



Surveys on Citizen activities

In the BalticFlows project, the consortium conducted two surveys as part of the Work Package 4, “Water Monitoring Via Citizen Activity”, to people of various ages and educational backgrounds amongst appropriate target groups in order to explore their willingness to install and maintain a small water quality monitoring device and amongst active users of social media regarding whether sensor technology is seen as a useful means of creating self-published content.

Based on the surveys, it looks promising that if people are offered the chance and asked to locally participate in the monitoring process, they will most likely be interested in such activities. The survey results imply, that in general, the wellbeing of the local rivers and streams are of interest to the respondents.

To make the environmental monitoring programme viable, it is seen important to realise the amount of maintenance the programme and devices need. A modern day volunteer is not necessarily willing to donate a fixed amount of time on a regular basis. Therefore, it would be ideal if the timetables and demands of a monitoring programme can be influenced and attended when it is most suitable for the volunteer. By giving citizens a chance to involve in the monitoring process and providing them easy-to-use devices and platforms, they are able to provide a new dimension to water quality measuring and information sharing for researchers to further analyse and citizens to be more aware of the state of their nearby rivers and streams.

Data privacy issues may rise to be a central issue in activities such as environmental monitoring, but based on the surveys it is too early to tell whether the general public is aware and concerned about their personal privacy related to the use of their own hand held devices. Privacy is seen as an important issue for the researchers and data utilisers to be payed attention to once an environmental monitoring programme utilising the volunteer’s personal devices would be launched.

A clear majority of the respondents of the second survey have an account at least for one social media service, Facebook being the most popular. Social media platforms enable people to share information and create content on social media. Respondents were identified to mainly utilize social media for informing their network of their selected personal or public matters. When planning new environmental monitoring programmes and projects, it is seen important to understand what the social media networks are utilised for, and what type of information would be preferred by the active citizens to be shared. The respondents generally want to control the information they share, e.g. by reviewing the data before publishing. In total, based on the survey analysis, citizens see sensor technology as an attractive and potentially useful way of creating content for social media purposes and via social media networks.





WP4 Water Monitoring via Citizen Activity – Analysis of Survey 1

In the BalticFlows project, the consortium conducted a survey as part of the Work Package 4, “Water Monitoring Via Citizen Activity”, to people of various ages and educational backgrounds amongst appropriate target groups (e.g. residents living near streams or small rivers as well as environmental activists) in order to explore their willingness to install and maintain a small water quality monitoring device.

The questionnaire was conducted from 1.11.2014 to 30.11.2014. The consortium contacted different types of student groups and environmental organisations, as they were seen as natural dissemination channels for the survey to reach wide audiences. The survey was distributed as an open link in the local languages of the project (German, Finnish, Swedish, Latvian, and Estonian). The open link was selected instead of individual survey links to identifiable individuals, as the consortium decided to keep the public participation to a maximum level, allowing the project to reach a wider array of people. Local partners from each participating region were responsible to contact and distribute the survey to similar student and environmental groups. The groups were compared and analysed to be similar in nature to the other participating regions. The environmental organisations and educational centres with students in environmental fields were contacted and a permission to send the survey link to their e-mail lists were acquired before the survey link opened, so that the survey could be launched simultaneously in different participating regions. Most of the survey links were distributed on the e-mail lists on the 1st of November by the student group lecturer or other staff member of the educational facility or environmental organisation themselves. The organisations were asked to remind the respondents 1-4 times during the month to answer the survey.

As the survey was conducted via an open link, it is possible that the respondents have shared the survey forward to their friends or family members. Some respondent groups decided to share the link on the social media or website of the organisation, even if the original method of contact was via e-mail.

First in this analysis we characterize the respondents by age, sex and educational background. Following the characterization, we focus on certain questions asked in the survey, mostly in ‘Yes’ or ‘No’ format. We determine how males and females of different age groups and educational





backgrounds are willing to assist in monitoring the environmental conditions of their local streams or rivers and, if so, which monitoring devices they prefer, e.g. smart phone or tablet. In addition we explore their interest to voluntarily assist or whether they seek compensation in return of such activities as installing, maintaining and storing a small water quality monitoring device.

Important! This analysis is based on the information that participants have filled out themselves without any supervision. Due to the non-representativeness and the sampling methods of this survey, it is not possible to state whether people would or would not be interested in the environmental conditions of their local streams or rivers, or be or not be willing to somehow participate in the monitoring process. The analysis does give an indication of the interest towards willingness to install and maintain a small water quality monitoring device, serves as a description of the survey results, and describes the interpreted utterance of female and male survey respondents of various age groups and educational backgrounds.

General interpretation of results

In the next sections the results are introduced one question at a time. The questions raised to the focus point are seen as the most relevant ones, and characterizing the most central aspects of environmental monitoring of rivers and streams as a citizen activity. As the survey is executed via an open link meaning an open access to the survey to anyone with the web access link of the survey, it cannot be stated what are the answer rates. The survey is expected to give general guidelines and allow discussions with researchers and regional authorities on what are the opinions, possibilities and restrictions of organizing an environmental monitoring program on rivers and streams as citizen activities. The general conclusions can be found at the end of the analysis paper.



General information and characterization of respondents of the questionnaire

The survey had a total of 445 respondents, of which 272 (61.1 %) were female and 173 (38.9 %) male respondents (see Figure 1). Figure 2 shows the distribution of age groups of respondents. Nearly half, 203 respondents, (45.6 %) were 17-30 years old. The second most common age group was 31-45 years old, followed by 46-60 years old. As one of the main channels of distributing the survey has been via educational centres with students in environmental fields, it is not surprising that the main respondent group were 17-30 years old.

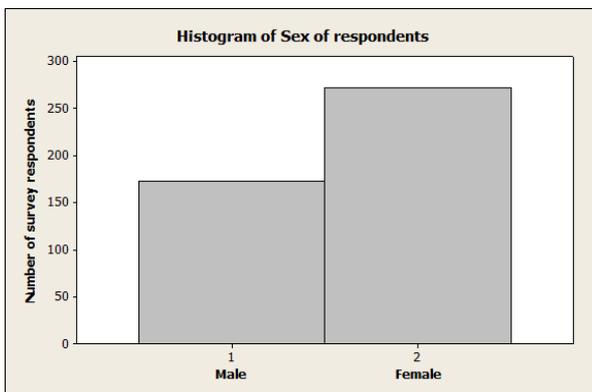


Figure 1: Histogram of Sex of respondents

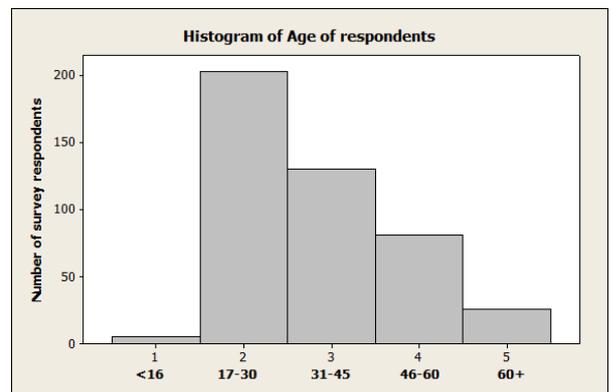


Figure 2: Histogram of Age of respondents

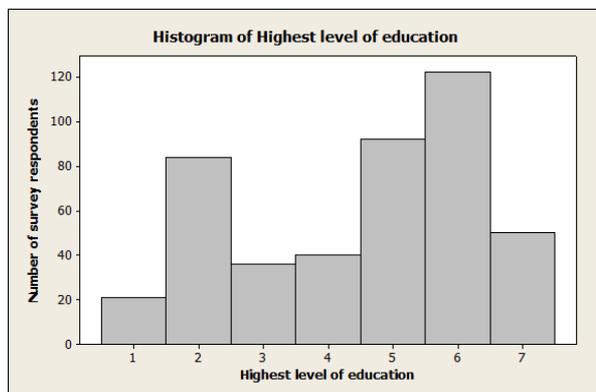


Figure 3: Histogram of levels of education

- 1:** Basic education
- 2:** Lower secondary vocational qualification (e.g. Vocational or trade school)
- 3:** The upper secondary vocational qualification (e.g. Medical or business school, Institute of Technology)
- 4:** University of Applied Sciences (e.g. Bachelor of Business Administration, Engineering)
- 5:** Bachelor's degree
- 6:** Master's degree
- 7:** Post-graduate education (Lic., Dr.)

The highest level of education amongst survey respondents is shown in Figure 3. The most common education background amongst survey respondents was Master's degree with 122 respondents (27.4 %), whereas Bachelor's degree and Lower secondary education were more common than the rest. Generally, more than half of survey respondents have a university-based degree. Considering the before mentioned distribution channels, this is not surprising.

Question-specific interpretation of survey results

Next in this analysis the questions asked from survey respondents are being separated by respondents' age, sex and education level. For the age group "under 16 years old" (<16) proper analysis couldn't be conducted due to the low sample size. In some cases this analysis also considers the respondent groups by education levels, e.g. respondents that have at least Bachelor's degree, and respondents who do not have an academic degree. Also, if relevant, this analysis points out specific age (e.g. 17-30 years old) and education level (e.g. Master's degree) groups to determine applicable trends in the survey responses.

Question 8: Would you be willing to install a small water quality monitoring device (max size a cigarette box) in a river or stream (if you had access)?

The question was answered by 438 (98.4 %) respondents whereas 7 (1.6 %) did not, which can be considered as excellent percentage to form a comparison. The question was answered with 'Yes' by 393 (89.7 %) and with 'No' by 45 (10.3 %) of all respondents.

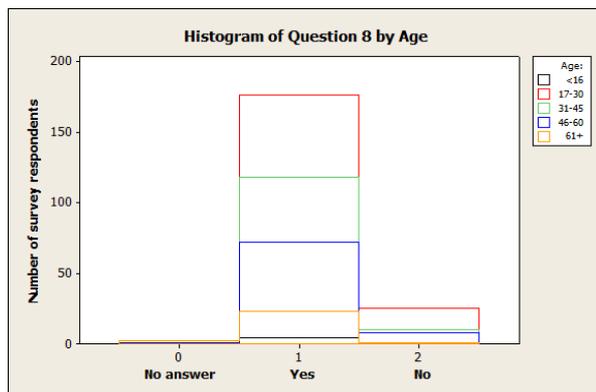


Figure 4: Histogram of Question 8 by Age

Figure 4 shows that respondents from all age groups answered relatively evenly either 'Yes' or 'No' to the question. Respondents from each age group answered to the question similarly. Relatively most often 'Yes' was answered by respondents in age group 31-45 years old.

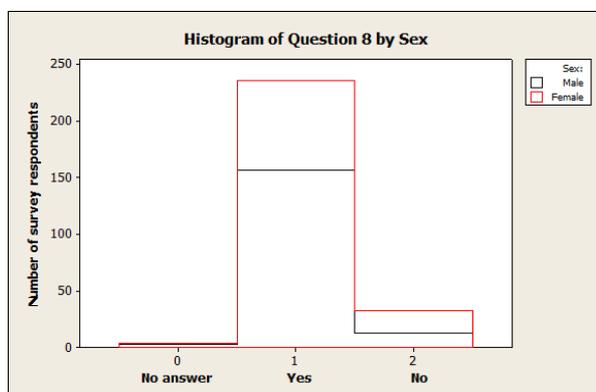


Figure 5: Histogram of Question 8 by Sex

Figure 5 shows that of the active respondents 268 were females and 170 were males. Of the female respondents 236 (88.1 %) and of male respondents 157 (92.3 %) answered 'Yes' to the question. Proportionally, males were slightly more willing to install a small water quality monitoring device in a nearby river or stream if they had access.

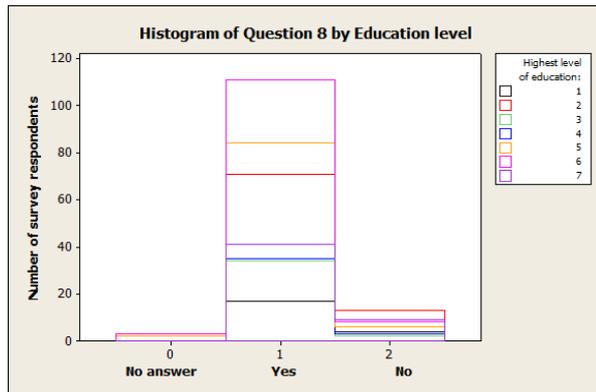


Figure 6: Histogram of Question 8 by Education level

Figure 6 shows the turnout of Question 8 by education level of respondents (the numbers are explained above in this document). Generally, the higher the level of education, the greater the likelihood to answer 'Yes' to the question becomes. For example, 111 out of 119 (93.3 %) respondents with a Master's degree were interested in installing a small water quality monitoring device. In turn, the lower the level of education, the greater the

likelihood to answer 'No' to the question becomes. For example, 71 out of 84 (84.5 %) of the respondents with a Lower secondary degree were willing to install a small water quality monitoring device, i.e. every sixth respondent with such degree is not interested in such activity.

In conclusion, people are very willing to install a small water quality monitoring device in a river or stream nearby. People in the age group 31-45 years old were relatively most interested, which could mean that with age comes concern of the environment. Furthermore, education level seems to have an effect; people with Bachelor's degree or higher were more willing to install a small water quality monitoring device in a river or stream nearby.

Question 12: Would you be willing to maintain a small water quality monitoring device?

The question was answered by 425 (95.5 %) respondents whereas 20 (4.5 %) did not, which can be considered as excellent percentage to form a comparison. The question was answered 'Yes' by 358 (84.2 %) and 'No' by 67 (15.8 %) of all respondents.

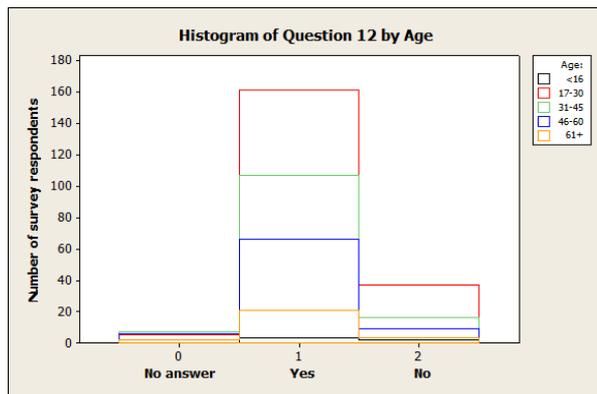


Figure 7: Histogram of Question 12 by Age

Figure 7 shows that respondents from all age groups answered relatively evenly either 'Yes' or 'No' to the question. Most respondents answering 'Yes' to the question were either in the age groups of 31-45 or 17-30 years old.

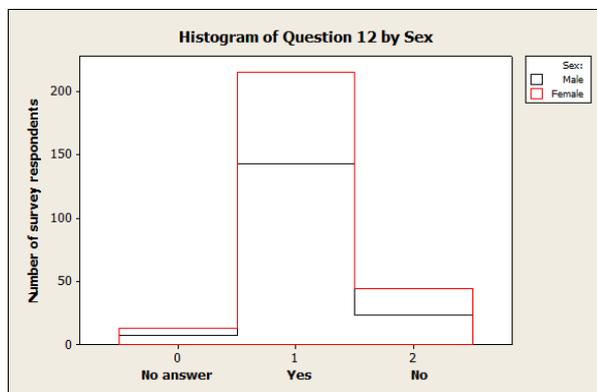


Figure 8: Histogram of Question 12 by Sex

Figure 8 shows that of the active respondents 259 were females and 166 were males. Of the female respondents 215 (83.0 %) and of male respondents 143 (86.1 %) answered 'Yes' to the question. Proportionally, males were slightly more willing to maintain a small water quality monitoring device.

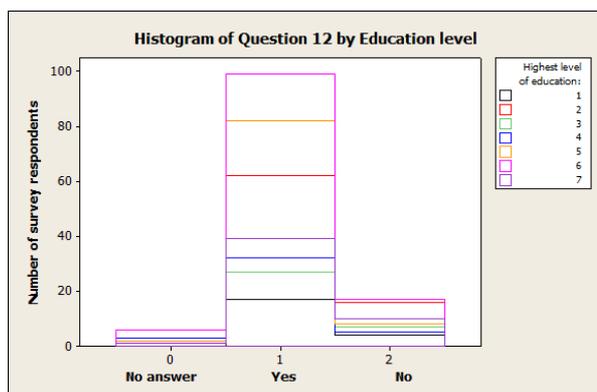


Figure 9: Histogram of Question 12 by Education level

Figure 9 shows the turnout of Question 12 by education level of respondents (the numbers are explained above in this document). Generally, the higher level of education, the greater the likelihood to answer 'Yes' to the question. For example, 99 out of 116 (84.6 %) respondents with Master's degree were interested in maintaining a water quality monitoring device. In turn, the lower level of education, the greater the likelihood to answer 'No' to the question.

For example, 62 out of 78 (79.5 %) of the respondents with Lower secondary degree were interested in the maintaining process, i.e. every fifth respondent with such degree was not interested in such activity.

In conclusion, survey respondents generally from all age groups are willing to maintain a small water quality monitoring device. This could mean that people are interested in the condition of their environment, and that they are willing to participate in preserving the quality of it. However, when compared to e.g. Question 8, people generally are less willing to maintain a device but more willing to install one. This could be interpreted in such a way that people are interested in participating in the process but do not want it to be a regular burden in their everyday lives.

Question 14: If possible, would you like to have updates on your phone/tablet computer/e-mail on the current situation and environmental condition of a stream or a river of your choice?

The question was answered by 422 (94.8 %) respondents whereas 23 (5.2 %) did not, which can be considered as excellent percentage to form a comparison. The question was answered ‘Yes’ by 371 (87.9 %) and ‘No’ by 51 (12.1 %) of all respondents.

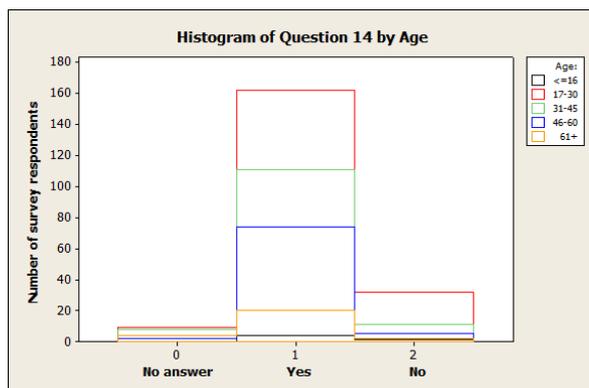


Figure 10: Histogram of Question 14 by Age

Figure 10 shows that respondents from all age groups answered relatively evenly either ‘Yes’ or ‘No’ to the question. Relatively, by far most respondents answering ‘No’ were 17-30 years old. Comparing the volume of age groups, answering ‘Yes’ was relatively equal amongst other age groups.

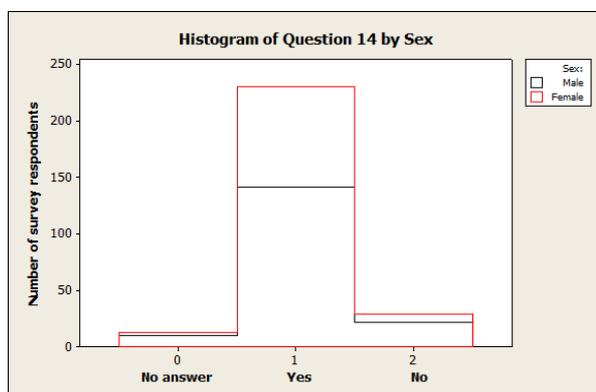


Figure 11: Histogram of Question 14 by Sex

Figure 11 shows that of the active respondents 259 were females and 163 were males. Of the female respondents 230 (88.8 %) and of male respondents 141 (86.5 %) answered ‘Yes’ to the question. Proportionally, females were slightly more willing to have updates on the environmental condition of the local stream or river to some of their electrical device.

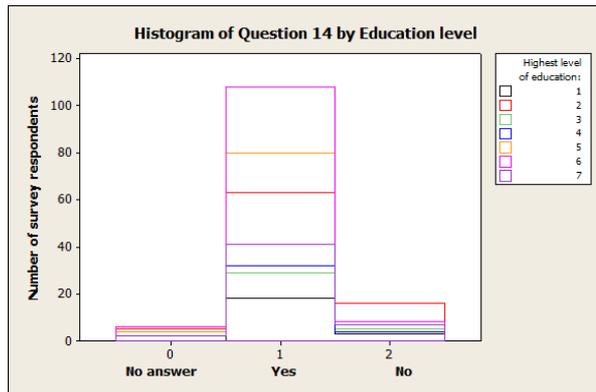


Figure 12: Histogram of Question 14 by Education level

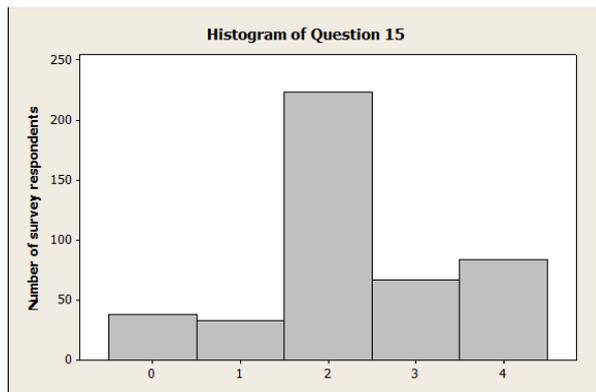
Figure 12 shows the turnout of Question 14 by education level of respondents (the numbers are explained above in this document). Generally, the higher level of education, the greater the likelihood to answer 'Yes' to the question. For example, 108 out of 122 (88.5 %) respondents with Master's degree were interested in receiving information. In turn, the lower level of education, the greater the likelihood to answer 'No' to the question.

For example, 68 out of 84 (80.1 %) of the respondents with Lower secondary degree were interested in receiving information, i.e. nearly every fifth respondent with such degree is not interested in the information.

In conclusion, survey respondents generally from all age groups are willing to receive information of their local streams or rivers to their selected electronic device. This could mean that people are interested in the condition of their environment, and that they are willing to participate in preserving the quality of it.

Question 15: Which of these would be the most preferred way of information updates? (If 'Yes' to Question 14)

The question was answered with 407 respondents (whereas 38 did not), which includes answers from 36 respondents that did not answer 'Yes' to Question 14 (which was answered 'Yes' with 371 respondents). This analysis does not exclude these conflicting answers but includes them. In addition, respondents answering this question may have also answered to the open section of this question. Open answers will not be discussed in this analysis due to the wide array of the responses and due to the open answers similarity to the list of selectable answers.



0: No answer
1: Text messages
2: E-mails
3: Live updates on a smartphone or tablet computer app
4: Website to check the situation
 Open answers are not listed in the histogram and not taken account in this analysis.

Figure 13: Histogram of Question 15

Figure 13 shows the distribution on how respondents prefer to receive information updates. By far the most preferred way (223 respondents) of receiving information updates was via e-mails, which is approximately 2,5 times the quantity compared to the next preferred way (Website to check the situation, 84 respondents).

The prevailing way of receiving information is rather unexpected since e-mail is generally considered as a traditional text-based form of communication. Websites (4:) and applications (3:) are both easily accessible and can easily provide graphical analyses.

Question 16: Would you be willing to let your smartphone/tablet/home computer to analyse some of the data produced by such a device?

The question was answered by 423 (95.1 %) respondents whereas 22 (4.9 %) did not, which can be considered as excellent percentage to form a comparison. The question was answered ‘Yes’ by 248 (58.7 %) and ‘No’ by 31 (7.3 %) of all respondents. Question was answered ‘I don’t know’ by 144 (34.0 %) respondents, which is relatively much.

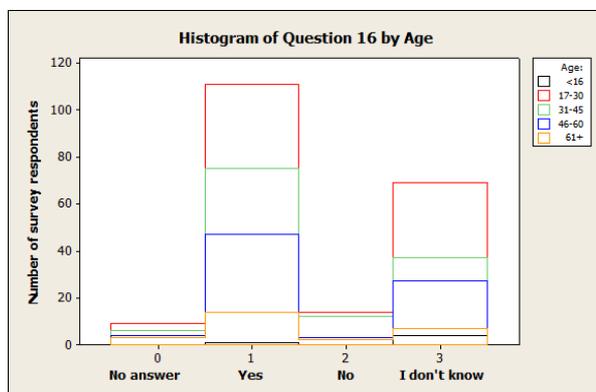


Figure 14: Histogram of Question 16 by Age

Figure 14 shows that respondents from all age groups answered relatively evenly either ‘Yes’ or ‘No’ to the question. Comparing the volume of age groups, answering ‘Yes’ was relatively equal amongst all age groups. Relatively most respondents answering ‘I don’t know’ were 17-30 years old – almost half of the respondents of the age group answered this way.

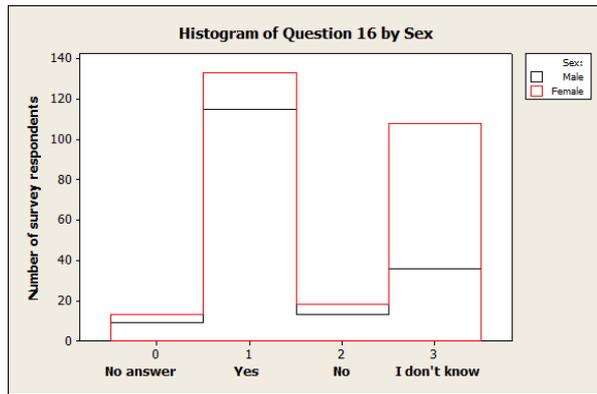


Figure 15: Histogram of Question 16 by Sex

selected more frequently by females (118 of active respondents, 27.9 %) than males (36 respondents, 8.5 %).

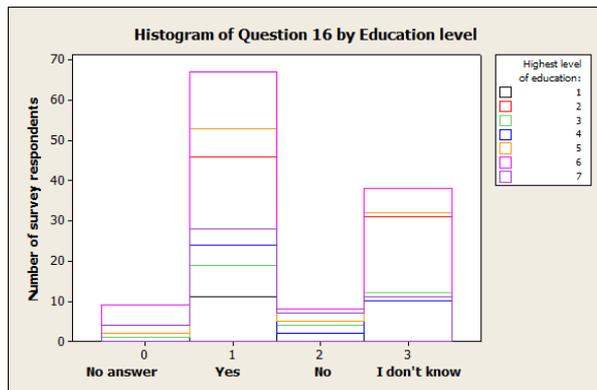


Figure 16: Histogram of Question 16 by Education level

Figure 15 shows that of the active respondents 259 were females and 164 were males. Of the female respondents 133 (51.4 %) and of male respondents 115 (70.1 %) answered 'Yes' to the question. Proportionally, males were clearly more willing to let their smartphone, tablet or home computer to analyse some of the data produced by such a device. The answer 'I don't know' was clearly

selected more frequently by females (118 of active respondents, 27.9 %) than males (36 respondents, 8.5 %).

Figure 16 shows the turnout of Question 16 by education level of respondents (the numbers are explained above in this document). Generally, the higher level of education, the greater the likelihood to answer 'Yes' to the question. Level-specific analysis is not conducted regarding this question, but the trend is same as e.g. in Questions 12 and 14.

In conclusion, most respondents are willing to let their smartphone, tablet or home computer to analyse some of the data produced by such a device. Interpreting the total number of respondents answering 'I don't know', the question itself may have been unclear, i.e. respondents had no clear conception what the analysing means in practice. There may be suspicions considering e.g. privacy issues. After all, the question itself can be considered as the most invasive to people's personal protection.

Question 17: What kind of compensation would you seek in return of such activities as installing, maintaining and storing a small water quality monitoring device? (Multiple answers)

As this question had multiple answers (and not clear 'Yes' or 'No'), this analysis considers only the answers itself and does not categorise the respondents by age, sex or education level. Also, this analysis does not identify respondents who skipped this question without answering.

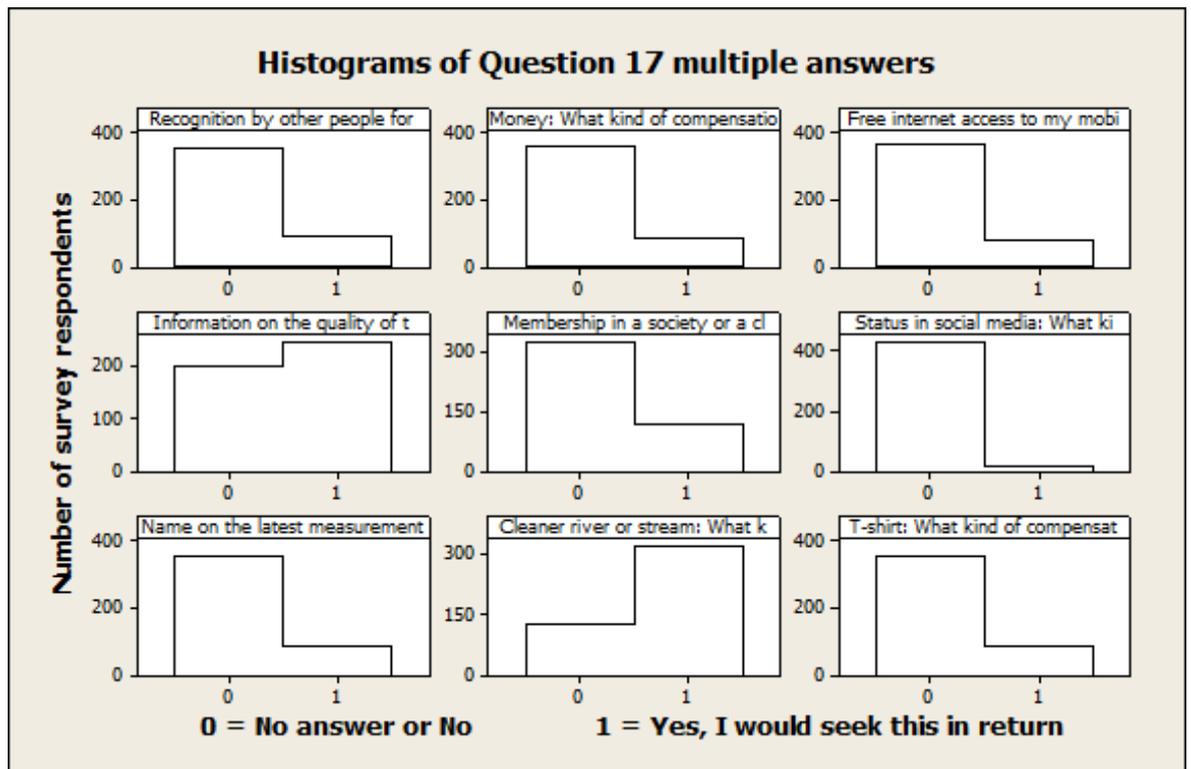


Figure 17: Histograms of multiple answers to Question 17

Figure 17 shows the multiple answers as follows from top left to right by each row:

- Recognition by other people for the important environmental work
- Money
- Free internet access to my mobile device
- Information on the quality of the water
- Membership in a society or a club related to environmental issues
- Status in social media
- Name on the latest measurement data
- Cleaner river or stream
- T- shirt



From the multiple answers, respondents answered most 'Yes' (meaning they would seek this in return) to 'Cleaner river or stream' with nearly 320 respondents, which is over 70 % of all survey respondents. Also, respondents seek in return the information on the quality of the water with nearly 250 respondents. All other benefits were generally seen as less interesting. However, this analysis cannot determine whether nearly 150 respondents did not simply answer to the category 'Cleaner river or stream' or whether they did not consider such activities as relevant.

Conclusion

Based on the survey, it looks promising that if people are offered the chance and asked to locally participate in the monitoring process, they will most likely be interested in such activities. The survey results imply, that in general, the wellbeing of the local rivers and streams are of interest to the respondents, and that this fitted group seems willing to volunteer for improving the environmental situation. In return, most respondents would like to receive information and assurance that their activities are valuable and that the situation is improving.

There is some evidence that information and updates of the environmental situation are more important to those with higher educational background, but it is too far-fetched to make such propositions based on the settings of this survey. The potential of smart phones and electrical hand held devices are not yet widely seen as an interesting information channel, and it seems that the more traditional type of information channels, such as e-mails and websites serving the citizens at the time they choose, are preferred.

Data privacy issues may rise to be a central issue in activities such as environmental monitoring, but based on this survey it is too early to tell whether the general public is aware and concerned about their personal privacy related to the use of their own hand held devices. Privacy is seen as an important issue for the researchers and data utilisers to be payed attention to once the setting up an environmental monitoring programme utilising the volunteer's personal devices would be launched.

To make the environmental monitoring programme viable, it is seen important to realise the amount of maintenance the programme and devices need. However, a modern day volunteer is not necessarily willing to donate a fixed amount of time on a regular basis. Therefore, it would be ideal if the timetables and demands of the monitoring programme can be influenced and attended when it is most suitable for the volunteer her- or himself. In total, based on this analysis, by





giving citizens a chance to involve in the monitoring process and providing them easy-to-use devices and platforms, they will provide a new dimension to water quality measuring and information sharing for researchers to further analyse and citizens to be more aware of the state of their nearby rivers and streams.





WP4 Water Monitoring via Citizen Activity – Analysis of Survey 2

In the BalticFlows project, the consortium conducted a survey as part of the Work Package 4, “Water Monitoring Via Citizen Activity”, to people of various ages and educational backgrounds amongst active users of social media regarding whether sensor technology is seen as a useful means of creating self-published content, or whether manual creation is more preferable.

The questionnaire was conducted from 2.3.2015 to 2.4.2015. The consortium contacted different types of student groups and environmental organisations, as they were seen as natural dissemination channels for the survey to reach wide audiences. The survey was distributed as an open link in the local languages of the project (German, Finnish, Swedish, Latvian, Estonian) and also in English. The open link was selected instead of individual survey links to identifiable individuals, as the consortium decided to keep the public participation to a maximum level, allowing the project to reach a wider array of people. Local partners from each participating region were responsible to contact and distribute the survey to similar student and environmental groups. The groups were compared and analysed to be similar in nature to the other participating regions. The environmental organisations and educational centres with students in environmental fields were contacted and a permission to send the survey link to their e-mail lists were acquired before the survey link opened, so that the survey could be launched simultaneously in different participating regions. Most of the survey links were distributed on the e-mail lists on the 2nd of March by the student group lecturer or other staff member of the educational facility or environmental organisation themselves. The organisations were asked to remind the respondents 1-4 times during the month to answer the survey.

As the survey was conducted via an open link, it is possible that the respondents have shared the survey forward to their friends or family members. Some respondent groups decided to share the link on the social media or website of the organisation, even if the original method of contact was via e-mail. The link to the English survey was also provided in the Facebook page of BalticFlows project.

First this analysis characterizes the respondents by age, sex and educational background. Following the characterization, we focus on certain questions asked in the survey, mostly in ‘Yes’ or ‘No’





format. In certain cases it is necessary to determine how males and females, different age groups and respondents with various educational backgrounds use social media and how many services are they registered in. Furthermore, this analysis pursues to determine the willingness of respondents to utilize various social media services in order to share and disseminate the environmental monitoring data.

Important! This analysis is based on the information that participants have filled out themselves without any supervision. Due to the non-representativeness and the sampling methods of this survey, it is not possible to state whether people would or would not be interested in utilizing social media services to share information about the condition of their local streams and rivers. The analysis does give an indication of the interest towards sharing environmental data on social media, serves as a description of the survey results, and describes the interpreted utterance of female and male survey respondents of various age groups and educational backgrounds.

General interpretation of results

In the next sections the results are introduced one question or question group at a time. The questions raised to the focus point are seen as the most relevant ones, from the basics of the social media usage to determining whether respondents would share environmental information and create content on social media services. As the survey is executed via an open link meaning an open access to the survey to anyone with the web access link of the survey, it cannot be stated what are the answer rates. The survey is expected to give general guidelines and allow discussions with researchers and regional authorities on what are the opinions, possibilities and restrictions of organizing an environmental monitoring program on rivers and streams as citizen activities. The general conclusions can be found at the end of the analysis paper.



General information and characterization about the respondents to the questionnaire

The survey had a total of 368 respondents, of which 256 (69.6 %) were female and 112 (30.4 %) male respondents (see Figure 1). It is noteworthy that females represent a clear majority amongst the survey respondents. As one of the main channels of distributing the survey has been via educational centres with students in environmental fields, it is not surprising that the main respondent group were 17-30 years old.

Figure 2 shows the distribution of age groups of respondents. Over half (211, 57.3 %) of the respondents were 17-30 years old. The second most common age group was 31-45 years old, followed by 46-60 years old.

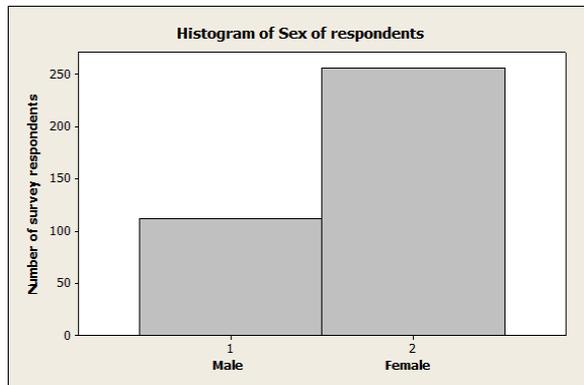


Figure 1: Histogram of Sex of respondents

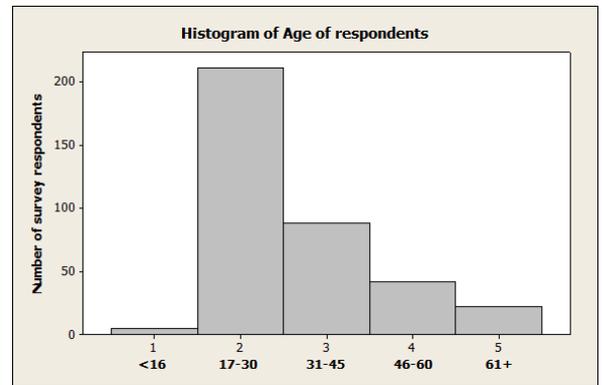


Figure 2: Histogram of Age of respondents

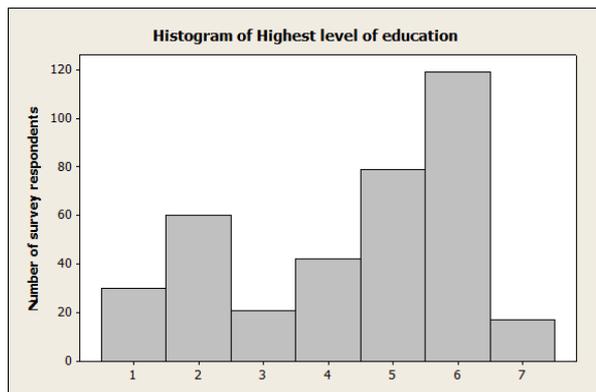


Figure 3: Histogram of levels of education

- 1: Basic education
- 2: Lower secondary vocational qualification (e.g. Vocational or trade school)
- 3: The upper secondary vocational qualification (e.g. Medical or business school, Institute of Technology)
- 4: University of Applied Sciences (e.g. Bachelor of Business Administration, Engineering)
- 5: Bachelor's degree
- 6: Master's degree
- 7: Post-graduate education (Lic., Dr.)

The highest level of education amongst survey respondents is shown in Figure 3. Most common education background amongst survey respondents was Master's degree with 119 respondents (32.3 %), whereas Bachelor's degree and Lower secondary education were slightly more common than the rest. Generally, more than half of survey respondents have a university-level degree. Considering the before mentioned distribution channels, this is not surprising.



Question-specific interpretation of survey results

Next in this analysis the questions asked from survey respondents are being differentiated by respondents' age, sex and education level. For the age group "under 16 years old" (<16) proper analysis couldn't be conducted due to the low sample size. In some cases this analysis also looks at the responses by education levels, e.g. respondents that have at least Bachelor's degree, and respondents who do not have an academic degree. Also, if relevant, this analysis points out specific age (e.g. 17-30 years old) and education level (e.g. Master's degree) groups to determine applicable trends in the survey responses.

Question 158: In which of the following services do you have an account at? (multiple choices)

In this question respondents were asked of their usage of various social media services. The services asked were:

- Q158:1 Facebook
- Q158:2 Twitter
- Q158:3 Youtube
- Q158:4 Instagram
- Q158:5 LinkedIn
- Q158:6 Google+
- Q158:7 Wikipedia
- Q158:8 Pinterest
- Q158:12 I don't use any



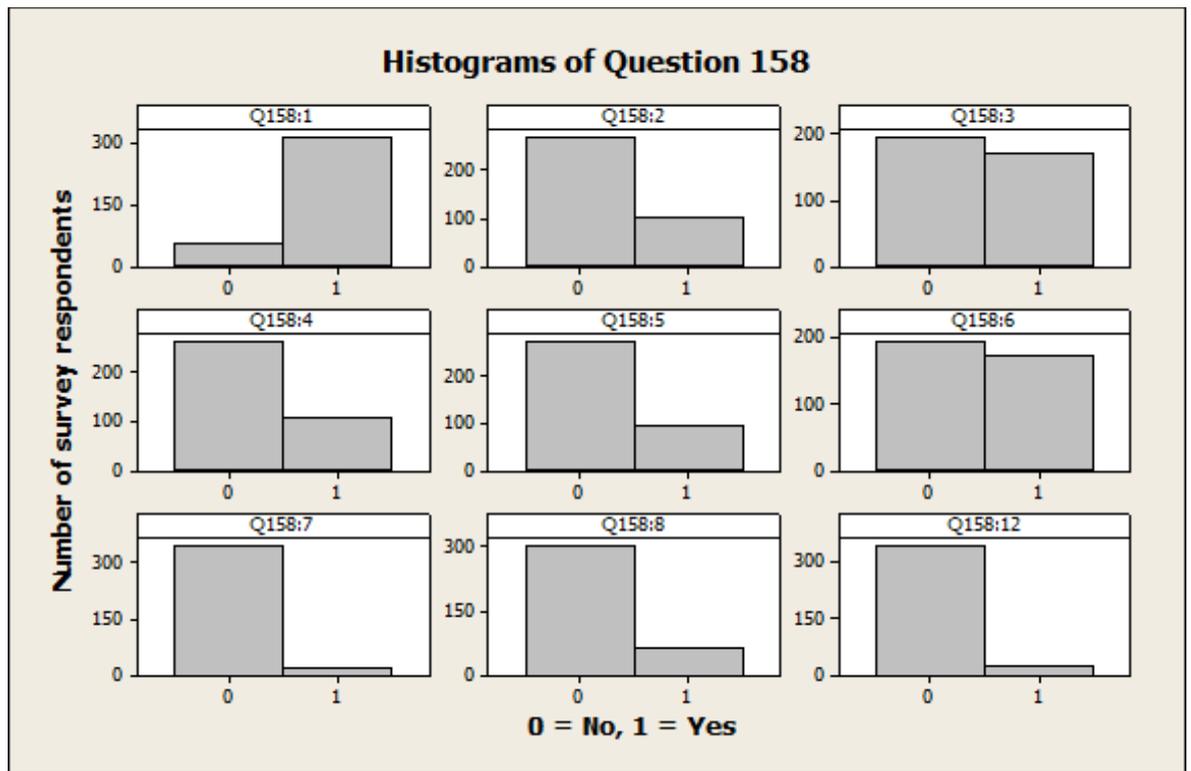


Figure 4: Histograms of multiple answers to Question 158

Figure 4 shows that from the multiple answers, respondents answered mostly 'Yes' to 'Facebook' with 315 respondents, which is over 85 % of all survey respondents. It was also the only choice that was answered more frequently with 'Yes' than 'No'. Next popular choices, 'Google+' and 'Youtube', each had over 170 positive answers. Choice 'I don't use any' was selected by less than 30 survey respondents.

Questions 159-169: How often do you usually use [social media chosen from Q158]?

Based on the previous Question 158, respondents' most popular answers are considered more deeply. Next, this analysis focuses on the respondents' usage of Facebook, Youtube and Google+.

The multiple choices were as follows:

1. Multiple times a day
2. Once a day
3. A few times a week
4. A few times a month
5. Less frequently than once a month
6. I don't use it

Question 159: How often do you usually use Facebook?

The question was answered by 315 (85.6 %) respondents which makes Facebook by far the most popular social network site in this questionnaire.

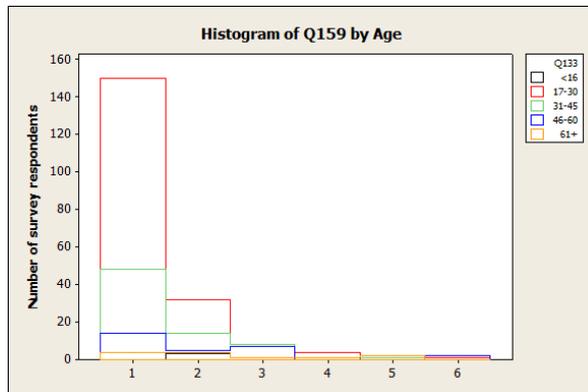


Figure 5: Histogram of Question 159 by Age

Figure 5 shows that the active answers respondents from various age groups answered differently to the question. The everyday usage of Facebook is clearly most popular in the age group 17-30 years old. General trend is that the older the respondents are, the less they use Facebook.

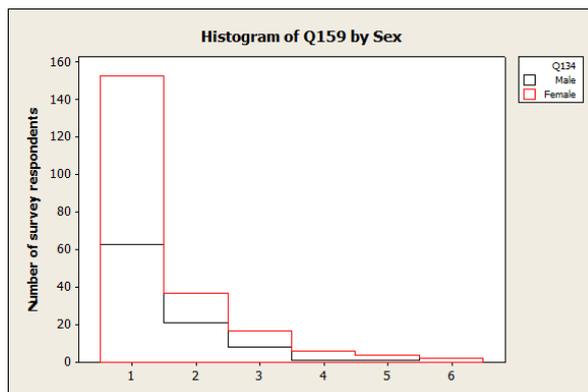


Figure 6: Histogram of Question 159 by Sex

Figure 6 shows that of the active respondents, females and males answered this question similarly. Of all respondents, over half of both female and male respondents use Facebook multiple times every day.

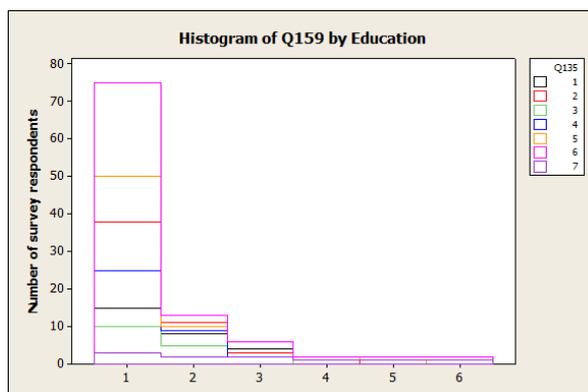


Figure 7: Histogram of Question 159 by Education level

Figure 7 shows the usage of Facebook by education level. There are no significant differences amongst various groups; a clear majority of respondents in every education group uses Facebook at least daily or multiple times a day.

In conclusion, of all respondents 216 (58.7 %) use Facebook every day multiple times, and total of 274 (74.5 %) of all respondents use it every day. This makes it a very popular social media service, which is of general knowledge today.

Question 161: How often do you usually use Youtube?

The question was answered by 172 (46.7 %) respondents. In the comparison between social media services, Youtube is the third most popular service in the questionnaire.

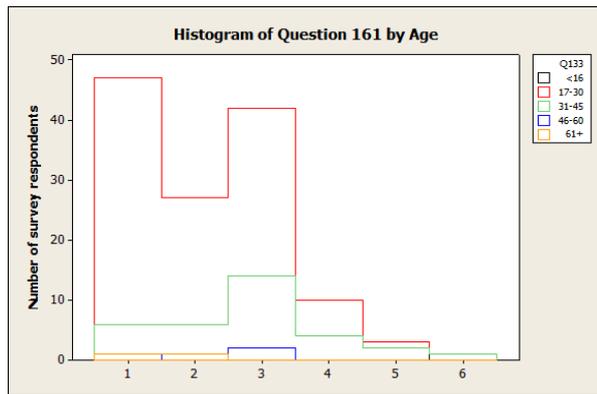


Figure 8: Histogram of Question 161 by Age

Figure 8 shows that the respondents from various age groups answered differently to the question. The everyday usage of Youtube is not nearly as popular as it is with Facebook. The dominant trend is that Youtube is used at least once, often few times a week.

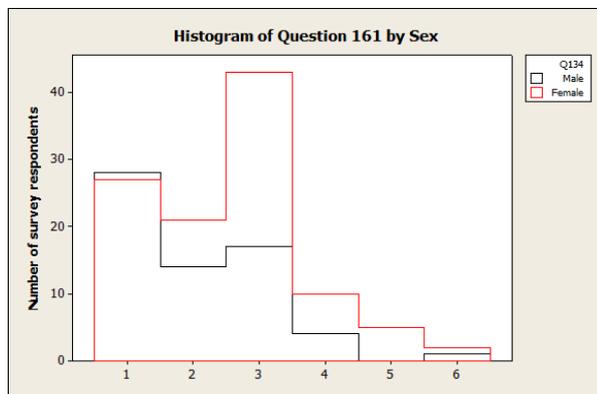


Figure 9: Histogram of Question 161 by Sex

Figure 9 shows that of the respondents, females and males answered this question differently. Males, despite them being a clear minority in this questionnaire, use Youtube more daily than females who clearly use the service few times a week.

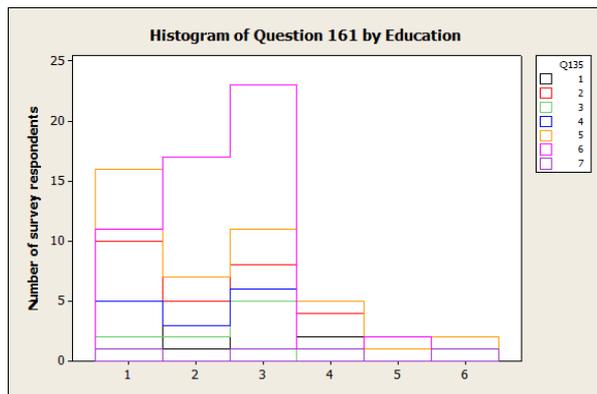


Figure 10: Histogram of Question 161 by Education level

Figure 10 shows the usage of Youtube by education level. There are no significant differences amongst various groups except one; compared to other education level groups, people with Bachelor's degree use Youtube several times a day and therefore more often than others. However, the sample size per group is too small to make a clear statement.

In conclusion, based on the analysis above, Youtube is generally used a few times a week or at least on a weekly basis. Compared to Facebook, the nature of Youtube is quite different the former being often used for daily communication, while the latter is more a service for media distribution. There are some differences in the usage between sex, age groups and education level, the clearest observation being that younger people use Youtube more frequently.

Question 164: How often do you usually use Google+?

The question was answered by 174 (47.3 %) respondents. In the comparison between social media services, Google+ is the second most popular service in the questionnaire.

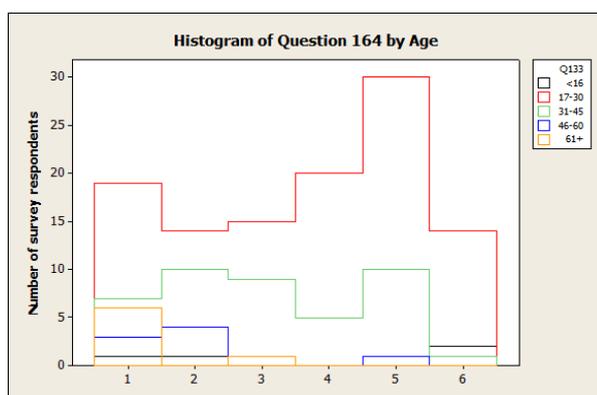


Figure 11: Histogram of Question 164 by Age

Figure 11 shows that the active answers respondents from various age groups answered similarly to the question. The sample size is insufficient in some cases to make a comparison between the age groups but the general trend is noticeable.

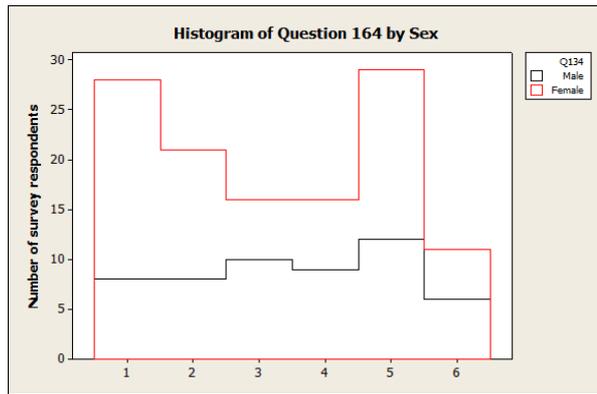


Figure 12: Histogram of Question 164 by Sex

Figure 12 shows that of the active respondents, females and males answered this question similarly. Males and females seem to use Google+ quite similarly.

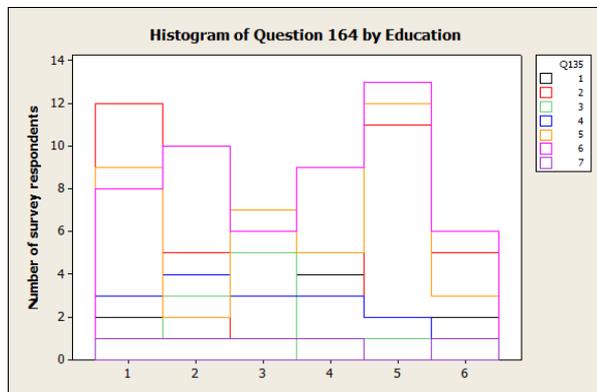


Figure 13: Histogram of Question 164 by Education level

Figure 13 shows the usage of Google+ by education level. There are no significant differences amongst various education levels. Also, the number of survey respondents per education level group per answer is rather small to draw conclusions of any anomaly.

Based on the analysis of this survey, Google+ cannot be considered as a service to be used every day. Google+ is virtually similar to Facebook, but clearly not as frequently used. Survey respondents who have an account seem to use it much less frequently than Facebook, for example to do a monthly check-in.

Question 170: What type of information do you share on social media? (Multiple answers)

The question was answered by 343 (93.2 %) respondents whereas 25 (6.8 %) did not, which can be considered an excellent percentage to form a comparison. As this question had multiple answers (and not clear 'Yes' or 'No'), this analysis considers only the answers itself and does not categorise the respondents by age, sex or education level.

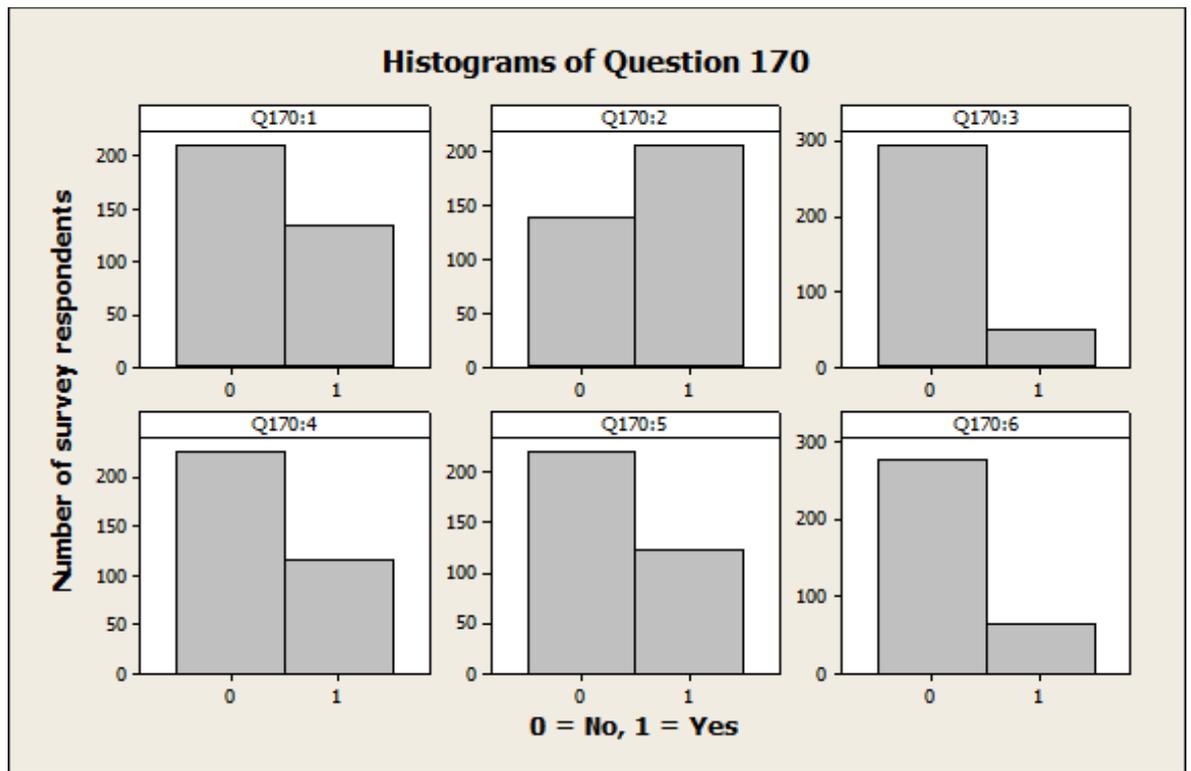


Figure 14: Histograms of multiple answers to Question 170

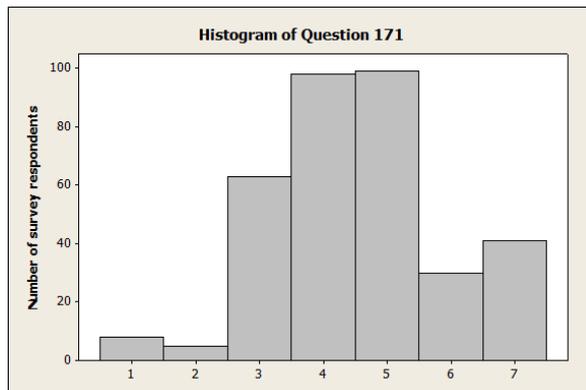
Figure 14 shows the multiple answers as follows from top left to right by each row:

- Q170:1 Acknowledgements
- Q170:2 Informing
- Q170:3 Critique
- Q170:4 Mobilization
- Q170:5 Personal
- Q170:6 I don't share information on social media

From the multiple answers, respondents answered mostly 'Yes' to 'Informing' with over 200 respondents, which is over 50 % of all survey respondents. It was the only answer that was answered with 'Yes' more often than with 'No'. Choices 'Acknowledgements', 'Personal' and 'Mobilization' had over 100 positive answers each. Choices 'Critique' was clearly answered 'No' most often with nearly 300 respondents. Choice 'I don't share information on social media' was answered 'Yes' by 66 (19.2 %) respondents which would mean that four out of five active respondents would share information in the social media at some level.

Question 171: How often do you create content on social media by writing, taking pictures or videos?

The question was answered by 344 respondents (93.5 %, whereas 24 did not), which can be considered an excellent percentage to form a comparison.



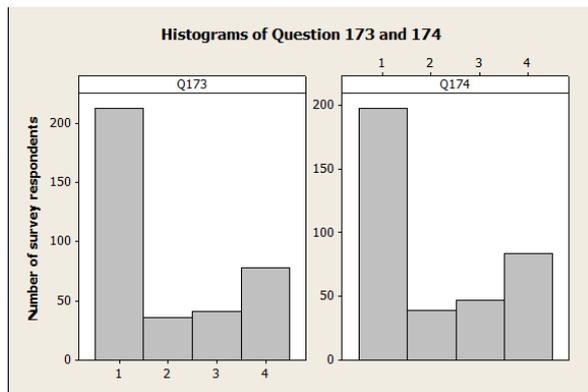
- 1:** Multiple times a day
- 2:** Once a day
- 3:** A few times a week
- 4:** A few times a month
- 5:** Less frequently than once a month
- 6:** I don't create content myself; I only share ready made content
- 7:** I don't create content; I only see what others have shared and created

Figure 15: Histogram of Question 171

Figure 15 shows the distribution of how respondents create content in social media. Approximately 4 out of 5 respondents create content altogether. Clearly over half of the respondents create content on a monthly or weekly basis. Very active content creating (at least once a day) was clearly less frequent than not creating content at all. It is noteworthy that not creating own content does not mean that one does not utilize social media by e.g. making comments or statements to content created by others.

Questions 173 and 174: Let's take a moment and imagine that a water monitoring kit, connected to a mobile phone, laptop or computer would exist and collect environmental-related water data from rivers and streams. Would you be interested in collecting such data (173)? Would you be interested in sharing such data (174)?

Questions 173 and 174 were answered by all 368 respondents. This can be stated to be a very prominent question and yet easy to answer. The analysis of this question will also consider the open answers to 'Yes' regarding both questions.



- 1: Yes
- 2: Yes, on a condition that [open answer]
- 3: No
- 4: I don't know

Figure 16: Histograms of Question 173 and 174

Figure 16 shows that visually both questions were answered very similarly as clearly over 50 % of the respondents answered 'Yes' to both questions. However, some respondents answered 'Yes' on their selected condition. Total number of respondents answering 'Yes' (with or without condition) to Question 173 was 250, and respectively to Question 174 it was 238. Respondents answering 'No' were a clear minority considering both questions. Option 'I don't know' was answered roughly every fifth respondent. Regarding Question 173, the most common condition was that the application has to be very easy to use and not require unnecessary effort. Also, regarding Question 174, the sharing of information should be as easy as possible.

In conclusion, respondents were eager to both collect and share environmental data with their own devices. The answer 'I don't know' should require further research to determine details and causes for the answer.

Question 175: To whom would you allow access to the measurement data?

Questions 175 answered by 237 (64.4 %) respondents. The nature of the question is such that, in principle, active respondents should have answered 'Yes' to both previous Questions 173 and 174. As Question 173 was answered 'Yes' with 250 and Question 174 with 238 respondents, the number of active respondents of this question is in excellent line with previous questions.

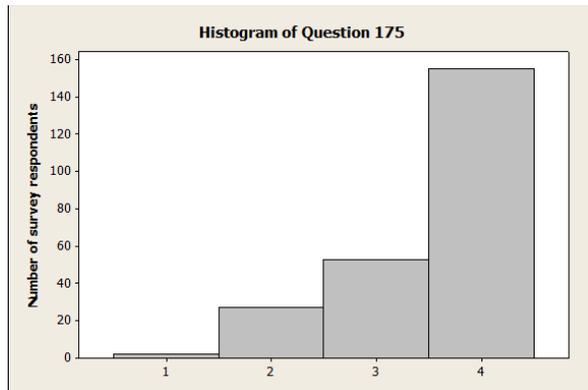


Figure 17: Histogram of Question 175

- 1:** Only you would see your own measurement
- 2:** Only you and the researchers will see the monitoring results
- 3:** Access restricted to researchers and other monitoring data collectors
- 4:** Open access to data

Figure 17 shows that a fair majority (155, 65.4 %) of the respondents was willing to set open access to the measurement data they have collected. Also, nearly all other respondents with a more strict opinion to the access of their measurement results are willing to let the data to be accessed by researchers.

Question 177: If the environmental monitoring data would be possible to share via social media, how would you choose to share it?

The question was answered by 237 (64.4 %) respondents whereas 131 (35.6 %) did not. The nature of the question is such that, in principle, active respondents should have answered 'Yes' to previous Questions 173 and 174. Therefore, the number of active respondents of this question is in excellent line with previous questions.

The question had multiple choices (no clear 'Yes' or 'No'). This analysis considers only the answers itself and does not categorise the respondents by age, sex or education level in more detail.

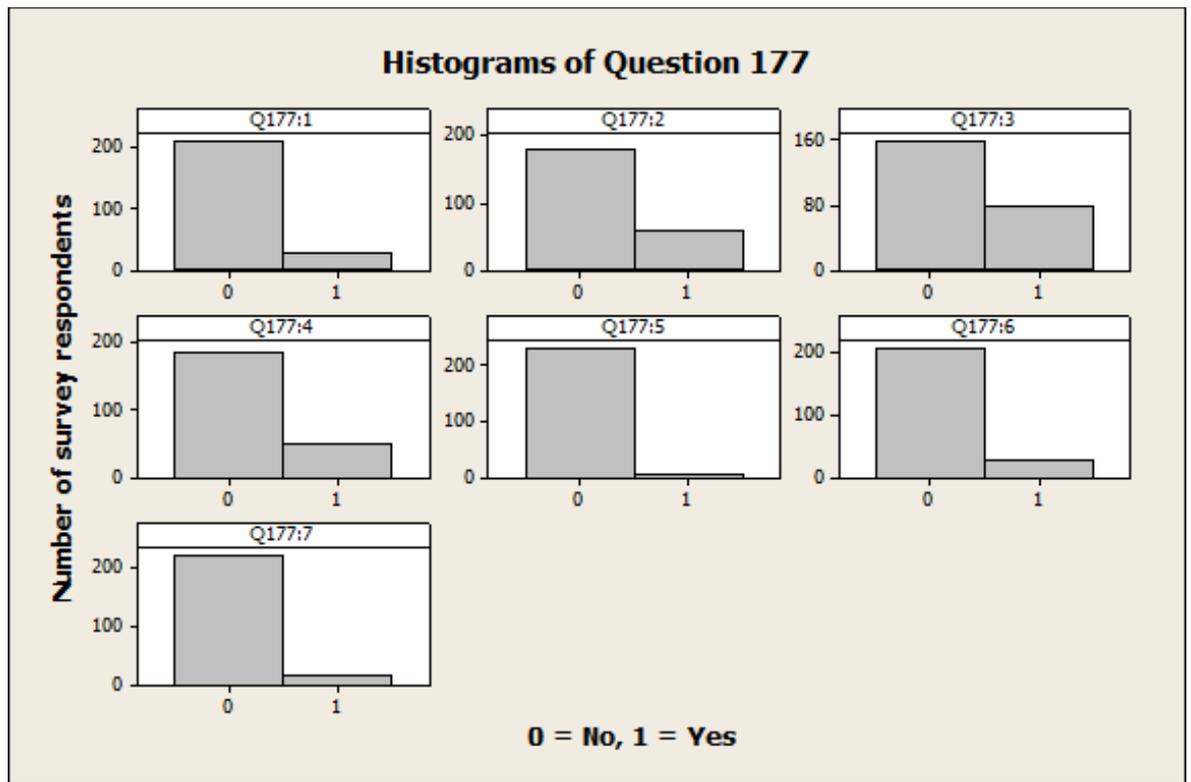


Figure 18: Histograms of multiple answers to Question 177

Figure 18 shows the multiple answers as follows from top left to right by each row:

- Q177:1 Real-time results alongside your account information, such as which school did you take or where do you work
- Q177:2 Automatically on pre-selected intervals, turn publishing content on or off
- Q177:3 Semi-automatic update: click yes to publish the latest results
- Q177:4 Manually typing or sharing any content created by myself
- Q177:5 Other (not considered in this analysis)
- Q177:6 I wouldn't share monitoring data via social media account
- Q177:7 I don't know

From the multiple answers, respondents answered mostly 'Yes' to 'Semi-automatic update: click yes to publish the latest results' by 80 respondents. Generally, choices of the question were selected quite unevenly and rather negatively by the respondents. Therefore, this analysis cannot state that survey respondents would be definitely willing to share their environmental monitoring data on social media.

Question 179: Do you find it important to see / be able to share environmental data on social media?

The question was answered by all 368 respondents. This question, in addition to Questions 173 and 174 are such questions that can be answered very simply – ‘Yes’ or ‘No’. The question was answered ‘Yes’ by 259 (70.4 %) respondents and ‘No’ by 109 respondents.

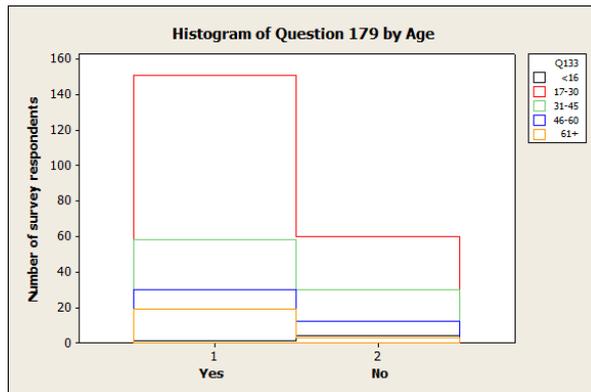


Figure 19: Histogram of Question 179 by Age

Figure 19 shows that the active answers respondents from various age groups answered similarly to the question. Proportionally, age group of 46-60 years old saw it most important to share environmental data on social media. Whether this observation is significant will require further research.

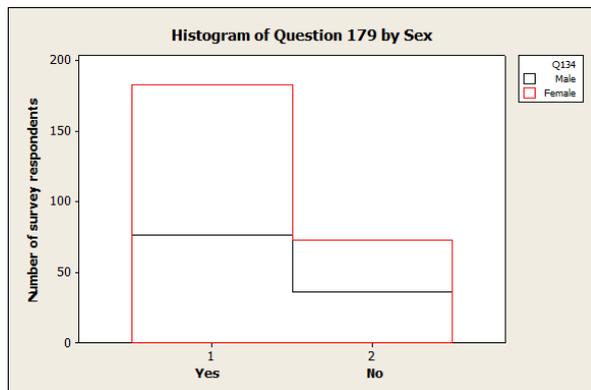


Figure 20: Histogram of Question 179 by Sex

Figure 20 shows that of the active respondents, females and males answered this question quite similarly. A small majority of both males and females find it important to share environmental data on social media.

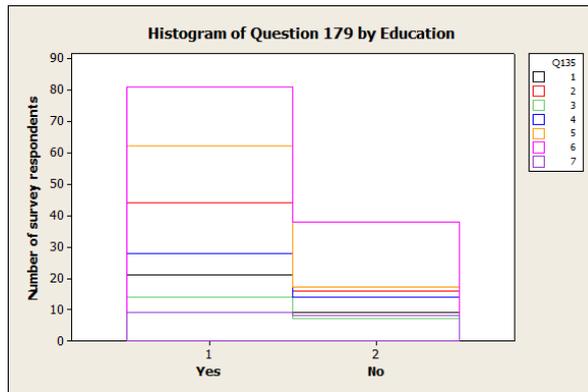


Figure 21: Histogram of Question 179 by Educational level

Figure 21 shows the turnout of the importance of sharing environmental data in social media by educational background. There were no significant differences amongst various educational backgrounds. However, of respondents with Master's degree nearly half found it unimportant to share environmental data on social media.

In conclusion, respondents find it important to share environmental data on social media. That the question was answered by all respondents makes it crucially important since it can be inferred that people have a clear opinion on the issue. Based on the previous answers, the platform and mechanisms of sharing such information could however be seen more case specific.

Conclusion

Based on the survey, a clear majority of the respondents have an account at least for one social media service, Facebook being the most popular. Social media platforms enable people to share information and create content on social media. Respondents were identified to mainly utilize social media for informing their network of their selected personal or public matters. When planning new environmental monitoring programmes and projects, it is seen important to understand what the social media networks are utilised for, and what type of information would be preferred by the active citizens to be shared.

Based on this and more specific questions regarding the usage of social media, people are positively receptive to sharing environmental monitoring data on their accounts in various social media services for their network. Nonetheless, the respondents generally want to strictly control the information they share, e.g. by reviewing the data before publishing. In total, based on this survey analysis, citizens see sensor technology as an attractive and potentially useful way of creating content for social media purposes and via social media networks.