaires (number of interviews uploaded, and quality assessment of those interviews based on various parameters) from the data quality control team. Following this check, the country manager will instruct the supervisors about any actions or clarification that the situation would require.

Interviewers were instructed to contact the supervisor to discuss any discrepancies or perceived problems. Supervisors also monitored the progress made by interviewers. The country manager was also in constant contact with them for additional feedback. All questionnaires were checked on the same day, as soon they are uploaded on GORBI's servers.

Fieldwork

Fieldwork was done by face-to-face interviews in respondents' homes in their preferred languages. As mentioned earlier, the interviews were conducted using CAPI. 1400 respondents were interviewed.

All interviews were conducted in strict adherence to the sampling plan. GORBI organized and supervised all aspects of fieldwork, including: preparing the final questionnaires; preparing training manuals; selecting and training interviewers; assigning fieldwork tasks (geo locations, starting points, quotas, etc.) to interviewers; supervising interviewers; enforcing quality controls; monitoring and recording contact and non-response rates.

Data Quality Control

GORBI's proprietary quality control system and strict quality control protocols are perhaps the most central feature of GORBI's data collection methodology. Proprietary data collection software records:

- A time stamp on every entry to the cover sheet and questionnaire;
- A GPS recording of the location of the tablet at the time of every entry to the cover sheet and questionnaire;
- A full audio recording of the entire duration of the contact between the interviewer, the household, and the respondent.

These data collection capabilities give GORBI a unique ability to not only record but to visualize the activities of interviewers and ensure high quality of data. This ability ranges from the nationwide level, to the level of the individual interviewer:

GORBI's data management team runs scripts through the data set daily to flag the following occurrences:

- A contact attempt more than 100 m away from any other contact attempt for the same household;
- A contact attempt outside of normal working hours;
- A change of location of more than 10 m during the interview;
- A total interview duration more than two standard deviations below the mean interview duration;
- A question response time more than two standard deviations below the mean response time for any question.

While these statistics are calculated daily, an additional script is developed for each questionnaire and is run periodically throughout the fieldwork period. This script flags

- Illogical/unusual combinations of responses;
- Respondent answers to any enumerator significantly more or less homogenous than those given to other enumerators.

Any time that any interview was flagged, 100% of the interviews per relevant interviewer were checked by listening to the audio file. After listening to the audio file the decision was made whether cheating occurred or whether there was a legitimate reason for the irregularities observed, and action is taken as necessary. In addition, 30% of each interviewer's work was verified by listening to audio recordings of the interviews. In the event that an enumerator was caught cheating, all of his/her interviews were deleted from the data base.

Part 4: Issues

Fieldwork for Georgia was completed on time without complications. GORBI has a team of experienced interviewers and provided extensive training on this specific survey before the start of fieldwork. In addition, due to the quality control procedures and close monitoring of the fieldwork progress, most things that could become an issue otherwise are caught early on and prevent it from becoming a problem. There was only one issue with the sample that was drawn, which was corrected before the start of fieldwork. Namely, 4 PSUs that were selected were replaced due to a language barrier because in those villages interviews cannot be properly conducted in Georgian or Russian (would have to be in Armenian or Azerbaijani); 1 PSU in Bolnisi and 3 PSUs in Marneuli were replaced. In addition, during data quality control, 9 interviews were rejected because; interviewer was not interviewing the correct HH respondent or in the wrong place or because the interviews were very short. This was caught before the end of fieldwork so new interviews were conducted in a timely fashion.

ANNEX 2 QUESTIONNAIRE FOR KAP 2019 IN GEORGIA

A Nationwide Survey

HUMANS & NATURE

H&N1.1. There is a common toast in Georgia - "To our beautiful Georgian nature!" In your opinion: What is the meaning of this toast? SHOW CARD H&N1.1

...that Georgians should appreciate the richness and variety of their country's landscapes and natural wonders	1
...that Georgians should appreciate their country's natural products	2
...that Georgians should appreciate the richness and variety of their country's animals and plants	3
Don't know	4

H&N1. In which way have the conditions of the natural resources in the area of your residence changed in the past 2-3 years? (Pastures, forests, fish, wild animals, fruits, berries, mushrooms, green spaces, etc.).

Worsened	1
Remained the same	3
Improved	3
Don't know (DO NOT READ OUT)	9

H&N3. What observations did you make over the last 5-10 years regarding the situation of natural resources in Georgia? ONE ANSWER PER LINE.

natural resources SHOW CARD H&N3.a	**no change**	**got a bit better**	**got a lot better**	**got a bit worse**	**got a lot worse**	**Don't know**
1. air quality	1	2	3	4	5	9
2. water quality	1	2	3	4	5	9
3. soil quality	1	2	3	4	5	9
4. Natural resources in/near rivers	1	2	3	4	5	9
5. Natural resources in/near lakes	1	2	3	4	5	9
6. Natural resources related to pastures	1	2	3	4	5	9
7. Natural resources related to mountains	1	2	3	4	5	9
8. Natural resources related to Black Sea	1	2	3	4	5	9
SHOW CARD H&N3.b.	**no change**	**got a bit more**	**got a lot more**	**got a bit less**	**got a lot less**	**Don't know**
10. animal species	1	2	3	4	5	9
11. plant species	1	2	3	4	5	9
12. forests	1	2	3	4	5	9
13. green spaces in urban areas	1	2	3	4	5	9

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

H&N4. Did you take any action at home to help protect the natural environment? SHOW CARD H&N4. ONE RESPONSE ONLY PER LINE.

	Always	Often	Rarely	Never	Not applicable	Don't know
1.Separate Household waste (glass, plastic, paper and cans)	1	2	3	4	7	9
2.Use an organic bin for kitchen/garden waste	1	2	3	4	7	9
3. Composting, i.e. recycling organic materials (e.g. food or garden waste) for improving soil with nutrients	1	2	3	4	7	9
4.Use fewer fertilizers	1	2	3	4	7	9
5.Use energy efficient bulbs	1	2	3	4	7	9
6.Laundry washing at lower temperatures	1	2	3	4	7	9
7.Saving water, e.g. while washing fruits/vegetable, car washing, brushing teeth etc.	1	2	3	4	7	9
8.Switch light off when not needed	1	2	3	4	7	9
9.Use energy-efficient building materials	1	2	3	4	7	9
10.Use products with less packaging	1	2	3	4	7	9
11.Grow plants on your balcony and garden that attract insect pollinators, e.g. bees, butterflies etc.	1	2	3	4	7	9
12.Attract wildlife in your garden e.g. by means of feeders and nesting boxes	1	2	3	4	7	9
13.Buy environmentally-friendly or organic products when available	1	2	3	4	7	9
14.Use non-plastic carrier bags when doing my shopping	1	2	3	4	7	9
15. Refrain from burning leaves and waste	1	2	3	4	7	9

H&N5. What do you think can be done in order to protect nature in Georgia? Please rank the top 5 priorities you would select from the list of activities below? SHOW CARD H&N5. MAX 5 ANSWERS, IN RANKING.

Priority	Selected priorities
1. Improve waste collection and disposal	1
2. Ban single-use plastics, e.g. shopping bags, straws, cutlery, coffee-to-go cups etc.	2
3. Avoid negative impact of natural resources exploitation, e.g. mining, cutting of forests, pollution of rivers, air pollution through traffic and industries	3
4. Greening urban public and private spaces (such as gardens, flowerbeds etc.)	4
5. Sound environmental policies/governance	5
6. Increase environmental communication, education and awareness raising through media, schools and NGOs	6
7. Mitigate and adapt to climate change	7
8. Promote the recreational value of nature	8
9. Make people aware of the benefits and services nature provides for free, e.g. fresh air, water purification, recreational value etc.	9
10. Promote eco-tourism	10

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

Priority	Selected priorities
11. Enforce environmental and forestry laws	11
12. Heavy fines for environmental polluters	12
13. Support environmentally friendly initiatives of rural communities	13
14. Don't know (Do not read out)	14

H&N6. Which THREE (3) policy topics should the government in Georgia deal with? SHOW CARD H&N6. MAX 3 ANSWERS.

Reduce crime	1
Reduce corruption	2
Improve the quality of education	3
Protect the environment, incl. forests, rivers, lakes etc.	4
Improve healthcare	5
Prevent the extinction of animals and plants	6
Increase salaries	7
Create jobs	8
Fight drug abuse	9
Reduce traffic	10
Air pollution	11
Natural disasters	12
Adapt to climate change	13
Other: ...	14
Don't know	15

H&N7.GE Who should be mainly responsible for protecting the environment? single answer

Industry	1
Government	2
Environmental groups	3
All citizens	4
The local government	5
Nobody	6
Don't know	7

H&N8.GE In your opinion: What does "sustainable development" mean? SHOW CARD H&N8.GE SINGLE ANSWER

Development, that provides the most jobs	1
Development that will save the environment even if it means lots of people will lose their jobs	2
Development that takes into consideration the economic, social and environmental needs of future generations	3
Don't know	4

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

BIODIVERSITY

Biodiversity *means the variety of all forms of life – plants, animals, humans and other organisms that live in a particular area together with the complex relationship between them and their physical environment*
An ***ecosystem*** *is a biological community of plants, animals, humans and organisms that live in a particular area or region in harmony with each other and their physical environment (e.g. forests, mountains, grassland/pasture, cropland, rivers, lakes etc.)*

B1. How concerned are you about the loss of biodiversity in specific ecosystems? SHOW CARD B1.

Ecosystems	Very concerned	Mostly concerned	Less concerned	Not at all concerned	Don't know
1. Forest	1	2	3	4	9
2. Mountains	1	2	3	4	9
3.Grassland/pasture	1	2	3	4	9
4. Cropland	1	2	3	4	9
5. Rivers	1	2	3	4	9
6. Lakes	1	2	3	4	9

B3. Do you believe that one or more of the following aspects threatens biodiversity and the natural environment in Georgia? SHOW CARD B3. ONE ANSWER PER LINE.

	Very much	To some extent	Not very much	Not at all	Don't know
1. Intensive/industrial farming (e.g. using fertilizers, chemical pesticides, antibiotics etc.)	1	2	3	4	9
2. Overuse of forest resources	1	2	3	4	9
3. Over-fishing/over-hunting	1	2	3	4	9
4. Water pollution (rivers, lakes, seas, etc.)	1	2	3	4	9
5. Air pollution	1	2	3	4	9
6. Man-made disasters (e.g. industrial or nuclear accidents, dam failure, chemical spill from mines etc.)	1	2	3	4	9
7. Plants and animals introduced into our environment that are not normally found in our region or country	1	2	3	4	9
8. Climate change and natural disasters (floods, storms, heat, other extreme weather events)	1	2	3	4	9
9. Increasing use of natural areas for roads, housing, industry, farmland etc.	1	2	3	4	9
10. Negative impacts of tourism	1	2	3	4	9
12. Loss of animal or plant species	1	2	3	4	9
13. Poor waste management, incl. hazardous waste	1	2	3	4	9
14.Large-scale hydropower	1	2	3	4	9
15. Forest fires, meadows burning	1	2	3	4	9
16. Heating & cooking with firewood	1	2	3	4	9
17. People's careless attitudes towards nature	1	2	3	4	9
18. Absence of and/or poor wastewater treatment	1	2	3	4	9

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

B4a.1 Can you identify one or more tree species from the set cards shown to you?
B4a.2 And can you identify which one of these trees is on the red list of endangered species?
SHOW CARD B4a.

	B4a.1	B4a.2
Beech	1	1
Hornbeam	2	2
Oak	3	3
Spruce	4	4
Pine	5	5
Fir	6	6
Chestnut	7	7
Don't know	8	
Don't know what a 'red list' is		9
Don't know which one of these trees is on the red list		10

B5. Which of the following problems pose a risk to the livelihood of your family? SHOW CARD B5.

Problems	very high risk	high risk	low risk	no risk	Don't know
1 climate change	1	2	3	4	9
2 deforestation (e.g. illegal logging)	1	2	3	4	9
3 extinction of animals or plants	1	2	3	4	9
4 air, water and/or soil pollution (e.g. by smog or gases from factories or power plants, or chemicals such as in pesticides, fertilizers or insecticides)	1	2	3	4	9
5 overpopulation	1	2	3	4	9
6 natural disasters (e.g. flood, drought, storms)	1	2	3	4	9
7 Health risks in general, something that harms or affects your health, e.g. alcohol use, unsafe sex, high blood pressure etc.	1	2	3	4	9
8 loss of arable or pasture land	1	2	3	4	9
9 no access to drinking water	1	2	3	4	9
10 conflict over natural resources (e.g. land, water source)	1	2	3	4	9
11 livestock disease	1	2	3	4	9
12 hotter temperature	1	2	3	4	9
13 lower temperature	1	2	3	4	9
14 urban problems (traffic jams, pollution, lack of green spaces, etc.)	1	2	3	4	9
15 growing waste volume	1	2	3	4	9
16 use of pesticides/herbicides	1	2	3	4	9

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

CLIMATE CHANGE

CC1. When you hear people talking about "climate change": What kind of change do you think they are talking about? ONE ANSWER PER LINE.

	Yes	No	Don't know	
1. change of weather	1	2	9	
2. change in average temperature	1	2	9	
3. change in length of seasons	1	2	9	
4. change in frequency of extreme weather events (floods, droughts)	1	2	9	
5. change in forest cover	1	2	9	
6. change in air quality	1	2	9	
7. change in water supply	1	2	9	
8. change in sea level	1	2	9	
9. never heard of "climate change"	1			GO TO CC3.
10. I heard of "climate change" but don't know the meaning	1			GO TO CC3.

CC2. Which of the following statements about climate change in Georgia is true? ONE ANSWER PER LINE.

Statement	**true**	**not true**	**Don't know**
1. Climate in Georgia will not change because Georgia is protected by mountains	1	2	9
2. The weather in Georgia will get worse from year to year	1	2	9
3. The amount of rainfall in Georgia will increase from year to year	1	2	9
4. Climate change will result in a higher frequency of storms, floods and droughts in Georgia	1	2	9
5. Climate change will result in the destruction of forests in Georgia	1	2	9
6. Climate change in Georgia is caused by human activities in Georgia	1	2	9
7. Climate change will increase the destruction of crops by new pests in Georgia	1	2	9

CC3. What observations did you make over the last 5-10 years regarding the following extreme weather events in Georgia? SHOW CARD CC3. ONE ANSWER PER LINE.

event	**no change**	**got a bit more**	**got a lot more**	**got a bit less**	**got a lot less**	**Don't know**
1. heat waves	1	2	3	4	5	9
2. cold snaps	1	2	3	4	5	9
3. floods	1	2	3	4	5	9
4. droughts	1	2	3	4	5	9
5. snow fall	1	2	3	4	5	9
6. storms	1	2	3	4	5	9
7. heavy rainfall	1	2	3	4	5	9
8. wildfires	1	2	3	4	5	9

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

FOREST

F1. Which benefits and services does the forest provide for you? SHOW CARD F1. MAX 5 ANSWERS.

firewood	1
construction material for housing	2
berries	3
mushrooms	4
medicinal plants	5
fodder for livestock (cows, goats, sheep)	6
meat (from hunting)	7
fresh air	8
recreation, picnic	9
beauty of nature	10
wind protection	11
soil erosion prevention	12
water cycle regulation	13
protection against floods and mudflows	14
Don't know	15
None of the benefits	16

F3. What are the three most pressing problems for forests in Georgia? SHOW CARD F3. MAX 3 ANSWERS.

Legal logging	1
Illegal logging	2
Commercial logging	3
Subsistence logging for household consumption	4
forest fires	5
firewood extraction	6
pests & diseases	7
hydropower dams	8
overgrazing	9
drought	10
Waste	11
Storms	12
None	13
Don't know	14

F4. Who is most responsible for maintaining healthy forests?

people who benefit from the forest	1
all citizens	2
the forest agency	3
the government	4
nobody	5
Don't know	6

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

F6. How many people do you know whose jobs are related to the forest and to wood processing, e.g. wood cutters, foresters, rangers, carpenters, or working with wood in handicraft enterprises, furniture production etc.?

0	1-2 persons	3-5 persons	more than 5 persons
1	2	3	4

F7. During the last 12 months, on how many occasions did you spend time in the forest or in a natural environment with your children under the age of 18? SHOW CARD F7. ONE ANSWER PER LINE.

	don't have children under the age of 18 - 10				
	0	**1-2 occasions**	**3-5 occasions**	**more than 5 occasions**	**Do not remember**
1. Forest	1	2	3	4	9
2. Nature	1	2	3	4	9

F8. During the last 12 months, how many wild animals did you see/hear in their natural environment? ONE ANSWER PER LINE.

Animal	**0**	**1-2**	**3-5**	**more than 5**
1. wild pig	1	2	3	4
2. bear	1	2	3	4
3. wolf	1	2	3	4
4. roe deer	1	2	3	4
5. wild cat	1	2	3	4
6. jackal	1	2	3	4
7. wild goat	1	2	3	4
I do not go to the places where I can see animals in their natural environment - 5				

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

ENERGY

E1.GE Which energy sources for heating and cooking do you use? Please answer about the energy sources used in your main residence. SHOW CARD E1. MULTIPLE ANSWERS

firewood	1	IF NOT SELECTED SKIP FIREWOOD Fw1. - Fw10
dung	2	
gas	3	
oil	4	
briquettes, i.e. a compressed block of coal dust, charcoal, sawdust, wood chips, peat, or paper	5	IF SELECTED SKIP E4
electricity	6	
solar energy	7	
Don't know	8	

E3. Why do you use the energy source(s) you use? SHOW CARD E3. MULTIPLE ANSWERS.

because it is the most convenient energy source to use	1
because of its low costs	2
because it is cleaner	3
because it takes less time to cook/to heat	4
because it is most efficient when I compare costs and benefits	5
because the energy from this source lasts longest	6
Don't know	9

E4. Why do you not use briquettes (i.e. a compressed block of coal dust, charcoal, sawdust, wood chips, peat, or paper)? MULTIPLE ANSWERS.

not available	1
too expensive	2
inconvenient to use	3
not enough space for storage	4
I do not have the right stove for briquettes	5
Other (specify)	6
Don't know	7

E5. On a scale from 1-10: How much do you know about the following sources of energy? (1=know very little, 10=know very much) SHOW CARD E5. ONE ANSWER PER LINE.

Energy sources	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Don't know**
1. firewood	1	2	3	4	5	6	7	8	9	10	99
2. dung	1	2	3	4	5	6	7	8	9	10	99
3. gas	1	2	3	4	5	6	7	8	9	10	99
4. oil	1	2	3	4	5	6	7	8	9	10	99
5. briquettes, i.e. a compressed block of coal dust, charcoal, sawdust, wood chips, peat, or paper	1	2	3	4	5	6	7	8	9	10	99
6. district heating, i.e. distributing heat generated in a centralized location through a system of insulated pipes	1	2	3	4	5	6	7	8	9	10	99
7. electricity	1	2	3	4	5	6	7	8	9	10	99
8. nuclear energy	1	2	3	4	5	6	7	8	9	10	99

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

Energy sources	1	2	3	4	5	6	7	8	9	10	Don't know
9. photo-voltaic/solar energy	1	2	3	4	5	6	7	8	9	10	99
10. wind energy	1	2	3	4	5	6	7	8	9	10	99
11. large-scale dam-related hydropower	1	2	3	4	5	6	7	8	9	10	99
12. small-scale, in-river mini-hydropower	1	2	3	4	5	6	7	8	9	10	99
13. geothermal energy	1	2	3	4	5	6	7	8	9	10	99

E6. Would you use other energy sources if they would be available? MULTIPLE ANSWERS.

No	1
Yes, if it is as convenient to use as the one I am currently using	2
Yes, if it is as cheap as the one I am currently using	3
Yes, if it is more environmentally friendly than the one I am currently using	4
Don't know	6

E7. What access to finance do you have to invest in an improvement of your energy situation at home? MULTIPLE ANSWERS.

bank loan	1
private loan	2
loan through a project	3
loan through another organization (e.g. NGO)	4
savings	5
none	6
I have access to finance but do not want to invest	7
Don't know	8

E8.GE Do you get any kind of subsidy on energy sources from the government? MULTIPLE ANSWERS.

Yes, gas subsidy	1
Yes, electricity subsidy	2
Yes, firewood subsidy	3
No	4
Don't know	6

E9.GE How do you make sure you use energy efficiently? (MULTIPLE ANSWERS POSSIBLE) SHOW CARD E9.GE

I use dry firewood for heating	1
I have my house thermally insulated	2
I use energy efficient bulbs	3
I use energy efficient windows	4
I switch lights off when not needed	5
I don't care about energy efficiency	6
Don't know	7

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

FIREWOOD

"Firewood" in the context of questions Fw1-Fw10 refers to any wooden material used for fuel. Firewood can originate from inside people's own garden or from outside people's home, e.g. in a forest. Firewood can be collected/cut by people themselves or it can be provided/sold by other people/traders.

Fw2. Why do some people NOT use dry firewood? SHOW CARD Fw2. MULTIPLE ANSWERS.

drying firewood over 1-2 years takes too long	1
dry firewood burns too hot and will destroy the oven	2
moist firewood burns longer than dry firewood	3
I use dry firewood	4
Don't know	5

Fw3. Do you know that dry firewood burns better and with less smoke?

Yes	1
No	2

Fw4. Would you use firewood in case gas is available? SHOW CARD Fw4. MULTIPLE ANSWERS.

yes, to reduce costs for gas	1
yes, food cooked on a firewood stove tastes better	2
yes, a firewood stove heats the kitchen while cooking, a gas stove does less	3
yes, a firewood stove heats the house better	4
No	5
Don't know	6

Fw5. How much firewood do you need in winter and in summer in total, and how much do you need for cooking and for heating in summer and in winter? Summer and winter account for approximately six cold and six warm months respectively. ONE ANSWER PER LINE.

	0 m^3	**0.1-2 m^3**	**2.1-5 m^3**	**5.1-7 m^3**	**7.1 and more m^3**	**Don't know**
a. Total in summer	1	2	3	4	5	9
b. Cooking in summer	1	2	3	4	5	9
c. Heating in summer	1	2	3	4	5	9
	0 m^3	**0.1-3 m^3**	**3.1-7 m^3**	**7.1-10 m^3**	**10.1 and more m^3**	**Don't know**
d. Total in winter	1	2	3	4	5	9
e. Cooking in winter	1	2	3	4	5	9
f. Heating in winter	1	2	3	4	5	9

Fw6. Is the amount of firewood you purchase yourself/receive from state/collect or cut yourself enough to heat your home?

Yes	1
No	2
Don't know	3

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

Fw7. Do you prefer going to the forest yourself to cut firewood or do you prefer buying firewood?

cut firewood myself	1
buy firewood	2
other:	3

Fw8. How much are you actually paying for 1 m^3 of firewood right now?

0 GEL/m^3	1 -5 GEL/m^3	6-20 GEL/m^3	21-40GEL/m^3	41-60 GEL /m^3	61-80 GEL /m^3	81-100 GEL /m^3	100< GEL /m^3	Don't know
1	2	3	4	5	6	7	8	9

Fw9. How much would you be willing to pay for 1 m^3 of better-quality, dry firewood?

0 GEL/m^3	1-5 GEL/m^3	6-20 GEL/m^3	21-40GEL/m^3	41-60 GEL /m^3	61-80 GEL /m^3	81-100 GEL /m^3	100< GEL /m^3	Don't know
1	2	3	4	5	6	7	8	9
I am buying high-quality firewood, dry firewood already - 10								

Fw10. What incentives would you need to switch from firewood to other energy sources? MULTIPLE ANSWERS.

I would not switch	**1**
if the new energy source was more convenient to use than firewood	**2**
if the new energy source was cheaper than firewood	**3**
if the new energy source was more environmentally friendly than firewood	**4**
if the new energy source was healthier, with less smoke and dust, than firewood	**5**
Don't know	6

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

HOUSING

Thermal insulation refers to material that reduces heat loss, e.g. double-glazed windows, roof or wall insulation, etc.

H1a. Do you know to what degree thermal insulation could make your home warmer?

	10-20%	20-30%	30-40%	40-50%	50-60%	>60% warmer
insulation will make my home	1	2	3	4	5	6

I don't think that insulation will make my home warmer 7
other: 8
Don't know 9

H1b. How many rooms are in your apartment/house (the main residence)? *DO NOT COUNT BASEMENT AND CELLARS.*

rooms:	1	2	3	4	5	>5
	1	2	3	4	5	6

H1c. Does your apartment/house (the main residence) have thermal insulation (e.g. windows, roof and/or wall insulation)? MULTIPLE ANSWERS.

Yes, windows are insulated	1	
Yes, roof is insulated	2	
Yes, walls are insulated	3	
No	4	GO TO H2a
Don't know	5	GO TO H2a

H1d. How many rooms have thermal insulation in your apartment/house (the main residence)?

whole house	rooms:	1	2	3	4	5	>5
7		1	2	3	4	5	6

H2a. Do you have a centralized household heating system (heating all rooms of the house)?

Yes	1	GO TO H3.
No	2	GO TO H2b.
Don't know	9	GO TO H2b.

H2b. How many rooms do you heat by means other than a centralized heating system?

rooms:	0	1	2	3	4	5	>5	whole house	Don't know
	1	2	3	4	5	6	7	8	9

H3. On a scale from 1-10: In general, how comfortable is the room temperature in your home in winter? (1=not comfortable at all, 10=very comfortable) SHOW CARD H3.

1	2	3	4	5	6	7	8	9	10

Don't know 99

H4. On a scale from 1-10: How much do you know about the harmful effects from firewood on your health? (1=know very little, 10=know very much about it, 0=I know nothing about it) *SHOW CARD H4.*

Nothing 0	1	2	3	4	5	6	7	8	9	10

I don't consider that firewood has harmful effects on my health 11

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

H5. What source(s) of energy do you use for heating your house? SHOW CARD H5. MULTIPLE ANSWERS.

Gas	1
Electricity	2
Firewood	3
Improved firewood (dry, higher efficiency)	4
Pellet	5
Diesel	6
Dung	7
briquettes, i.e. a compressed block of coal dust, charcoal, sawdust, wood chips, peat, or paper	8
None	9
Don't know	10

H6. What type of improved stove for heating your house would you prefer? READ OUT

a better stove that heats better/more	1
a better stove that uses less energy	2
Don't know	9

H5.GE What kind of stove for heating and/or cooking do you use? .SHOW CARD H5.GE. MULTIPLE ANSWERS.

	heating	**cooking**	
gas stove	1	1	IF SELECTED SKIP H8.
briquette stove	2	2	
electric stove	3	3	
centralized heating system	4	4	
firewood stove Type A: Locally produces conventional stove	5	5	
firewood stove Type B: Imported Conventional Stove	6	6	
firewood stove Type C: Svanetian Stove (Energy Efficient)	7	7	
firewood stove Type D: Imported Energy Efficient Stove	8	8	
Don't know	9	9	GO TO NEXT SECTION
I don't use stove for this purpose	10	10	
Other :……	11	11	

H7. How much did you pay for your current stove used for heating and/or cooking? ONE ANSWER PER LINE.

	0 GEL	**1 -100 GEL**	**101 – 300 GEL**	**301 – 500 GEL**	**501 GEL and more**	**Don't know**
1. heating	1	2	3	4	5	6
2. cooking	1	2	3	4	5	6

H8. How much more would you be willing to pay for an improved firewood stove that lasts longer, heats more and/or uses less firewood?

nothing	10%	15%	20%	25%	Don't know
1	2	3	4	5	99

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

FOREST SECTOR REFORM

FSR1. Do you trust the following forest-related authorities? ONE ANSWER PER LINE

Authority	Yes, trusted	No, not trusted	Do not know this authority	I don't know about the activities this authority performs
1. National Forest Agency	1	2	3	4
2. Ministry of Environmental Protection and Agriculture, State Sub-agency Environmental Supervision Department	1	2	3	4
3. Georgian Forest Fund	1	2	3	4
4. Ministry of Environmental Protection and Agriculture, Biodiversity and Forestry Department	1	2	3	4
5. Agency of Protected Areas	1	2	3	4

FSR3. Do you agree with one of the following statements on existing practice of receiving firewood from the state? SHOW CARD FSR3.

The existing practice should be kept as it is now	1
The existing practice should be liberalized so that more people receive firewood at reduced prices	2
The regulations should be stricter so that less people have direct access to forest to receive firewood and instead they will receive firewood from NFA Business Service Yards	3
Don't know the existing practice	4

FSR4. Do you know about the ongoing forest sector reform and new draft forest law?

Yes	1
No	2

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

SOURCES OF INFORMATION

SoI1. What have been your three main channels of information about 1-the environment and 2-energy during the last 12 months? SHOW CARD SOI1. MAX 3 ANSWERS.

	1-Environment	2-Energy
publications, incl. newspapers, magazines, books	1	1
TV	2	2
Radio	3	3
Films and documentaries	4	4
Conversations with relatives/family/friends/neighbors/colleagues	5	5
Internet, incl. official websites, online newsletters, etc.	6	6
Social media, incl. Facebook, YouTube, Twitter	7	7
Posters, leaflets, brochures or similar information material	8	8
Trainings	9	9
Events (conferences, fairs/exhibitions, festivals, etc.)	10	10
Visits to protected areas	11	11
None of them (SPONTANEOUS)	12	12
Other (SPONTANEOUS)	13	13
I am not interested in the environment (SPONTANEOUS)	14	14
Don't know (DO NOT READ OUT)	99	99

SoI2. Which sources of information do you trust most when it comes to 1-environment and 2-energy issues ? SHOW CARD SOI2. MAX 5 ANSWERS.

	1-Environment	2-Energy
National government	1	1
Regional/local government	2	2
Companies	3	3
Political parties standing for the environment (Greens, etc.)	4	4
Environmental protection associations (Greenpeace, WWF, etc.)	5	5
Consumer associations and other citizens' organizations	6	6
Scientists & researchers	7	7
Teachers at schools or universities	8	8
Family/neighbors/friends/colleagues	9	9
Church-related organizations	10	10
None of them (SPONTANEOUS)	11	11
Other (SPONTANEOUS)	12	12
Don't know (DO NOT READ OUT)	99	99

taken over from 2016 questionnaire
added by ACT Assist & GORBI team

DEMOGRAPHIC DATA

D1. Gender:

Male	1
Female	2

D2. Age: How old are you?

____ Years.

D3. What language do you speak at home?

Georgian	1
Azeri	2
Armenian	3
Russian	4
Other (please specify)	6

D4. What is the highest level of education you attained?

No formal education	1
Completed primary education	2
Completed secondary education	3
Completed vocational (technical) education	4
Incomplete higher education (BA)	5
Completed higher education (MA or postgraduate)	6
Refusal	7

D5. Were environmental and/or sustainable development issues part of your studies?

No	1
Yes, please specify the environmental and/or sustainable development issues: …	2
Do not remember	3

D6. What region did the interview take place in?

Tbilisi	1
Kakheti	2
Shida Kartli	3
Kvemo Kartli	4
Mtskheta-Mtianeti	5
Samtskhe_Javakheti	6
Adjara	7
Guria	8
Samegrelo, Zemo Svaneti	9
Imereti	10
Racha-Lechkhumi and Kvemo Svaneti	11

D7. Type and size of the settlement. WILL BE CODED IN DATA.

Village	1	Town with a population of 50-99 thousand	5
Village of the town type	2	A city (100-499 thousand.)	6
Small town (less than 20 thousand inhabitants)	3	Large city (more than 500 thousand)	7
Medium size town (20-49 thousand)	4		

taken over from 2016 questionnaire
added by ACT Assist & GORBI team