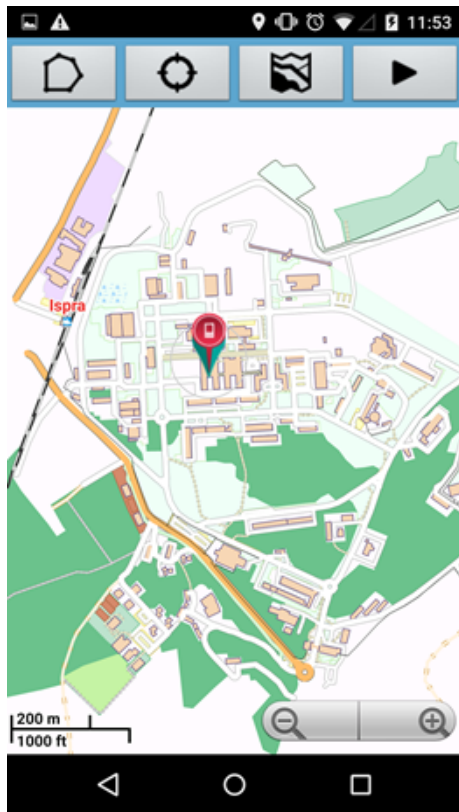


Planning and Implementation of a Household Survey

AQUASURVEY APP



- **How can I develop a household survey?**
- **What should the questionnaire include?**
- **What do I need to apply it on the field?**
- **How do I exploit the results?**



Developing, organizing and applying a household survey

Step 1: Selecting the exact topic of research / objectives of research

Step 2: Selecting the survey's geographical area

Step 3: Defining the size of the survey / number of questionnaires

Step 4: Designing the questionnaire (structure, formation and grouping of questions)

Step 5: Pilot testing of the questionnaire

Step 6: Estimating the cost and the necessary resources to apply the questionnaire

Step 7: Formation of the field groups / surveyors & Drawing up a detailed logistics plan for the field work

Step 8: Application of the field survey

Step 9: Data collection, cleaning and organization

Step 10: Dissemination and exploitation of results



Why conducting a household survey?

- Lack of detailed information about the general population (non-accurate and/or limited data)
- Less costs than studying the whole population
- Less field time than studying the whole population
- More accuracy i.e. Can Do A Better Job of Data Collection



Determining Purpose

- What type of information do you need?
- How soon must you complete the survey and compile the results?
- How much time will you have for each interview?
- How will you use the information obtained?
- What are your short- and long-range goals?
- What are your resources?



Initial Questions to answer

Designing the survey in order to get the right information

- Is this survey necessary?
- Is the purpose of the survey to evaluate people or programs?
- Can the data be obtained by other means?
- What level of detail is required?

Accuracy of the survey

- Is this a one-time survey or can the researcher repeat the survey on different occasions and in different settings?
- How will the results be used?
- How easy is it to do the survey?



Define the exact theme:

For example in **water sector**:

- Urban domestic water use
- Agricultural and rural water use
- Water and food security
- Provision of safe water
- Freshwater provision for maintaining ecosystem services
-



Preparation phase analysis

Before initiating the survey, it will be helpful to gather important information to support its implementation, including:

- a) Detailed maps by community or district (area with defined boundaries and known population size) and
- b) Most recent census data (for population estimates of the study area)

2. Selecting the survey's geographical area

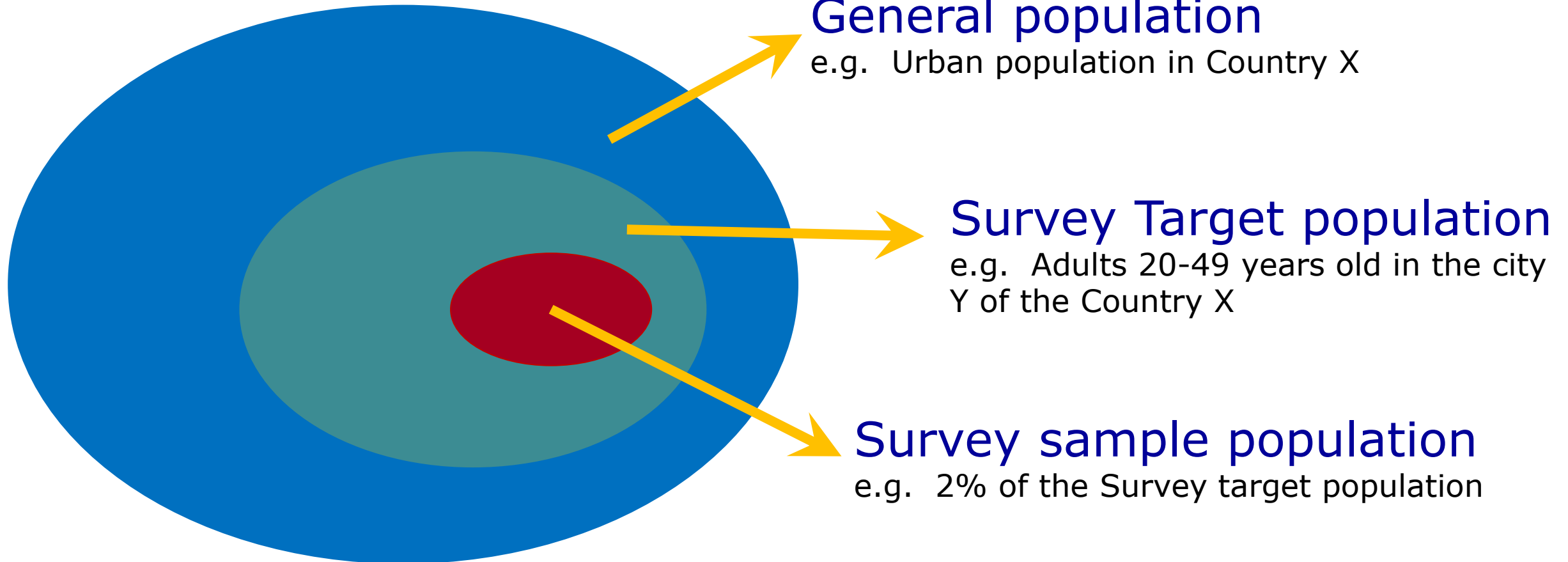


After defining the objective / theme of your survey it is important to define the exact location:

- **Country level**
- **Region level**
- **Province/Commune**
- **City/Cities or Village/villages**

.....defining the location depends on the **specific theme** (i.e. agricultural or domestic urban water sector) and **feasibility**.

Definition of the survey sample





Types of Samples

Probability (Random) Samples

- Simple random sample
- Systematic random sample
- Stratified random sample
- Multistage sample
- Multiphase sample
- Cluster sample

Non-Probability Samples

- Convenience sample
- Purposive sample
- Quota



PROBABILITY SAMPLING

- A probability sampling scheme is one in which every unit in the population has a chance (greater than zero) of being selected in the sample, and this probability can be accurately determined.
- When every element in the population does have the same probability of selection, this is known as an 'equal probability of selection' (EPS) design.



PROBABILITY SAMPLING

Probability sampling techniques:

- Simple Random Sampling,
- Systematic Sampling,
- Stratified Random Sampling,
- Cluster Sampling
- Multistage Sampling.
- Multiphase sampling



NON PROBABILITY SAMPLING

- Any sampling method where some elements of population have no chance of selection, or where the probability of selection can't be accurately determined. It involves the selection of elements based on assumptions regarding the population of interest, which forms the criteria for selection. Hence, because the selection of elements is nonrandom, nonprobability sampling not allows the estimation of sampling errors..



NON PROBABILITY SAMPLING

Nonprobability Sampling includes:

- Accidental Sampling
- Quota Sampling
- Purposive Sampling

In addition, nonresponse effects may turn any probability design into a nonprobability design if the characteristics of nonresponse are not well understood, since nonresponse effectively modifies each element's probability of being sampled.



Random vs Nonrandom Sampling

Random sampling

- Every unit of the population has the same probability of being included in the sample.
- A chance mechanism is used in the selection process.
- Eliminates bias in the selection process
- Also known as probability sampling

Nonrandom Sampling

- Every unit of the population does not have the same probability of being included in the sample.
- Open the selection bias
- Not appropriate data collection methods for most statistical methods
- Also known as nonprobability sampling



Calculating Sample Size

- Sample results are almost never identical to the entire population
- The larger the sample, the greater the likelihood that the statistical analysis will yield “significant” results that closely resemble the entire client population.

Different Views:

- Statistician – maximalist – at least 500
- Field researcher – minimalist – at least 35 to 50 for each subgroup we want to analyze and compare



Calculating Sample Size

Trade off: Larger sample is more accurate, but costs more in time and money

“To make generalizations about entire population, need a total sample size of 200-400 (depending on total population and confidence level desired)”

Sample Size Calculator

For a survey design based on a simple random sample,

Formula:

$$n = \frac{t^2 \times p(1-p)}{m^2}$$

Where,

n = required sample size

t = confidence level at 95% (standard value of 1.96)

p = estimated prevalence of measure

m = margin of error at 5% (standard value of 0.05)

Desired Confidence Level	z-score
80%	1.28
85%	1.44
90%	1.65
95%	1.96
99%	2.58



Confidence interval and Confidence level

- The confidence interval (also called margin of error) is the plus-or-minus figure usually reported in newspaper or television opinion poll results. For example, if you use a confidence interval of 4 and 47% percent of your sample picks an answer you can be "sure" that if you had asked the question of the entire relevant population between 43% ($47-4$) and 51% ($47+4$) would have picked that answer.
- The confidence level tells you how sure you can be. It is expressed as a percentage and represents how often the true percentage of the population who would pick an answer lies within the confidence interval. The 95% confidence level means you can be 95% certain; the 99% confidence level means you can be 99% certain. Most researchers use the 95% confidence level.

3. Defining the size of the survey / number of questionnaires



Sample Size Calculator

Population Size	Confidence Level	Confidence Interval	Sample Size
1,000	5	95%	278
5,000	5	95%	357
10,000	5	95%	370
50,000	5	95%	381
100,000	5	95%	383
1,000,000	5	95%	384

	Confidence level = 95%			Confidence level = 99%		
	Margin of error			Margin of error		
Population size	5%	2,5%	1%	5%	2,5%	1%
100	80	94	99	87	96	99
500	217	377	475	285	421	485
1.000	278	606	906	399	727	943
10.000	370	1.332	4.899	622	2.098	6.239
100.000	383	1.513	8.762	659	2.585	14.227
500.000	384	1.532	9.423	663	2.640	16.055
1.000.000	384	1.534	9.512	663	2.647	16.317

3. Defining the size of the survey / number of questionnaires



Sample Size Calculator

Respondents Needed at Error of ±3%, ±5%, & ±10%			
Population	±3%	±5%	±10%
500	345	220	80
1,000	525	285	90
3,000	810	350	100
5,000	910	370	100
10,000	1,000	385	100
100,000	1,100	400	100
1,000,000	1,100	400	100
10,000,000	1,110	400	100

Population Size	Required Sample Size [†]							
	Confidence = 95%				Confidence = 99%			
	Margin of Error				Margin of Error			
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	74	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	196	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579
700	248	370	481	653	341	462	554	672
800	260	396	526	739	363	503	615	763
1,000	278	440	606	906	399	575	727	943
1,200	291	474	674	1067	427	636	827	1119
1,500	306	515	759	1297	460	712	959	1376
2,000	322	563	869	1655	498	808	1141	1785
2,500	333	597	952	1984	524	879	1288	2173
3,500	346	641	1068	2565	558	977	1510	2890
5,000	357	678	1176	3288	586	1066	1734	3842
7,500	365	710	1275	4211	610	1147	1960	5165
10,000	370	727	1332	4899	622	1193	2098	6239
25,000	378	760	1448	6939	646	1285	2399	9972
50,000	381	772	1491	8056	655	1318	2520	12455
75,000	382	776	1506	8514	658	1330	2563	13583
100,000	383	778	1513	8762	659	1336	2585	14227
250,000	384	782	1527	9248	662	1347	2626	15555
500,000	384	783	1532	9423	663	1350	2640	16055
1,000,000	384	783	1534	9512	663	1352	2647	16317
2,500,000	384	784	1536	9567	663	1353	2651	16478
10,000,000	384	784	1536	9594	663	1354	2653	16560
100,000,000	384	784	1537	9603	663	1354	2654	16584
300,000,000	384	784	1537	9603	663	1354	2654	16586

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Approaches to conduct the survey

- **Telephone interviews** (less expensive, more efforts to predefine the sample, less accurate responses than in-person interviews)
- **Email / or Online surveys** (less expensive, more efforts to predefine the sample, less accurate responses than in-person interviews, low response rate, lack of access in internet service)
- **In-person (face to face) interviews** (most expensive, most accurate, highest response rate)

4. Designing the questionnaire (structure, formation and grouping of questions)



Comparison of Modes of Survey Administration

<i>Variable</i>	<i>Mail</i>	<i>Phone</i>	<i>In Person Interview</i>
Cost	Cheapest	Moderate	Costly
Speed	Moderate	Fast	Slow
Response rate	Low to moderate	Moderate	High
Sampling need	Address	Telephone number	Address
Burden on respondent	High	Moderate	Low
Control participation Of others	Unknown	High	Variable
Length of Questionnaire	Short	Moderate	Long
Sensitive questions	Best	Moderate	Poor
Lengthy answer choices	Poor	Good	Best
Open-ended responses	Poor	Good	Best
Complexity of Questionnaire	Poor	Good	Best
Possibility of interviewer bias	None	Moderate	High



Types of collected information

- Opinions
- Beliefs
- Behavior / Attitudes
- Attributes (demographic characteristics)
- Preferences
- Values



Basic types of survey questions

The way a question or statement is worded and the response options offered determine the nature of the data received.

Types of survey questions include:

- Open-ended response
- Closed response
- Semantic differential scales
- Agreement and rating scales
- Ranking scales
- Checklists

Example: Closed question

10. Indiquez la tranche de revenu qui correspond au REVENU MENSUEL TOTAL de tous les membres de votre foyer, vous inclus?

1. 0 - 25 000 FCFA par mois	
2. 25 001 - 50 000 FCFA par mois	
3. 50 001 - 75 000 FCFA par mois	
4. 75 001 - 100 000 FCFA par mois	
5. 100 001 - 125 000 FCFA par mois	
6. 125 001 - 150 000 FCFA par mois	
7. 150 001 - 200 000 FCFA par mois	
8. 200 001 - 300 000 FCFA par mois	
9. 300 001 - 500 000 FCFA par mois	
10. 500 001 - 700 000 FCFA par mois	
11. 700 001 - 1 000 000 FCFA par mois	
12. Plus de 1 000 001 FCFA par mois	
13. Je ne sais pas	

Example: Open-ended question

13. Votre foyer est-il connecté au réseau électrique ?

1. Connecté au réseau électrique	
2. Pas connecté au réseau électrique	

14. Si connecté, quel est le montant de la facture d'électricité du mois dernier (FCFA)? _____

15. Si connecté, nombre d'heures par jour pendant lesquelles vous avez eu de l'électricité ? _____

Example: Semi - closed question

23. D'où provient *principalement* l'eau que boivent les membres de votre foyer? (1 reponse)

<i>Sources d'approvisionnement améliorées en eau</i>	
1. Eau du robinet dans le domicile	
2. Eau du robinet dans la cour ou sur la parcelle	
3. Borne-fontaine/fontaine	
4. Puits tubé/puits foré = forage	
5. Puits creusé protégé = puit cimenté	
6. Source protégée	
7. Citerne d'eau de pluie	
<i>Sources d'approvisionnement non améliorées en eau</i>	
8. Puits non protégé = puit traditionnel	
9. Source non protégée	
10. Charette avec petite citerne / tonneau	
11. Eau en bouteille	
12. Camion-citerne	
13. Eau de surface (rivière, réservoir, lac, étang, ruisseau, canal, canal d'irrigation)	
14. Autre. Préciser	



Example: Attributes/demographics

6. Quel est votre niveau d'étude et/ou diplôme le plus élevé?

1. non scolarise	
2. scolarisation non formelle	
3. Ecole primaire	
4. Lycée	
5. Formation professionnelle	
6. Université	



Example: Opinions

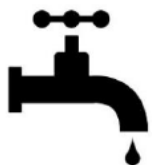
56. Quel niveau d'importance attribuez-vous aux services fournis par les écosystèmes aquatiques de la Mekrou sur une échelle de 1(pas important) à 5 (très important) : !!! Un service écosystémique ou fourni par les écosystèmes est défini comme l'eau mise à disposition par la Rivière Mékrou afin de satisfaire les besoins d'eau de boisson, de l'agriculture et l'élevage, pour la préservation des animaux, des poissons, et de la végétation/foret vivant sur le bassin versant.

	1	2	3	4	5
1. Eau de consommation pour les espèces et les animaux					
2. Provision d'un habitat/abri pour les espèces					
3. Eau de consommation pour les humains					
4. Source d'eau à usage agricole					
5. Cadre nécessaire à la biodiversité					
6. Protection contre les inondations et sécheresse					
7. Autre, spécifier:					

4. Designing the questionnaire (structure, formation and grouping of questions)



Example: Preferences / values



Imaginez que vous maintenant avez la possibilité d'être raccordé au réseau d'eau. Cela signifie un accès 24h/24h à une eau de bonne qualité pour votre foyer. Ce raccordement est coûteux. Si vous décidez d'être raccordé au réseau, vous devrez alors payer chaque mois une facture pour ce service d'eau.

36. Dans ce cadre, seriez-vous d'accord pour être raccordé au réseau et ainsi, payer chaque mois une facture pour le service d'eau

1. Oui		2. Non	
-----------	--	-----------	--

38. Si vous avez répondu OUI à la **question 36**, pourriez-vous indiquer le montant maximum par mois que vous seriez prêt à payer ?

1. 50 FCFA	
2. 100 FCFA	
3. 200 FCFA	
4. 300 FCFA	
5. 500 FCFA	
6. 750 FCFA	
7. 1 000 FCFA	
8. 1 500 FCFA	
9. 2 000 FCFA	
10. 3 000 FCFA	
11. 4 000 FCFA	
12. 5 000 FCFA	
13. 10 000 FCFA	
14. Plus de 10 000 FCFA	

Example: Behavior / Attitudes

25. Quelle est la distance (en mètres) qui sépare votre maison de la principale source d'approvisionnement en eau de boisson ?

Distance en mètres	
2. Je ne sais pas	

26. Combien de temps faut-il pour s'y rendre, avoir de l'eau et revenir ?

Temps en minutes	
2. Je ne sais pas	



Forming the questions: Common Wording Problems

- Writing questions for a particular survey means doing them for
 - a particular population
 - a particular purpose
 - for placement next to other questions in the survey
- Words that are too difficult for some to understand may be perfectly acceptable for others. A question that is fairly vague may satisfy the objectives of one study but not the ones of another.
- In order that every respondent will understand a question, it is important to keep the reading level at or below the average reading level of the population. Complex words may be replaced by simpler ones or ones more easily understood. If you are giving a survey to a particular group, you would want to use words that are common to the group.



Question Order

- Be attentive:
Initial questions affect answers to subsequent ones
- Start with easy, salient, non-threatening questions near the end
- Cluster questions addressing the same topic or concept together
- Avoid repetitions



Focus Group

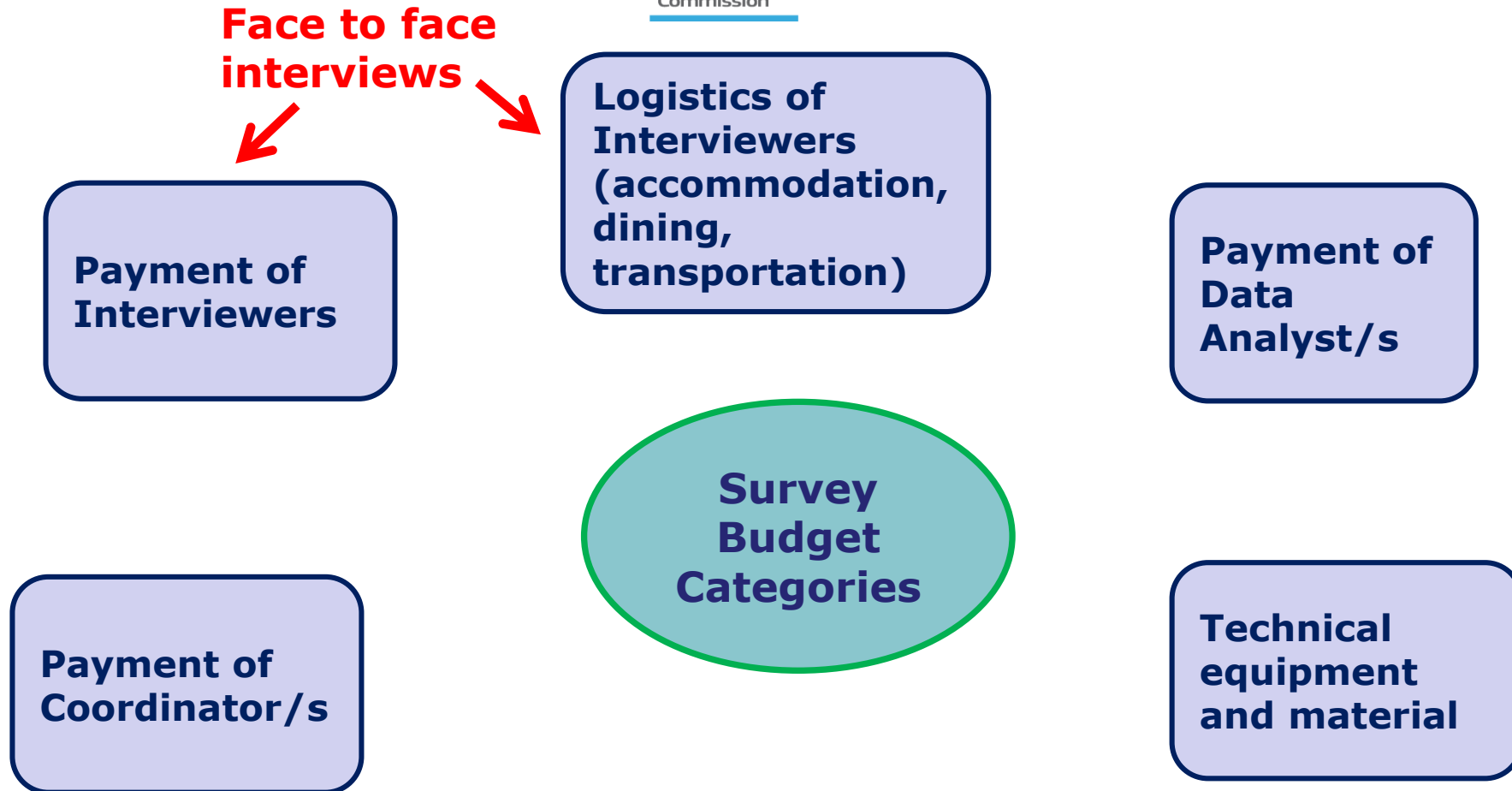
- After the initial structure formation of the questionnaire it is important to organize a focus group discussion with water sector experts/stakeholders in the countries where the survey will be applied. They should be aware of such an initiative and they can provide valuable feedback on the purpose and content of the survey.



Pilot application:

1. The pilot study is a part of the survey's implementation strategy
2. The Pilot study is a small experiment designed to test the application of the questionnaire
3. Gather information prior to a large study
4. Improve the actual questionnaire's quality and efficiency
5. Estimate the approximate total time for filling the questionnaire and detect problematic questions
5. Aims to reveal deficiencies in the design of the questionnaire or procedure and address them prior to the field application
6. It is a tool to avoid time and money being wasted due to inadequate survey planning

6. Estimating the cost and the necessary resources to apply the questionnaire





Organisation of the survey team

- Coordinator – Field coordinator/s
- Interviewers
The number of interviewers depends on the available time and resources to apply the survey.
- Data analyst/s



Selecting and Training Interviewers

Number Needed

- You will most probably need several interviewers
- Overburdening interviewers will damage the quality of interviews and the data received

Qualifications

- Interviewers must follow the rules
- If a survey requires probing and adaptation to different interviewees, professionally trained interviewers tend to be more efficient



Training Interviewers for:

- Preparing for an Interview
- Conducting the Interview
- Opening the Interview
- Asking Questions
- Receiving and Recording Answers
- Closing the Interview



The duties of the field coordinator:

- The overall or field coordinator recruits the interviewers and draws the implementation plan
- The field coordinator should keep track of which locations were visited by which interview team, while also scheduling interview teams to survey one location before moving to another.
- To ensure high-quality data collection, the field coordinator of each country will need to observe the certain number of the interviews conducted by each interviewer.
- The field coordinator will manage and support the data collection team to ensure:
 - a) good quality interviews are conducted,
 - b) interview timeframes are adhered to, and
 - c) interviewers are supported if particular issues arise.



Logistics plan - Before they go on the field interviewers should know in detail:

- How are they organized in groups?
- Where exactly will they go?
- How much time they will they stay at a place?



Interviewing

Follow Standard approach

- Trained interviewers
- Strictly follow the questionnaire
- Standardize wording, stick to it
- Avoid interviewer bias
- Neutral probing



Introduction to the interview

Example of introduction:

“Hello my name is...and I work for... The reason I am contacting you is because we are conducting a survey on in your country and I would like to ask you a few questions. Let me assure you that whatever information you tell us will not be disclosed to anyone and will only be used for research purposes”

Important to mention clear that “The responses given will be confidential and will only be used for research purposes.”



Behavior of the interviewers during the interview

1. They should be pleasant and assertive, and make the respondent feel at ease.
2. They should know the questionnaire thoroughly and be well prepared to answer any questions.
3. They should speak slowly and clearly to set the tone for the interview.
4. They should adapt the introduction to the respondent, as different respondents require different amounts of information.
5. They should be motivated and interested in the interview.



How the interviewers should ask the questions

- Read the questions as they are written in the text. Do not change the wording.
- Do not change the order of the questions.
- Read the questions slowly and clearly, emphasizing key words underlined.
- Read the questions in a pleasant voice that conveys interest and professionalism.
- Maintain good eye contact and adopt body language that is culturally appropriate.
- Read the entire question to the respondent and make sure s/he has heard it completely.
- Do not skip questions even if the respondent has given the answer earlier.
- Verify information given by respondent earlier, acknowledging the information s/he has already provided.



Clarification is needed when the respondent:

- Is unable to answer the question asked.
- Does not seem to understand the question and gives an inappropriate reply.
- Does not seem to have heard the question.
- Is taking time to answer the question and hesitates.
- Asks about a specific part of the question to be repeated. It is acceptable for the interviewer to repeat only that part.
- Asks for one option to be repeated or further clarified.



STANDARD INTERVIEWING TECHNIQUES

Clarification	Probes	Neutral prefaces	Feedback
Overall ...	Can you be more specific?	Overall ...	I see ...
Generally speaking ...	What is your best estimate?	Well, in general ...	I get your point
Whatever ... means to you	What do you mean by that?	Generally speaking ...	That is useful information
Whatever you think is ...	In what sense are you saying that?	In the country as a whole	It is important to know what your opinion on this is
Let me repeat the question again	What do you think?	Let me repeat the question ...	Thank you for your clarification on this
Let me repeat the different options again	Which would be closer to your condition?	Yes, but ...	I understand what you are saying
The definition for ... is	Would you say that you strongly agree or disagree?	Of course, it is difficult to know	Your comments are very helpful
	Can you tell me more about that?	There are no right or wrong answers ...	Let me make a note of what you have just said
	Can you think of any other examples?	We are just interested in your opinion ...	Let me make sure I understand correctly
	How is that? In what way?	We all hope that ...	
	Anything else?		
	Can you explain?		



- **Data should be organized in a database**
- **Quality control and data cleaning has to be done removing those questionnaires that data were not sufficiently collected**
- Data in Aquasurvey are automatically saved and organized in a database, which can be extracted in excel



Analysis of survey data

- Descriptive research
Describe phenomena and summarize them. (Descriptive statistics)
The goal of using surveys for descriptive research is to get a precise measurement of specific concepts.
- Causal explanation (Econometrics)
Measure associations i.e. water consumption and wealth.
The data from surveys can provide a causal explanation to phenomena.
- Evaluation
Efficacy of a program
- Prediction (modeling)
Predict future events



Results dissemination

- Policy briefs
- Research/science papers
- Presentation to research and policy-making events (workshops, conferences etc.)
- Meeting with policy-makers and stakeholders

Main issues to define / discussion:

- Which is the main objective of your survey? (to influence policy-making, to evaluate water policy measures, research...)
- Which is the theme of your survey? (eg domestic water consumption, safe water provision, agricultural water...)
- In which areas? (link to the previous point)
- Do you have all the necessary financial, human and technical resources?
- Which is your time frame to apply the survey?

Thanks for your attention!!!

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