

Methodology and Data Quality Assurance Framework for Recreational Fisheries

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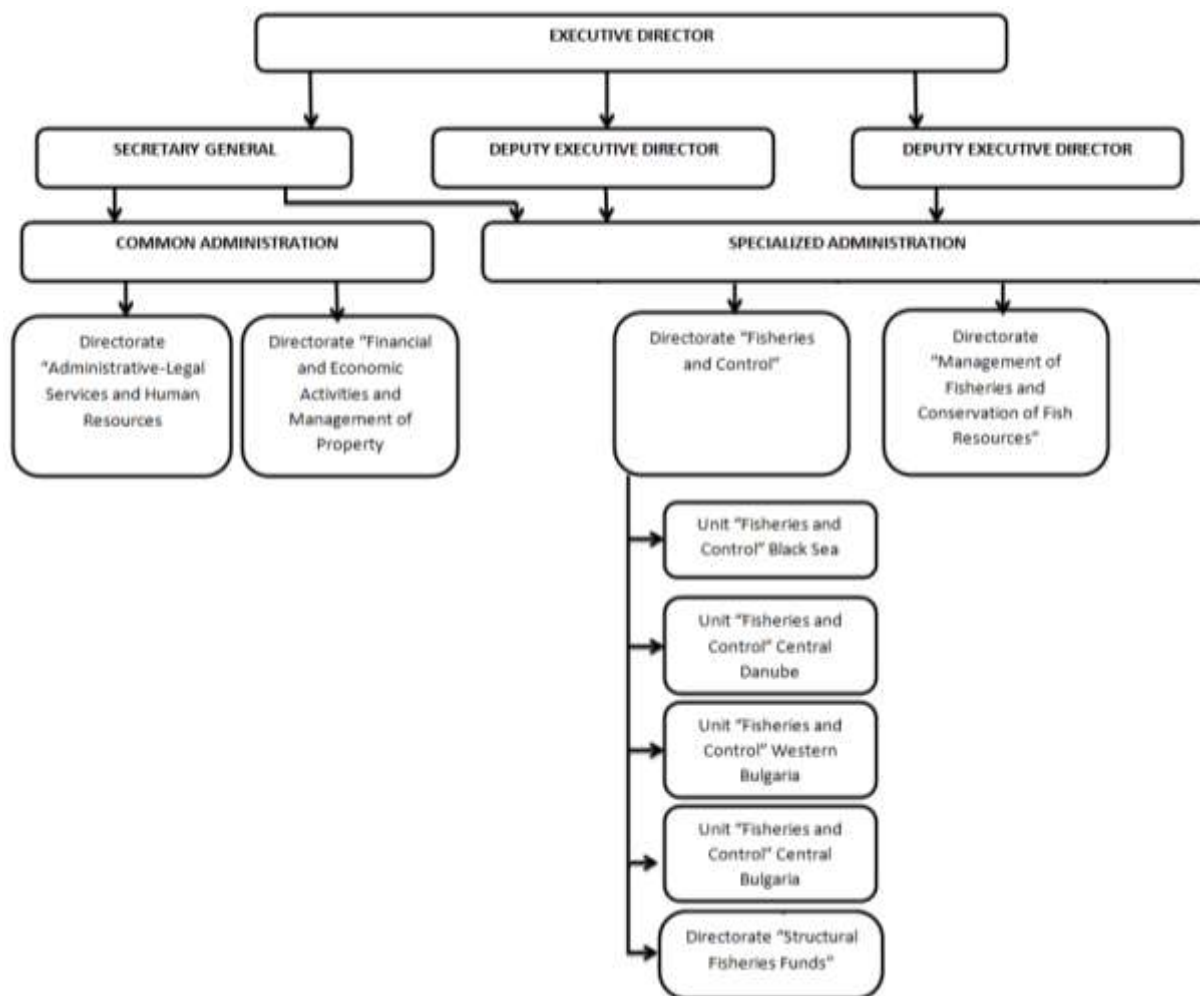
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1. General information about Executive agency for fisheries and aquaculture as responsible authority for fisheries control and data collection.

The responsible authority for fisheries control in Bulgaria is the Executive Agency for Fisheries and Aquacultures (EAFA). The Agency is organized by General administration (Accounting office, Human resources and Legal Services) and Specialized administration (Fisheries control, Structural Fisheries Funds and Management and monitoring of fish resources. The activities related to the fisheries and aquaculture control are carried out by Directorate “Fisheries and Control” which is divided by several units on geographical basis as follows:

- Unit “Fisheries and control – Black Sea”. This unit is responsible for fisheries control in the Black Sea waters, inland fishing activities, aquaculture and market, collection, initial verification, registration of the questionnaires for socio-economic statistics for the fleet, aquaculture and processing enterprises and uploading of the scanned document in EAFA’s information system. - unit “Fisheries and control – Black Sea” it is composed by 3 sections:
 - o Sector “Fisheries and Control Burgas” – responsible for inspection and control activities in Black Sea, inland waters, aquaculture farms, marketing, transportation of fisheries products and collection of the questionnaires for socio-economic statistics in the area of Burgas region;
 - o Sector “Fisheries and Control Varna” – responsible for inspection and control activities in Black Sea, inland waters, aquaculture farms, marketing, transportation of fisheries products and collection of the questionnaires for socio-economic statistics in the area of Varna region;
 - o Sector “Fisheries and Control Dobrich” – responsible for inspection and control activities in Black Sea, inland waters, aquaculture farms, marketing and transportation of fisheries products transportation and collection of the questionnaires for socio-economic statistics in the area of Dobrich region;
- Unit “Fishing Monitoring Centre” – responsible for monitoring and surveillance of fishing vessels.
- Unit “Fisheries and Control – Western Bulgaria” – it is located in Sofia and it is responsible for inspection and control activities in Danube and inland waters, aquaculture farms, marketing and transportation of fisheries products and collection of the questionnaires for socio-economic statistics in the area of regions of Sofia, Pernik, Kyustendil, Blagoevgrad, Vratsa, Montana and Vidin.
- Unit “Fisheries and Control – South Bulgaria” – it is located in Plovdiv and it is responsible for inspection and control activities in inland waters, aquaculture farms, marketing and transportation of fisheries products and collection of the questionnaires for socio-economic statistics in the area of regions of Plovdiv, Pazardjik, Smolyan, Kardjali, Haskovo, Sara Zagora, Sliven and Yambol;
- Unit “Central Danube” – it is located in Ruse and it is responsible for inspection and control activities in Danube and inland waters, aquaculture farms, marketing and transportation of fisheries products and collection of the questionnaires for socio-economic statistics in the area of regions of Pleven, Lovech, Gabrovo, Veliko Tarnovo, Ruse, Silistra, Targovishte, Shumen and Razgrad.

The Agency’s organization chart is presented below.



The Agency is responsible for issuing licenses for recreational fishermen in inland waters only, since there are no obligations under the Fisheries and Aquaculture Act or other national law for licenses of marine recreational fishing.

The Agency is responsible for the Data Collection Framework, and regarding marine recreational fisheries in 2022, a pilot project was conducted to assess the proportion of catches from recreational fisheries compared to commercial catches by the Bulgarian fleet in the Black Sea. This screening survey aimed to identify the target population of recreational fishers and their fishing habits, following the guidelines set out in the 2021 FAO Handbook for data collection on recreational fisheries in the Mediterranean and Black Sea. A telephone survey was conducted with a nationally representative sample of 1,000 respondents across Bulgaria.

The survey results highlighted a concerning scenario for marine recreational fisheries in the Bulgarian Black Sea, based on feedback from only 22 participants in the pilot study. According to the survey results, the total number of recreational fishermen in Bulgaria who practice recreational fishing in the Black Sea is 121 589, and for one calendar year they caught 607 945 kg. The full report of the survey is available at <http://dcf-bulgaria.bg/documents/>.

2. Description of the Off-site survey.

2.1. Description of the population.

2.1.1. Population targeted.

The Target Population are residents of the country, men and women aged 15 years and over. The research population includes all the regions of the country. The Primary Sampling Unit (PSU) will be the households of recreational fishers. Computer Assisted Telephone Interviews (CATI) using a structured questionnaire will be implemented, depending on whether the respondent will be a recreational fisher or no. The research population consists of people based on the latest available population census of National Statistical Institute (NSI).

2.1.2. Population Sampled.

The overall response rate, which is the ratio of interviews to the entire number of interviews and refusals, is calculated from the total number of interviews.

The number of interviews with marine recreational fishermen is counted out of all the interviews. Additionally, how many adult interviews were done and how many of these persons consented to take part in the off-site diary survey. The other individuals who either refused to participate in the study or refused to have their consent documented are also documented.

The method of selecting sample should be geographically stratified from RDD (Random Digit Dialling) telephone numbers. The selection of the sample should be based on stratified random sampling where the 28 provinces of the country are used as strata. The spatial stratification takes into account the population of each regional unit and uses a sample frame of fixed and mobile phones with quotas regarding the characteristics of the regional units.

2.2. Sampling design and protocols.

2.2.1. Stratification & description.

The selection of the sample is based on stratified random sampling where the regional dwelling units are employed as strata.

To locate the sample, the following procedures are taken:

- The sampling distributions of the respondents according to their age, gender, and educational attainment are tracked throughout the study.
- In addition to successful telephone interviews, absence and refusals to participate in the study also happen during the conversations.
- If the respondent is not there, a second call is sent at a different time and/or day in an effort to locate them. This household is replaced by another if the second call is not returned.
- The "Successful telephone interviews" category includes households that consent to take part in the survey. Depending on whether the respondent is a marine recreational fisherman or not, the whole questionnaire is given in these households.
- Households having one or more marine recreational fishermen and households without any marine recreational fishermen are identified from all of the successful interviews. This information is also documented in the event when many household members fish for recreation.
- Using self-reporting tools, respondents who are 15 years of age or older and who have fished recreationally in the 12 months preceding to the survey are asked if they would be interested in taking part in a diary survey. If there is interest, the fisherman's contact information is asked for

and only recorded if the fisherman is an adult. All of the guidelines established for the protection of personal information are followed during this process.

2.2.2. Questionnaire.

There are 24 numbered questions on the survey form (plus a few more if the respondent wants to participate in the diary survey). The majority of the questions are closed-ended, while occasionally responders may provide impromptu responses in addition to the pre-coded responses. Additionally, there are some open-ended questions, including which counties or regions the responder fishes in or what kind of fish they fish. Interviews typically should not exceed ten minutes. ANNEX I contains the questionnaire.

2.3 Sampling Implementation.

The national telephone survey is implemented every three years by EAFA in collaboration with polling agency, which is assigned in order to execute the survey. The national telephone survey has a duration of few months. The research staff responsible for collecting the data consist of CATI Manager, few Supervisors and dozens of interviewers. To start the research, the interviewers receive appropriate training on the objectives of the research and the structure of the questionnaire cooperation of EAFA. The training and the implementation of the survey is taking place at the relevant company's headquarters, by the interviewers and monitored by the CATI manager and the supervisors.

2.4 Data Capture.

Using a structured questionnaire and the Computer Assisted Telephone Interviews (CATI) methodology, the national telephone survey is a quantitative research tool.

The duration of the telephone survey is a few months. Daily checks are conducted throughout the survey to make sure the researchers are conducting it consistently. As a percentage of each interviewer's work, the supervisors of the telephone research department concurrently hear the interviews as part of the process. Additionally, programmers receive the completed questionnaire file at regular intervals from the start of the survey and code open-ended questions in addition to verifying that each question makes sense. 100% of the completed questionnaires are reviewed at the conclusion of the survey to look for any inconsistent responses or values that were entered erroneously. A standard 95% confidence interval is used to compute the maximum sampling error.

2.5. Data Storage and Confidentiality.

Because personal information is recorded during the interviews, the raw national telephone survey data are kept in the market research and opinion polls database only. After being extracted, the data is processed for additional handling and analysis.

2.6. Data Processing.

The most recent FAO instructions in the Black Sea and Mediterranean are now followed by the standards for data accuracy in recreational fisheries (Grati et al., 2021).

The sample distribution for the national telephone survey was determined during the design stage based on the regional housing unit's population distribution. The population distribution determines how the survey sample is weighted for this attribute. In order to handle discrepancies from the population data, additional weightings of the sample are also made based on gender distribution by age group and educational level.

The sampling errors of the survey for a percentage, is calculated under the assumption of simple random sampling at the 95% confidence level, where the provided methodology by the Handbook

for data collection on recreational fisheries in the Mediterranean and the Black Sea (Grati et al., 2021) is followed.

Using the appropriate statistical software, the data is statistically analyzed and tests are conducted.

References:

1. Grati, F., Carlson, A., Carpentieri, P. & Cerri, J. 2021. Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea. FAO Fisheries and Aquaculture Technical Paper No. 669. Rome, FAO. <http://www.fao.org/3/cb5403en/cb5403en.pdf>;
2. GFCM, 2017. Report of the first meeting of the Working Group on Small-Scale and Recreational fisheries (WGSSF). FAO headquarters, Rome, Italy, 12–13 September 2017. (Last accessed 29 September 2021). <http://www.fao.org/gfcm/technical-meetings/detail/en/c/1061844/>.
3. RCG Med&BS Regional Work Plan on data collection in the fisheries and aquaculture sectors 2025-2027, Version 5.3, Paris, 30 August 2024. https://dcf.ec.europa.eu/wps-and-ars/work-plans_en.

ANNEX I
Telephone Survey Questionnaire

OFF-SITE SURVEY

UNIT 1st: SCREENING QUESTIONS

Q.1. Good morning/Good afternoon. My name is and I am an interviewer for..... These days we are conducting a public opinion research in your area and your opinion would be valuable. Could I please speak to a gentleman/madam over the age of 15? IF MOBILE NUMBER CONTINUE WITH THE INTERVIEWEE/ IF LANDLINE ASK A RANDOM MEMBER OF THE HOUSEHOLD (FOR EXAMPLE THE ONE THAT CELEBRATES HIS/HER BIRTHDAY SOONER) OR BASED ON SEX/AGE PERCENTAGES

- YES (WHEN YOU CONNECT)
- NO

IF THE ANSWER IS YES THEN CONTINUE, IF NEEDED

We would like to inform you that follows the legislation in regards with data protection. Your answers will be kept confidential, they are not shared with third parties and will be used exclusively for statistical analysis. For quality assurance purposes and to ensure the credibility of the interview we maintain a record of calling this phone number for a 3-month period and afterwards this record is deleted.

Could we begin the interview?

- Yes
- No
- An eligible individual is absent, then arrange an appointment.
- Refusal (why? ____)
- There is no eligible individual.

IF THE ANSWER IS YES, THEN CONTINUE

Q.2. What year were you born? _____

CONTINUE ONLY WITH INTERVIEWEES THAT ARE 15 YEARS OF AGE AND OLDER

Q.3. SEX (*CONTINUE WITHOUT READING*)

Q.4. HOME REGIONAL UNIT (*CONFIRM FROM THE LIST*)

UNIT 2nd: RECREATIONAL FISHING

Q.5. To begin with I would like to ask you if you have been fishing recreationally in... COUNTRYat the sea, from the shore or at ports in the last 12 months, from (MONTH OF THE YEAR) till today? **ONE**

ANSWER

- Yes
- No

Q.6. Is there another member/members of your household excluding yourself that has been fishing recreationally at sea, from coast or ports withing ... COUNTRY the last 12 months? How many members of your household of any age, apart from you, have been fishing?

- Yes (number of members of household_____)
- No

PROGRAMMER: IF YES TO Q.5., GO TO NEXT QUESTION OTHERWISE GO TO DEMOGRAPHICS

**UNIT 3rd: MARINE RECREATIONAL FISHING, COASTAL AND PORT FISHING,
GENERAL FISHING INFORMATION**

Q.7. At which regional units (or areas) have you been fishing recreationally the past 12 months?

SPONTANEOUS ANSWER (PRECODED LIST OF REGIONAL UNITS AND SPONTANEOUS REFERENCE TO AREAS), INTERVIEWER CHOOSE OR NOTE (UP TO THREE REGIONAL UNITS OR AREAS)

- _____

Q.8. How many times have you been fishing recreationally the last 12 months?

- From the coast _____
- From boat _____
- Underwater fishing (or spearfishing) _____
- Other (NOTE WHAT AND HOW MANY TIMES _____)

PROGRAMMER: IF AT Q.8. THE INTERVIEWEE HAS BEEN FISHING FROM COAST AT LAST ONCE: ONE ANSWER FOR EACH CASE, INTERVIEWER ASSIST FOR EVEN AN ESTIMATE RESPONSE BETWEEN 1 TO 300

Q.9. And how many times have you been fishing from the coast **READ PERIODS?**

From January to March (YEAR): ____

From April to June (YEAR): ____

From July to September (YEAR): ____

From October 2022 till December (YEAR): ____

INTERVIEWER: IF THE INTERVIEWEE IS UNABLE TO STATE FOR A CERTAIN PERIOD, THEN NOTE N/A

PROGRAMMER: IF AT Q.8. THE INTERVIEWEE HAS FISHED FROM THE COAST AT LEAST ONCE:

Q.10. And with which methods/techniques, have you been fishing from the coast? **MULTIPLE ANSWERS, INTERVIEWER READ THE LIST AND RANDOMIZE ITEMS**

- Handlines and Poles lines (Fishing rods with tentacles)
- Casting or Spinning (Fishing rods with a single hook or lure)
- Harpoon
- Other what (INTERVIEWER NOTE _____)

PROGRAMMER: PROGRAMMER: IF AT Q.8. THE INTERVIEWEE HAS BEEN FISHING FROM BOAT AT LAST ONCE: ONE ANSWER FOR EACH CASE, INTERVIEWER ASSIST FOR EVEN AN ESTIMATE RESPONSE BETWEEN 1 TO 300

Q.11. And how many times have you been fishing from boat **READ PERIODS?**

From January to March (YEAR): ____

From April to June (YEAR): ____

From July to September (YEAR): ____

From October 2022 till December (YEAR): ____

INTERVIEWER: IF THE INTERVIEWEE IS UNABLE TO STATE FOR A CERTAIN PERIOD, THEN NOTE N/A

PROGRAMMER: IF AT Q.8. THE INTERVIEWEE HAS FISHED FROM BOAT AT LEAST ONCE:

Q.12. And with which methods/techniques, have you been fishing from boat? **MULTIPLE ANSWERS, INTERVIEWER READ THE LIST AND RANDOMIZE ITEMS**

- Handlines and Poles lines (Fishing rods with tentacles)
- Casting or Spinning (Fishing rods with a single hook or lure)
- Harpoon
- Other what (INTERVIEWER NOTE _____)

PROGRAMMER: PROGRAMMER: IF AT Q.8. THE INTERVIEWEE HAS BEEN UNDERWATER FISHING AT LAST ONCE: ONE ANSWER FOR EACH CASE, INTERVIEWER ASSIST FOR EVEN AN ESTIMATE RESPONSE BETWEEN 1 TO 300

Q.13. And how many times have you been underwater fishing (spearfishing) **READ PERIODS?**

From January to March (YEAR): ____

From April to June (YEAR): ____

From July to September (YEAR): ____

From October 2022 till December (YEAR): ____

INTERVIEWER: IF THE INTERVIEWEE IS UNABLE TO STATE FOR A CERTAIN PERIOD, THEN NOTE N/A

Q.14. Approximately how many kilos of fish, regardless of species, have you caught in total the past 12 months? **ASSIST INTERVIEWEE WITH SCALE**

- 0 kilos
- Up to 1 kilo
- 1,1-2 kilos
- 2,1-3 kilos
- 3,1-4 kilos
- 4,1-5 kilos
- 6-10 kilos
- 11-15 kilos
- 16-20 kilos
- 21-30 kilos
- 31-50 kilos
- Over 50 kilos (how many, approximately? _____)

PROGRAMMER: IF AT Q.8. MORE THAN ONE OPTIONS HAVE BEEN CHOSEN:

Q.15. You mentioned before that you have been fishing with various methods (PROGRAMMER: BRING UP ALL THE MODES USED AT LEAST ONCE THAT HAVE BEEN MENTIONED BY THE INTERVIEWEE AT Q.8.

AND INTERVIEWER READ THEM). What percentage of the kilos you have noted before refer to each fishing mode? **NOTE THE PERCENTAGES SO THAT THEIR SUM IS 100%**

- From the coast
- From boat
- Underwater fishing
- Other

ASK THE NEXT FOUR QUESTIONS IF MORE THAN 0 KILOS WERE STATED AT Q.14

Q.16. And what is the type of fish that you have **CAUGHT & KEPT** the most in terms of quantity in the past 12 months? And the second most kept in terms of quantity in the past 12 months? And the third most kept in terms of quantity in the past 12 months?

NOTE IF THE ANSWER IS SPONTANEOUS, ASSIST WITH THE FISH SPECIES MORE SPECIFICALLY (FOR EXAMPLE, HORSE MACKEREL, BLUEFISH, GOBIES NEI, MULLET, ETC)

PRECODED ALPHABETICAL LIST OF RESPONSES FROM PREVIOUS SURVEYS WITHOUT READING, PLUS OTHER WHAT

- 1st SPECIES _____
- 2nd SPECIES _____
- 3rd SPECIES _____

REPEAT THE NEXT QUESTION FOR ALL THE SPECIES MENTIONED IN THE PREVIOUS QUESTION Q.16

Q.17. Approximately how many kilos from (MENTION THE SPECIES) have you caught in the past 12 months? **USE THE SCALE FROM Q.14**

Q.18. And what is the type of fish that you have **CAUGHT & RELEASED** the most in terms of quantity in the past 12 months, if any? And the second most released in terms of quantity in the past 12 months? And the third most released in terms of quantity in the past 12 months?

NOTE IF THE ANSWER IS SPONTANEOUS, ASSIST WITH THE FISH SPECIES MORE SPECIFICALLY (FOR EXAMPLE, HORSE MACKEREL, BLUEFISH, GOBIES NEI, MULLET, ETC)

- 1st SPECIES _____
- 2nd SPECIES _____
- 3rd SPECIES _____

REPEAT THE NEXT QUESTION FOR ALL THE SPECIES MENTIONED IN THE PREVIOUS QUESTION Q.16

Q.19. Approximately how many kilos from (MENTION THE SPECIES) have you caught in the past 12 months? **USE THE SCALE FROM Q.14**

Q.20. Have you caught any protected, endangered, and threatened species (PETS) in the past 12 months? (based on the opinion of the INTERVIEWEE)

- 1) Birds _____
- 2) Mammals _____
- 3) Fish (Sturgeons or other) _____
- 4) Reptiles _____

UNIT 4th: FINANCIAL INFORMATION

Let's move now to another subject.

Q.21. How much have you spent in total in the past 12 months for recreational fishing and more specifically for

INTERVIEWER READ EACH ANSWER AND NOTE THE SPONTANEOUS RESPONSE, IF THE INTERVIEWEE CANNOT ANSWER NOTE APPROXIMATELY BASED ON THE SCALE

- Equipment and gear _____
- Baits _____
- Fishing trip _____
- Boat expenses (such as purchase, rent or maintenance) _____
- Other (NOTE WHAT)

SCALE

- Nothing
- 1-10 euros
- 11-24 euros
- 25-50 euros
- 51-75 euros
- 76-100 euros
- 101-150 euros
- 151-250 euros
- 251-500 euros
- 500-999 euros
- 1000+ euros (how much approximately; _____)

UNIT 5th: SOCIAL DIMENSION

Q.22. Last, when do you usually go fishing? READ ONE ANSWER

- | | | | |
|-------------------------------|--------------------------|--------------------------------|--------------------------|
| Weekdays | <input type="checkbox"/> | Whenever I have the time | <input type="checkbox"/> |
| Weekends | <input type="checkbox"/> | Whenever I find a fishing-mate | <input type="checkbox"/> |
| On summer holidays | <input type="checkbox"/> | When the weather allows it | <input type="checkbox"/> |
| On holidays outside of summer | <input type="checkbox"/> | Other what? | <input type="checkbox"/> |

Q.23. What do you gain (mentally, socially, aesthetically, etc.) from recreational fishing?

- To consume the catch
- Get out in the nature (aesthetic gains, inspiration)
- Cognitive benefits, abilities, skills
- Therapeutic benefits (peace of mind, health, fitness)
- Sense of identity (strong local ties, memories)
- Socialization
- Other (e.g. financial benefits)

UNIT 6th: DEMOGRAPHIC DATA (All respondents answer)

Now we will continue with some demographic questions, only for statistical purposes.

Q.24. Level of education

- | | | | |
|-------------------------|--------------------------|----------------------|--------------------------|
| Elementary | <input type="checkbox"/> | technological school | <input type="checkbox"/> |
| junior high (gymnasium) | <input type="checkbox"/> | University/College | <input type="checkbox"/> |
| senior high (lyceum) | <input type="checkbox"/> | MSc/PhD | <input type="checkbox"/> |

Q.25. How many people are in your household?

Q.26. What is your employment status?

- | | | | |
|---------------|--------------------------|------------------|--------------------------|
| Unemployed | <input type="checkbox"/> | household keeper | <input type="checkbox"/> |
| self-employed | <input type="checkbox"/> | Retired | <input type="checkbox"/> |

public sector Other

Q.27. What is your marital status?

- | | | | |
|---------------------------------------|--------------------------|-----------------------------------|--------------------------------|
| Married with kids | <input type="checkbox"/> | Single, living alone/with partner | <input type="checkbox"/> |
| Married without kids | <input type="checkbox"/> | Divorced | <input type="checkbox"/> |
| Single living with the parents | <input type="checkbox"/> | Widowed | <input type="checkbox"/> |
| Single living with relatives/siblings | <input type="checkbox"/> | Other | <input type="checkbox"/> |