

**D1.1 – SCENT Stakeholder Analysis & End User Needs and Requirements**



**Smart Toolbox for Engaging Citizens into a People-Centric Observation Web**

**Abstract**

Whilst citizen participation in environmental policy making is still in its infancy, there are signs of a growing level of interest. The majority of citizens, though, both as individuals and as groups often feel disengaged from influencing environmental policies. They also remain unaware of publicly available information, such as the GEOSS or Copernicus initiatives. The SCENT project will alleviate this barrier. It will enable citizens to become the ‘eyes’ of the policy makers by monitoring land-cover/use changes in their everyday activities. This is done through a constellation of smart collaborative technologies delivered by the SCENT toolbox in TRLs 6-8.

SCENT user-centered approach requires that citizens and experts get involved in the design process, particularly for the user needs description and consolidation. Hence, the current deliverable emphasizes the end user needs collection performed, for both case studies, through questionnaires, online surveys and focus-groups at three different levels: i) policy makers that are involved in the process of monitoring floods and flood risks as well as those that are obliged by law to deal with the flood consequences and effects, ii) experts of the area, ranging from remote sensing and sensor equipment experts, flood modellers, local/regional and national authorities active in civil protection, civil protection NGOs, regional and national authorities responsible for the application of the EU flood related policy directive, as well as scientists working in data collection and analysis of parameters that may affect flooding (precipitation, water discharge, water level, surface velocity). Finally, the third level targeted citizens and volunteers who will participate in the large-scale demonstration campaigns of SCENT in the third year of the project and use the SCENT tools. Standard descriptive statistics were used to define the perception of existence of monitoring systems and the specification of User Requirements of the SCENT – Toolbox and to understand the requirements of citizens for the SCENT toolbox, as users of the SCENT toolbox. The end user requirements that have stemmed from all participatory approaches were introduced in a final set of the prioritised user requirements from both case studies, classifying them in various categories to make this list more readable and coherent. The list of user requirements will feed into the SCENT system requirements as well as the SCENT system architecture tasks.

**Keywords: focus groups, socio-anthropological investigation, online survey, stakeholders, user requirements, citizen observatory.**

|             |                                |                            |
|-------------|--------------------------------|----------------------------|
| <b>D1.1</b> | <b>Dissemination Level: PU</b> | <b>Deliverable Type: R</b> |
|-------------|--------------------------------|----------------------------|



| <b>Authoring and review process information</b>   |  |
|---|--|
| <b>EDITOR</b><br>Iulian Nichersu / DDNI   | <b>DATE</b><br>15-11-2016  |
| <b>CONTRIBUTORS</b><br>Eugenia Marin / DDNI<br>Iuliana Nichersu / DDNI<br>Florentina Sela / DDNI<br>Marian Mierlă / DDNI<br>Cristian Trifanov / DDNI<br>Athanasia Tsertou/ ICCS<br>George Athanasiou / ICCS<br>Anna Antonakopoulou / ICCS<br>Mary Miska/ Attica<br>Dimitra Alexopoulou / Attica<br>Haris Georgiou / HRTA<br>Amy Hume / CARR<br>Linda Henriksson / CARR<br>Alida Barbu / SOR | <b>DATE</b><br>5-12-2016<br>10-12-2016<br>17-12-2016<br>5-12-2016<br>5-12-2016<br>20-11-2016<br>10-12-2016<br>10-01-2017<br>16-12-2016<br>16-12-2016<br>18-12-2016<br>15-12-2016<br>15-12-2016<br>10-01-2017 |
| <b>REVIEWED BY</b><br>Linda Henriksson / CARR<br>Ioana Popescu / IHE  | <b>DATE</b><br>27-01-2017<br>30-01-2017  |
| <b>APPROVED BY</b><br>Tony Hughes / CARR  | <b>DATE</b><br>06-02-2017  |
| <b>LEGAL &amp; ETHICAL ISSUES COMMITTEE REVIEW REQUIRED?</b>  |  |
| NO  |  |



# Table of Contents

- Executive Summary..... 9**
- 1 Introduction..... 9**
  - 1.1 Purpose of the Document..... 11
  - 1.2 Intended readership ..... 11
  - 1.3 Relation with other SCENT deliverables ..... 12
- 2 Methodology based on Participatory Approaches ..... 12**
  - 2.1 Methodology Scope and Structure ..... 12
  - 2.2 Questionnaires/semi-structured interviews for identification of target groups..... 14
- 3. End user requirements ..... 17**
  - 3.1 Description of methodology and explanation of the user requirements format..... 18
    - 3.1.1 Methodology for derivation of the end user requirements ..... 18
    - 3.1.2 Formalisation of the user requirements ..... 21
  - 3.2 List of End User requirements ..... 22
    - 3.2.1 Functional Requirements..... 23
    - 3.2.2 Non-Functional Requirements..... 37
- 4 Conclusions..... 42**
- References..... 43**
- Annex 1 Questionnaires and Online surveys for end user needs collection ..... 44**
  - 1.1 Questionnaires for policy makers ..... 44
    - 1.1.1 Overview of results for Danube Delta..... 47
    - 1.1.2 Overview of results for Kifisos, Attica ..... 47
  - 1.2 Questionnaires for expert groups..... 48
    - Methodology..... 49
    - 1.2.1 Overview of results for Danube Delta..... 52
    - 1.2.2 Overview of results for Kifisos Attica, Greece..... 61
  - 1.3 Online survey for citizen needs..... 70
    - 1.3.1 Overview of results for Danube Delta..... 70
    - 1.3.2 Overview of results for Kifisos, Attica ..... 73
    - 1.3.3 Overview of results for UK and Ireland..... 75
- Annex 2 Focus groups for end user needs collection..... 78**
  - 2.1 Introduction explaining the method followed for focus groups..... 78
  - 2.2 Overview of results and key points from the Danube Delta focus groups ..... 85



2.3 Overview of results and key points from the Kifisos Attica focus groups ..... 93

**Annex 3 Informed consent forms** ..... 101

**Annex 4 Questionnaires & online surveys** ..... 103

    Questionnaire addressed to policy makers (Level I)..... 103

    Questionnaire addressed to experts (flood modellers, sensor experts, remote sensing experts, national and regional authorities, meteorological data providers, etc.) (Level II) ..... 104

    Questionnaire addressed to citizens and volunteers (Level III)..... 106

    Example page from Online Survey (English) ..... 110

**Annex 5 Example of Official Address Questionnaires Level I** ..... 111

**Annex 6 Example of Official Address Questionnaires Level II** ..... 118

    Example of Romanian Official Address Questionnaires Level II ..... 118

**Annex 7 Focus groups Program / Agendas**..... 128

## Table of Figures

**Figure 1** Participatory approach for collecting stakeholder list and extracting user needs WP1 – tasks 1.1-1.3 ..... 13

**Figure 2** Iterative methodology for the collection of the user requirements, identification of system/technical requirements and definition of the system architecture ..... 19

**Figure 3** Methodology used during the discussion with the end users in the two workshops in Tulcea and Athens ..... 19

**Figure 4** Discussion within focus groups, analysis and prioritisation of the user requirements. .... 21

**Figure 5** Flow chart for the dissemination of the extreme weather conditions bulletin to all responsible stakeholders ..... 48

**Figure 6** Satisfaction with the accuracy of current land-cover and land-use maps for monitoring flood hazards and their environmental related issues – Danube Delta..... 54

**Figure 7** Satisfaction with the current rate of updates land-cover and land-use maps for monitoring flood hazards and their environmental related issues– Danube Delta ..... 54

**Figure 8** Satisfaction with current established taxonomies describing rural areas for monitoring flood hazards in those areas – Danube Delta ..... 55

**Figure 9** Satisfaction with currently established taxonomies describing urban areas for monitoring flood hazards in those areas – Danube Delta ..... 56

**Figure 10** Parameters that are necessary to determine the extent and behaviour of floods in Danube Delta region, from most important to less important ..... 56

**Figure 11** Citizen sourced information is not relevant with the current flood monitoring programs of Kifisos River, Attica and Danube Delta..... 57

**Figure 12** Citizen sourced information could be of assistance with the current flood monitoring programs of Kifisos River, Attica and Danube Delta ..... 58

**Figure 13** Citizen sourced information could be of assistance to current flood monitoring programs of Kifisos River, Attica and Danube Delta however this kind of data is insecure or has privacy issues.... 58



**Figure 14** Citizen-sourced information may provide valuable input for the monitoring of land-cover and land-use changes and for monitoring critical environmental phenomena such as floods– Danube Delta ..... 59

**Figure 15** Opinion of participants of what components a citizen observatory must include – Danube Delta ..... 60

**Figure 16** Maintaining accurate and updated land-cover and land-use maps is important for monitoring flood hazards and their environmental related issues - Attica ..... 62

**Figure 17** Satisfaction with the accuracy of current land-cover and land-use maps for monitoring flood hazards and their environmental related issues - Attica..... 63

**Figure 18** Satisfaction with the current rated of updates in land-cover and land-use maps for monitoring flood hazards and their environmental related issues - Attica ..... 63

**Figure 19** Satisfaction with current established taxonomies describing rural areas for monitoring flood hazards in those areas - Attica..... 64

**Figure 20** Satisfaction with current established taxonomies describing urban areas for monitoring flood hazards in those areas - Attica..... 65

**Figure 21** Parameters that are necessary to determine the extent and behavior of floods in Kifisos river ..... 66

**Figure 22** Citizen sourced information is not relevant with the current flood monitoring programs of Kifisos River, Attica and Danube Delta..... 67

**Figure 23** Citizen sourced information could be of assistance with the current flood monitoring programs of Kifisos River, Attica and Danube Delta however this kind of data is not sustainable..... 67

**Figure 24** Citizen sourced information could be of assistance to current flood monitoring programs of Kifisos River, Attica and Danube Delta however this kind of data is insecure or has privacy issues. .... 68

**Figure 25** Citizen-sourced information may provide valuable input for the monitoring of land-cover and land-use changes and for monitoring critical environmental phenomena such as floods’ - Attica ..... 69

**Figure 26** Smartphone ownership and operating system – Danube Delta ..... 71

**Figure 27** How often are you willing to participate in SCENT activities– Danube Delta..... 72

**Figure 28** Smartphone ownership and operating system –Kifisos/Attica ..... 73

**Figure 29** How often are you willing to participate in SCENT activities– Kifisos/Attica ..... 74

**Figure 30** Smartphone ownership and operating system – UK/Ireland ..... 75

**Figure 31** How often are you willing to participate in SCENT activities – UK/Ireland ..... 76

**Figure 32** Focus Group stages ..... 78

**Figure 33** Data flow chart for prevention for Danube Delta case study ..... 86

**Figure 34** Distribution of percentage of involvement by components: people, technology and process ..... 88

**Figure 35** Use of Smartphone applications among Danube Delta Focus Group stakeholders ..... 90

**Figure 36** The social impact of Citizen Observatories ..... 91

**Figure 37** Disaster Management Source: [www.health.gov.fj/?page\\_id=2697](http://www.health.gov.fj/?page_id=2697) ..... 93



## List of Tables

|  |    |
|--|----|
| <b>Table 1</b> List of Abbreviations .....   | 8  |
| <b>Table 2</b> Format of SCENT user requirements .....   | 21 |
| <b>Table 3</b> Contributors for Danube Delta case study.....   | 45 |
| <b>Table 4</b> Contributors for Kifisos, Attica case study .....   | 45 |
| <b>Table 5</b> Contributors for Danube Delta case study.....   | 51 |
| <b>Table 6</b> Contributors for Kifisos, Attica case study .....   | 52 |
| <b>Table 7</b> Focus group participants/stakeholders - Danube Delta case study .....   | 81 |
| <b>Table 8</b> Focus group participants/stakeholders – Kifisos river case study .....  | 84 |
| <b>Table 9</b> Focus groups topics.....  | 84 |
| <b>Table 10</b> Existing resources (human/technical) and issues .....  | 87 |
| <b>Table 11</b> Existing Monitoring-Citizen and Citizen – Knowledge relationships - Danube Delta .....   | 88 |
| <b>Table 12</b> Analysis of the smart collaborative technologies (SMT) characteristics needed for CO architecture, on a scale of importance – Danube Delta ..... | 89 |
| <b>Table 13</b> Existing Monitoring-Citizen and Citizen – Knowledge relationships - Attica .....   | 95 |
| <b>Table 14</b> Analysis of the smart collaborative technologies (SMT) characteristics needed for CO architecture, on a scale of importance - Attica .....       | 96 |

## Acronyms and abbreviations

| Abbreviation   | Description                                     |
|----------------|---|
| APM            | Tulcea Environmental Protection Agency          |
| APP            | Applications                                    |
| ARG edition    | Alternate Reality Gaming edition                |
| CO             | Citizen Observatory/ies                         |
| Copernicus EMS | Copernicus Emergency Management Service         |
| CORINE         | Co-Ordinated Information on the Environment     |
| DGP            | Directorate of Civil Protection / Attica Region |
| DDBRA          | Danube Delta Biosphere Reserve Authority        |
| DEM            | Digital Elevation Model                         |
| DOW            | Directorate of Water                            |
| EC             | European Commission                             |
| EJ             | Expert Judgement                                |
| EKAV           | National Centre for Emergencies (Greece)        |

|         |  |
|---------|--|
| EKEPY   | National Centre for Health Operations (Greece)           |
| EMY     | National Meteorological Service (Greece)                 |
| FG      | Focus Group  |
| FRM     | Flood Risk Management                                    |
| GEOSS   | Global Earth Observation System of Systems               |
| GIS     | Geographical Information Systems                         |
| GSCP    | General Secretariat of Civil Protection (Greece)         |
| GSM     | Global System for Mobile Communications                  |
| HCMR    | Hellenic Centre for Marine Research                      |
| IMG     | Image  |
| iOS     | A mobile operating system created and developed by Apple |
| IPP     | Integrated Product Policy                                |
| ISU     | Danube Delta Emergency Situation Inspectorate            |
| IT      | Information Technology                                   |
| KPI     | Key Performance Indicator                                |
| LiDAR   | Light Detection and Ranging                              |
| LC      | Land Cover   |
| LU      | Land Use   |
| LUCAS   | Land Use and Coverage Area Frame Survey                  |
| NGO     | Non-governmental Organisation                            |
| NMSES   | National Management System for Emergency Situations      |
| NOA     | National Observatory of Athens                           |
| OGC     | Open Geospatial Consortium                               |
| OPEKEPE | Greek Payment Authority of Common Agricultural Policy    |
| QR code | Quick Response Code                                      |
| RRI     | Responsible Research Innovation                          |
| SENS    | Sensor   |
| SGA     | Tulcea Water Management System                           |
| SME     | Small and Medium-sized Enterprise                        |

|        |   |
|--------|---|
| SMS    | Short Message Service                   |
| SMT    | Smart Collaborative Technologies        |
| SSH    | Social Science Humanities               |
| VGI    | Volunteered Geographic Information      |
| WebGIS | Online Geographical Information Systems |
| WFD    | Water Framework Directive               |
| WP     | Work Package                            |
| WWF    | World Wildlife Fund                     |

*Table 1 List of Abbreviations*



## Executive Summary

Whilst citizen participation in the environmental policy making process is still in its infancy, there are signs of a growing interest. Most citizens however, both as individuals and as groups quite often feel disengaged from influencing environmental policies. The aim of this deliverable is to get involved both citizens and experts in the design process of the SCENT toolbox of innovative technologies, particularly for the current needs and user requirements description and consolidation, to form an active and self-sustainable citizen observatory.

The methodology applied in order to collect user requirements for an active citizen participation in the environmental policy was based on participatory approaches (questionnaires and focus-groups) carried out with care and consideration for the group of stakeholders involved for both pilot areas where serious flooding events are a concern – the urban area of Kifisos River area in Attica, Greece and the rural area of Danube Delta in Romania. Having compiled the input received from the questionnaires the consortium gave to the stakeholders more details on the solutions that will be offered by SCENT to cover their needs. An interactive discussion followed, where the consortium identified their satisfaction level, a prioritisation of their requirements and finally the key features of the SCENT toolbox. In this direction, the final system architecture was shaped to respect the specifications collected and in which the end user requirements were introduced in a final set of the prioritised user requirements from both case studies, classifying them in various categories (functional and non functional) to make this list more readable and coherent. The list of user requirements will feed into the SCENT system requirements as well as the SCENT system architecture tasks.

## 1 Introduction

The creation of an active Citizen Observatory (CO) is of particular interest to scientists, researchers and authorities in the field of flood risk management (FRM) and to actors in emergency services (Civil Protection Mechanism, 2017). To ensure an effective flow of information and citizen engagement, tools need to be developed, modernized and adapted to face current realities and overcome current challenges. The engagement of citizens in citizen observatories has not yet been adequately addressed. A series of citizen-led initiatives such as ReCONNECT by the EPA (Ireland), the “big butterfly count” (UK), Moors for the Future (UK) and Cancer Research (UK); and EU-funded projects exist, such as Cobweb, Citi-Sense, WeSenseIt, but these have typically been small pilots and of a limited duration. The large scale demonstrations and long-standing citizen engagement are challenges that are yet to be met and showcased, including through the current set of H2020 CO projects, namely SCENT, Grow (Observatory, 2017), GroundTruth2.0 (2.0, 2017), Landsense (Landsense, 2017).

The SCENT project will design and implement a toolbox of innovative technologies to improve current maps and make flooding prediction models more accurate. Such technologies include low-cost and portable sensors, an innovative crowd sourcing platform, serious gaming applications for large-scale image collection, machine learning for image and text classification, numerical models for mapping land-cover changes to quantifiable impact on flood risks and a harmonization platform, consolidating data and adding it to GEOSS. This research is being conducted in two pilot areas where serious flooding



events are a concern – the urban area of Kifisos River area in Attica, Greece and the rural area of Danube Delta in Romania.

The research on citizen observatories needs to cover various aspects of citizen involvement, including monitoring activities and data validation. This ties in with the identification of appropriate user requirements relevant to the SCENT Toolbox. The prevention, monitoring and management of flood risks and phenomena, in general, involving contributions from citizens is increasingly challenging due to the complex nature of flooding as a phenomenon and the diversified needs of authorities and citizens. Existing or less mature approaches and solutions need to be adopted to the project context in order to improve FRM and bring in crowd-sourced data in a complementary way to existing systems and methods. The consolidation of these challenges and discussion on suitable technological solutions in SCENT is based on a socio-anthropological investigation and the provision of theoretical and practical insights from experts. This methodology, combined and multiplexed with the SCENT consortium proposed tools and innovations, will ultimately lead to the detailed specification and technical design of the SCENT Citizen Observatory.

Specifically, the key objectives of SCENT Work Package WP1 ‘SCENT toolbox requirements and architecture’, relevant to the current document are as follows:

- To identify relevant stakeholders (local, regional, from EU-environmental agencies) that may support and disseminate SCENT in a regional/national context but also at European level in the immediate future
- To closely follow the Integrated Product Policy (IPP)<sup>1</sup>, adopted to the SCENT context, using a set of participatory methods, which requires integrated assessment tools, as indicators, scenarios, mechanisms for monitoring and assessment of land-use changes and their impact. Attention will be paid to issues such as urban growth, wetlands and protected areas, climate change impacts on water and biodiversity.
- To document current needs and user requirements (including a list of relevant environmental parameters of interest) for the SCENT toolbox in order to form an active and self-sustainable citizen observatory
- To integrate the suite of data governance information into a common framework that can form the methodological basis of the assessment for the SCENT Toolbox that will be delivered by the project.

SCENT focus on citizen participation in the environmental policy making and data governance, along with participatory techniques used, will facilitate the understanding of trade-offs associated with different tools, technologies and policies. It will also ensure that Social Science Humanities (SSH) are embedded in SCENT as an enabler of Responsible Research Innovation (RRI)<sup>2</sup>.

---

<sup>1</sup> Integrated Product Policy (IPP) - <http://ec.europa.eu/environment/ipp>. All products cause environmental degradation in some way, whether from their manufacturing, use or disposal. Integrated Product Policy (IPP) seeks to minimise these by looking at all phases of a products' life-cycle and taking action where it is most effective.

<sup>2</sup> Responsible Research and Innovation includes:



## 1.1 Purpose of the Document

The purpose of this document is to describe the methodology and concepts used and applied in order to collect user requirements for an active citizen participation in the environmental policy making process through the SCENT toolbox. The deliverable describes the outcome of SCENT Stakeholder analysis & End-user needs and requirements Task in WP1 (Lead DDNI).

The deliverable starts by outlining the methodology used to identify relevant stakeholders and user requirements. The key participatory approaches that have been used to extract these needs and requirements for a successful implementation of the SCENT toolbox are defined in section 2. Section 3 discusses user requirements in more detail and formalises and classifies the end-user needs and requirements necessary for the SCENT toolbox implementation. Section 4 concludes the document

Annex 1 focuses on the questionnaires and online surveys used to collect end user needs in the Danube Delta and the Kifisos river area, providing details of the profiles of participating stakeholders and organisations. Annex 2 subsequently describes the focus groups conducted to collect user needs in both pilot areas. Annex 1 and 2 provide detailed information on both the methods applied and the results obtained.

All methods followed in the framework of this research are fully compliant with the principles described in Deliverable 8.3 Data Management Plan and Protection of Personal Data Requirements. In this context, a series of measures has been taken to protect the personal data of participants. The collection of such data, especially regarding participants' ethnicity, age, gender, educational level and socioeconomic status has been guided and justified, in order to meet the research goals of the project. Particular care has been taken to ensure the protection of personal data, not only in the data acquisition phase, but also in the data storage, protection and destruction. The EU General Data Protection Regulation (General Data Protection Regulation, 2016) is taken into account in (personal) data processing by making licit use of the collected data and guaranteeing participants' privacy.

## 1.2 Intended readership

The work presented in this report addresses the needs of three potential user communities:

- Citizens who are interested in participating in environmental monitoring and in particular in the SCENT CO and would like to understand the project scope, participatory approach and conclusions on stakeholder needs in a form that is easy to explain and to understand.

- 
- **Involving society in science and innovation** 'very upstream' in the processes of R&I to align its outcomes with the values of society.
  - **A wide umbrella connecting different aspects of the relationship between R&I and society:** public engagement, open access, gender equality, science education, ethics, and governance.
  - **A cross-cutting issue in Horizon 2020**, the EU Programme for Research and Innovation 2014-2020.



- Researchers, scientists and industrial organisations, internal and external to the SCENT partnership that are active in the CO and/or in-situ environmental monitoring domains and would like to have an updated view on user requirements for an active and sustainable CO.
- Authorities (local, regional or national) relevant to urban planning for flood prevention (Kifisos case), to civil protection, to implement the 2007/60 Flood directive, to monitor and preserve the local ecosystem (Danube Delta case).

It may seem difficult to address the needs of such diverse communities in a single document. Nevertheless, the editors believe that the workflow allows us to organize the information in ways useful to all aforementioned communities.

### 1.3 Relation with other SCENT deliverables

The present deliverable is essentially the cornerstone of SCENT. It is the basis document where the inputs and needs of several related stakeholders are documented along with the methods used to capture their challenges, concerns and needs from a citizen observatory. These stakeholders range from experts and researchers in flood modelling, in in-situ equipment, in civil protection, in the application of flood related policy directives, in data collection systems for various environmental parameters to citizens and volunteers that will be asked to participate in the SCENT large scale demonstration campaigns and use SCENT tools.

In this context, this document will feed several other key deliverables of the project and WP1, namely D1.3 SCENT toolbox system requirements and D1.4 SCENT toolbox system architecture definition. In particular, for the compilation of the system requirements, the user requirements included in the present document will be considered, after having been prioritized (See Section 3.1) and given the technology limitations of the innovations proposed in the SCENT Innovation Action. The current document is in close relation to D1.2 Benchmarking of available in-situ infrastructure, in the sense that (i) the collection and consolidation of existing in-situ monitoring systems in the two regions was performed through the various methods used in Task 1.1, i.e. the questionnaires, interviews, online surveys and the focus groups; (ii) the analysis regarding the Key Performance Indicators that experts have recommended for the evaluation of SCENT (reflected in D7.4 Evaluation of the SCENT toolbox) will be presented in D1.2 along with the description of the specific regions of interest where the SCENT pilots will be performed. This has been decided as both aspects are in close relation to a benchmarking of the current capabilities of the two pilot regions regarding in-situ monitoring, as essentially the SCENT Citizen Observatory shall act in complementarity with them.

## 2 Methodology based on Participatory Approaches

### 2.1 Methodology Scope and Structure

The objective of this section is to provide research goals and protocol (Patton, 2004), (Taylor, 2002) for the social science into WP1. Each section focuses on the most important and necessary tools for successful research and analysis. This section contains planning, methods and techniques that respond to SCENT project challenges. Research was carried out with care and consideration for the



stakeholders with whom we are working. It should be noted however that the communication and dialogue between researchers and stakeholders was the base of the methodology described below.

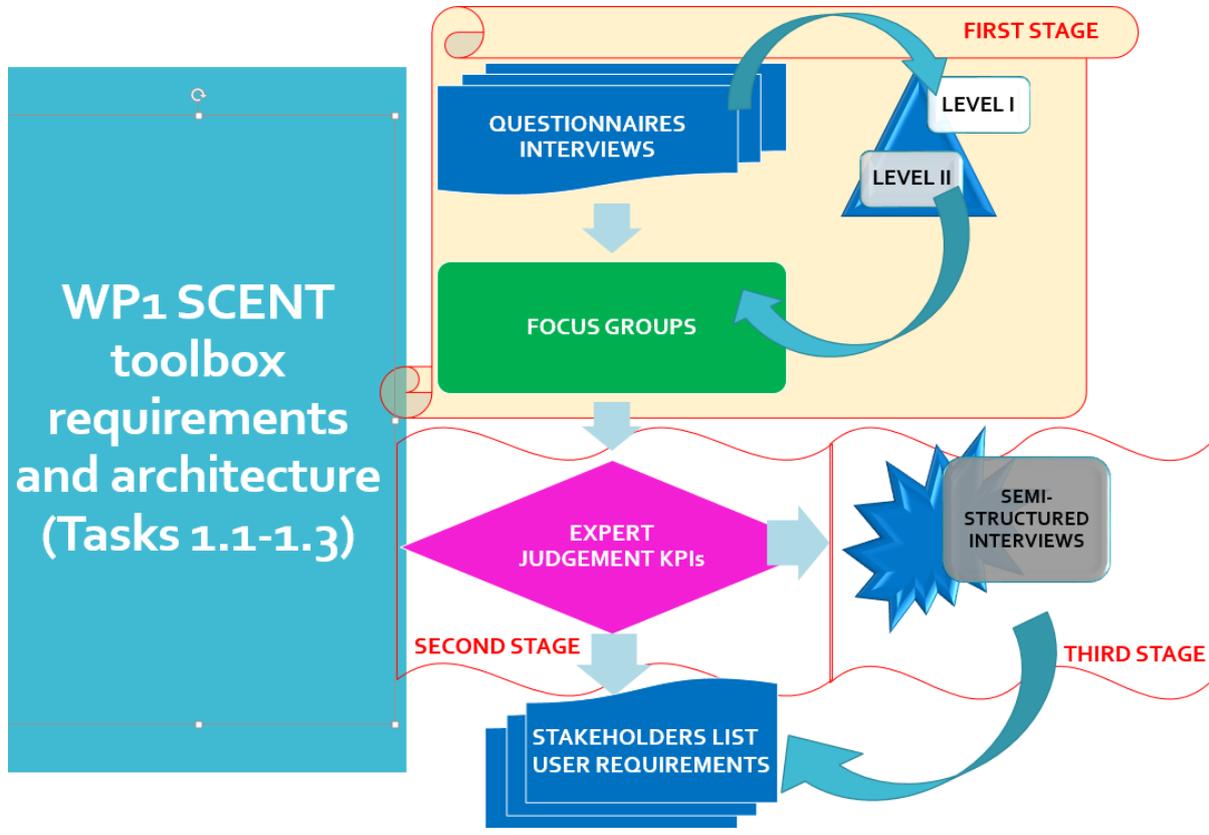


Figure 1 Participatory approach for collecting stakeholder list and extracting user needs WP1 – tasks 1.1-1.3

Working tools used in the framework of Task 1.1 for the extraction and compilation of SCENT user requirements are visualised in Figure 1 and described in what follows:

1. Questionnaires/semi-structured interviews for Identification of target groups (Level I, II and Level III)
2. Focus Groups (Greenbaum, 1997)/workshops
3. Expert judgement assessment Matrix (will be described in D1.2, as stated in Section 1.3)
4. Extraction, compilation and consolidation of user requirements

This 4-step process follows the so-called ‘tree approach’ (Zacharias, 2012), (Erasmus, 2017) that aims to reach conclusions, by determining cause-effect relationship and structures problems and challenges according to their levels of complexity and specificity. The Problem analysis identifies the negative aspects of the current problematic situation and establishes the cause-effect relationship of problems. In other words, the analysis aims to, on one hand, identify existing negative facts, that stakeholders in the management and monitoring of flood risks seek solutions for, and prioritise them but, on the other hand, also develop new opportunities for more efficient flood monitoring through

Citizen Observatories. Following this combinatorial approach, the tree approach has a significant impact because it is structured based on participatory techniques.

## 2.2 Questionnaires/semi-structured interviews for identification of target groups

The steps that were followed to compile the list of stakeholders, distribute the questionnaires and extract their viewpoints and expertise on the questionnaire scope and topics is described below:

Step 1.

A list of **‘tier-1’ stakeholders** – namely people, groups and bodies who will be able to describe what institutions (including formal and informal organisations and systems) affect the management of active citizen participation in the environmental policy making process are gathered.

The process includes keeping details of these ‘tier-1’ stakeholders, including what category they fall into, i.e. Non-Governmental Organisations (NGOs), environmental charities, educational, scientific institutions, local groups, etc; making a note of the permanence or transience of their position. Repeat the same process for the tier-2 stakeholders they have recognised as key for the CO context. This process includes keeping demographics data of participants e.g. male/female; approximate age (under 20, 20-30, 30-50, over 50), always in accordance to SCENT D8.3 principles.

- **OUTPUT: List and profile tier-1 stakeholders**

Record their responses, stopping at ‘saturation’, i.e. when no new identified institutions or organisations appear in the responses. Responses given will reveal the **‘tier-2’ stakeholders** affecting flood risk management in both pilot cases.

- **OUTPUT: List and profile tier-2 stakeholders, which have been identified capable to provide information on CO relevant topics. Also record the tier-1 stakeholders’ perceived importance of the stakeholders position/activities relative to each other and relative to active citizen participation in the environmental policy making process in the area.**

Step 2.

The **‘tier-2’ stakeholders**, when contacted, will be the source of the second stage of information, which will be grouped in 3 ways:

- a) **Formal institutions/organisations/bodies.** The stakeholders should be questioned to reveal how and why such institutions are put into practice or are not included in the environmental policy making process.
- b) **Local level formal institutions/organisations/bodies**, i.e. level councils, associations and private companies
- c) **Local level informal institutions/bodies/organisations/bodies**, i.e. more difficult to ascertain and perhaps unrecorded patterns of intervention rights, patterns of behaviour or procedures.

- **OUTPUT: List information pertaining to group a)** – these might be a set of key individuals or ‘relevant officials’ and their associated organizations. Collect written documentation associated with formal institutions. Also devise semi-structured interviews schedules to be performed with these individuals.
- **OUTPUT: List information pertaining to groups b) and c).** Devise lists of people who will participate in interviews and/or focus groups. Think about and record the size of groups.

Discuss with stakeholders the scope of the pilots, note any current problems or challenges that SCENT CO could address. Responses from interviews and focus groups will be analysed using qualitative methods and will need to be used as references for the system requirements and design performed in a later project stage by the SCENT partnership.

- **OUTPUT: Prepare, iterate with consortium members and consolidate clear, coherent and project-scope related numbered questions to be used during the interviews.**

Step 3.

The interviewees will be selected based on voluntary interest of participants and will include tier-1 stakeholders.

- **OUTPUT: Put together a list of individuals willing to be involved.** Record preferred means of contacting people and devise a set of questions, for use within interviews and focus groups.

In preparation for contacting and interviewing stakeholders, the following activities are useful in working out **methodologies** and the specific **field techniques**:

- **Discussion of the pilot case.**
- **Mapping** a set of stakeholders and their respective organisations. Use the question “What organization and institution affects the flood risk management in...” and complete with topic such as the active citizen participation in the environmental policy making process or a topic of your own group’s choosing.
- Discussion of methods for **recruiting** stakeholders (groups and individuals). How will you go about this process? Are you going to use a **judgement sample** (according to criteria such as age, occupation, background, etc.); an **opportunistic sample** (chosen according to with whom you are able to communicate); or sampling by **snowballing** (asking the friends and relations of respondents to become involved)? Note stakeholders who might ordinarily be **excluded** from discussions and participation, and try to include them.
- Discussion of **locations** associated with where contact will be made with the people you talk to. Is it important to use places where local processes are ‘typical’ or will places be ‘neutral’ ground? How important is this when you have mixed groups of people in workshops? What are the advantages of choosing a natural setting for discussion, rather than one that is falsely created?
- Work on creating **questions** to be used for the Focus-Groups with stakeholders.

- Creation of a list of some of the information types (not the results) that you think will appear from WP1 (so that you feel familiar with and comfortable with the approach). Discuss this with other consortium partners.

- **OUTPUT: Keep a set of recorded field notes, including notes on preparation activities and thinking before actually engaging in the research or pilot work.** In your field notes record the stages of communication with all people and details of contacts. Record notes on how you set up focus groups and include any details of known power relations within your group. There will be power relations arising from your own/the interviewers' place in the research. Reflect upon and record these, too. Record whether your groups were heterogeneous or homogenous.

The participatory approaches were implemented in both case studies, as emphasized in Annex 1 Questionnaires and Online surveys for end user needs collection and Annex 2 Focus groups for end user needs collection. The stakeholders were *a priori* asked if they are willing to collaborate and contribute to the achievement of project's objectives, giving their approval to be mentioned and listed within the current deliverable (Annex 1: Tables 3-6 and Annex 2: Tables 7, 8).

### 3. End user requirements

This section will describe in detail the end user requirements that have stemmed from all participatory approaches explained in Annex 1 and 2. The section starts below by an overview/wish-list of the end user needs that were identified in the two pilot sites (without specifying their prioritisation) and then discriminate between specific requirements for Danube Delta and Kifisos area in Attica. Then, in Section 3.1, the methodology that has been followed for deriving and prioritising the requirements is explained and the specific tabular format used for the detailed description of the requirements; this format includes classification and prioritisation of the requirements. The section finishes with the detailed presentation of end-user requirements using the specified tabular format (Section 3.2).

#### End-user needs common for both pilot sites

- Monitoring of water level, water surface velocity, DEM, soil moisture
- Geotagging and time-stamping crowd-sourced input
- Monitoring and assessing damages caused by flooding after the emergency phase
- Monitoring flooding and its extent and criticality while the flooding phenomenon is in progress
- Use and integration with meteorological data
- Feedback channel to citizens/volunteers for requesting additional data
- The sensors and smart devices being as low cost and as portable as possible
- Participation in SCENT should feel more like a game, than like an obligation
- Moral reward incentives could be used
- Friendly competition to be used as an engagement means
- Possibility for accessing their own contributions
- Acknowledgement of contributions as soon as data/images are received by the SCENT toolbox
- Involvement of local leaders as role models
- Involvement of mass media
- Perception that the participants are belonging to a group
- Training participants prior to demonstration campaigns
- Use of social media for the dissemination of SCENT
- Searching volunteers in cyclists, trekking and outdoor activities fields
- Creation of a discussion and information exchange forum
- Simple user interfaces
- Free and open software
- Using local language for all interfaces to citizens/participants
- Different parameters shown for different operational stakeholders
- Data quality assurance/credibility indication
- Data protection and privacy assurance provisions
- Open provision of information generated by SCENT

#### End-user needs specific for Danube Delta pilot

- Potential use of Sentinel 2 data for DEM
- Geotagging and time-stamping crowd-sourced input
- Colour coding as much as possible the user interfaces



- Integration with existing Romanian authorities platforms for flood management
- Charging possibility/longer-lasting phone battery
- Access to aerial images
- Provisions with respect to the cellular network signal
- Waterproof provision for SCENT devices

#### **End-user needs specific for Kifisos area pilot**

- Organisation of pilot campaigns for preparedness and provision phases in late spring or early summer
- Monitoring of soil conductivity, water and air temperature could be an additional source of input
- Installation of telemetry based real-time monitoring stations
- Installation of water level tapes and provision of water level information; measurement of water surface velocity through video
- Formalisation in the input provided by citizens
- Smart phone application preference rather than web based access for citizens
- Fun facts information inclusion
- Superposition of raw images and text for emergency and post-flooding phases
- Specific points and types of images of interest applicable to the prevention phase were given (see 5.2)
- Land-cover/use taxonomy should have CORINE as starting point, with extensions improving its accuracy
- Recording and mapping scale for improved flood monitoring recommended at 1:1000
- Monitoring and modelling water level in the northern part of the Kifisos river basin
- Creation of training guidelines/handbook for flood events
- Flood (risk, hazard, vulnerability) maps should respect the EC Flood Directive 2007/60
- Legal clearance and flight plan for drone flights

### **3.1 Description of methodology and explanation of the user requirements format**

#### **3.1.1 Methodology for derivation of the end user requirements**

The main purpose of the collection of the end user requirements is to satisfy the user needs by introducing the appropriate system specifications in the design of the SCENT toolbox. In this direction, the final system architecture is shaped to respect the aforementioned specifications. Figure 2 visualises the followed iterative procedure that starts from the identification of the end-user requirements, proceeds with the definition of the system/technical requirement and finishes with the system architecture of SCENT. During the system evaluation, the functionalities of the toolbox will be validated against the identified user needs (left arrow).

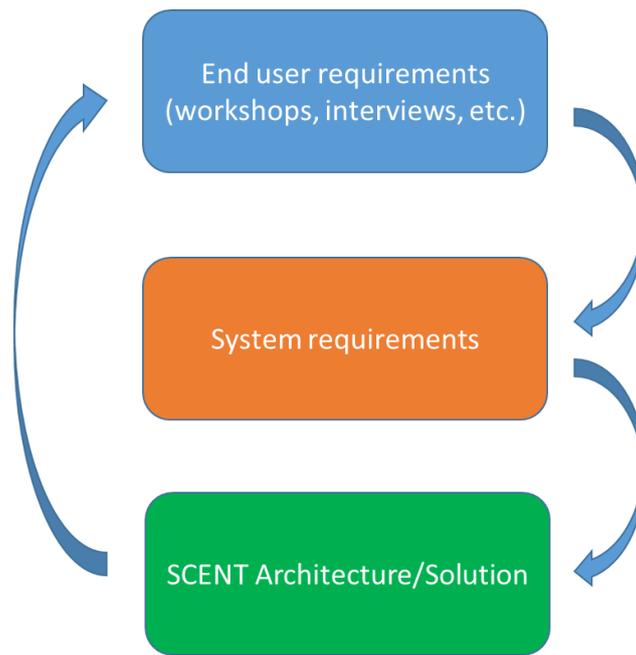


Figure 2 Iterative methodology for the collection of the user requirements, identification of system/technical requirements and definition of the system architecture

A very important step in the previous methodology is the efficient collection of the end user requirements. SCENT consortium organised two workshops in Tulcea, Romania and Athens, Greece where local stakeholders from different domains (volunteers, experts, etc.) were invited. Having compiled the input received from the questionnaires the consortium gave to the stakeholders more details on the solutions that will be offered by SCENT to cover their needs. An interactive discussion followed, where the consortium identified their satisfaction level, a prioritisation of their requirements and finally the key features of the SCENT toolbox, as visualised in Figure 3.

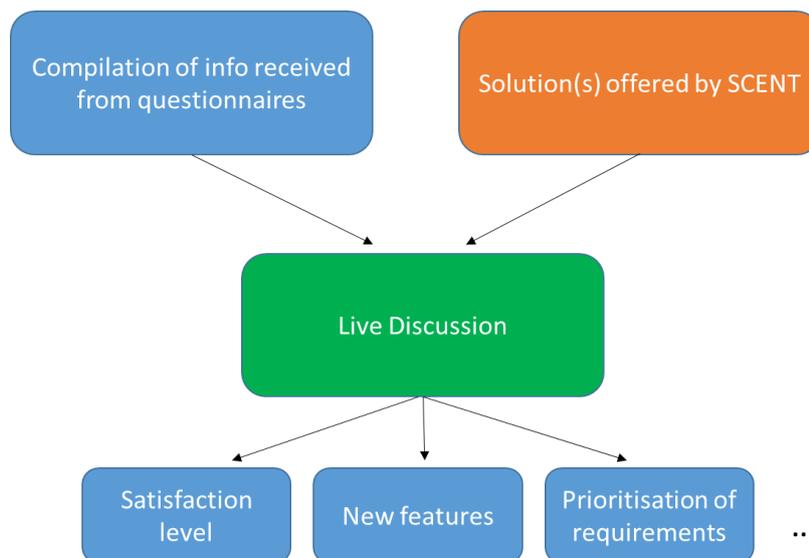


Figure 3 Methodology used during the discussion with the end users in the two workshops in Tulcea and Athens

Going one step deeper, the SCENT consortium structured the discussion based on the following focus areas:

Focus areas for authorities, NGOs and “operational” people

- Existing monitoring systems: alarms potential, challenges & gaps (relation to policy making)
- COs & their potential for influencing flood management & prediction: relevance, sustainability, data quality, data privacy
- CO cookbook: multidisciplinary panel, accurate data sources, online discussion forum, KPIs, data quality assessment tools
- Gamification & serious games for engaging citizens: Basic & Alternate Reality Gaming (ARG) edition, Captcha plugin
- Crowd-sourcing platform: smartphones & image capturing: Social media, chat, image annotation (free text, drop-down, icons), Features on the smartphone relevant to flood
- Training & early childhood education programme
- Exploitation of the toolbox and continuation of the SCENT movement

Focus areas for experts

- Existing monitoring systems: alarms potential, challenges & gaps (relation to policy making)
- Challenges and gaps in land-cover/use maps: accuracy, renewal period, taxonomy
- CO cookbook: multidisciplinary panel, accurate data sources, online discussion forum, KPIs, data quality assessment tools
- Portable sensors & drones for on-site data collection: Water level/temperature, soil moisture/conductivity, air temperature, Digital Elevation Model (DEM), Weight, size, battery charging
- Authoring tool for customizing the platform with respect to local/social features
- Assessment of crowd-sourced data contribution for flood modelling & flood risk
- Exploitation of the toolbox and continuation of the SCENT movement

A slot of 20 min was allocated to each focus area, where the stakeholders were asked to give their input on **what** do they need and **how** are they going to use the offered solutions. As visualised in Figure 4, a set of end user requirements was collected from each focus area and was carefully analysed in order to provide the final set of the prioritised user requirements. The forthcoming sections present these requirements.

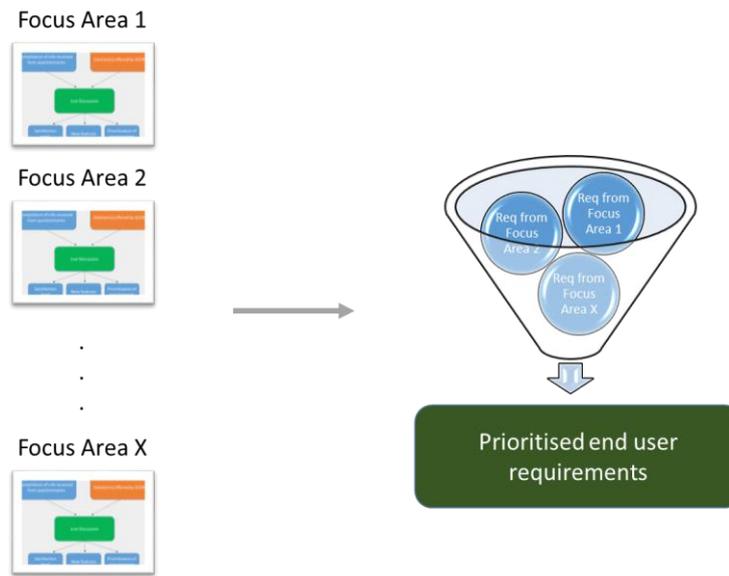


Figure 4 Discussion within focus groups, analysis and prioritisation of the user requirements.

### 3.1.2 Formalisation of the user requirements

The format that is selected for the description of the user requirements is analysed in Table .

|                              |                                   |
|------------------------------|-----------------------------------|
| User Requirement Unique ID   | USER_NF_LEG_1                     |
| Functional or Non-Functional | F or NF                           |
| Classification *             | See below                         |
| Title                        |                                   |
| Description (3-4 lines)      |                                   |
| Prioritisation               | Must, should, could, out of scope |
| Geographical scope           | DAN, KIF, BOTH                    |
| Work Package                 | WPx or Cross-WP                   |

Table 2 Format of SCENT user requirements

The first field is a unique identifier that consists of the string USER, then the classification to Functional (F) or Non Functional (NF) type of requirement, the specific category that the requirement refers to (see below) and the enumeration for each category.

#### Classification for Functional User Requirements

1. **SCENT Scope (GEN):** aspects that are generic and are relevant to the project scope
2. **Sensors (SENS):** aspects relevant portable or in-situ sensors, drones
3. **Serious games (GAME):** aspects relevant to gamification and SCENT serious gaming applications
4. **Crowd-sourcing platform/application (CROWD):** aspects relevant to collecting citizen sourced information via the SCENT platform
5. **Authoring tool (AUTH):** aspects relevant to the authoring tool and the user interface for local and regional authorities

6. **SCENT Intelligence Engine (SIE):** aspects relevant to the machine learning algorithms for image and text classification and the intelligence engine
7. **Flood models (MODEL):** aspects relevant to flood models, assessment of crowd-sourced data to their improvement
8. **Harmonisation platform (HARM):** aspects relevant to the harmonisation platform and standards
9. **Citizen or Authorities Engagement (ENGAGE):** aspects relevant to increasing and sustaining the engagement of citizens/volunteers as well as authorities; aspects relevant to training

#### Classification for Non-Functional User Requirements

1. **Interoperability (INTER)** = the ability of making individual parts of the system and the current available systems to work together
2. **Performance (PERF)** = the amount of useful work accomplished by the SCENT toolbox compared to the time and resources used, depending on the context, involving response time, throughput, utilization of computing resources, bandwidth and/or data transmission time
3. **Usability (USE)** = ease of use and learnability of the system; possibility of customisation, including support for local languages
4. **Reliability (REL)**= ability of the toolbox or a specific component to perform its required functions under stated conditions for a specified period of time; data reliability and credibility
5. **Security (SEC)**= something that gives or assures safety and prevent abuse
6. **Legal (LEG)**= using data and knowledge and SCENT system components according to rules and regulations
7. **Openness (OPEN)**=the ability and willingness to provide data in an open way, using well defined catalogues and open access

### 3.2 List of End User requirements

Prior to describing the detailed list of end user requirements, a general remark may be made in relation to the project scope. As is reflected in the SCENT Grant Agreement, SCENT seeks to gather citizen-sourced information mostly relevant for the flood prevention stages. This includes aspects that can improve the accuracy and the update rate of land-cover/use maps through crowd-sourced and annotated images, as well as monitoring environmental parameters such as soil moisture. During the focus groups and questionnaires/surveys, several other interesting potential contributions of a Citizen Observatory that may facilitate the work of authorities (e.g. civil protection) were revealed. This includes for instance the potential to gather images after the flood event has taken place so that post-assessment is facilitated and the relevant authorities may have a larger database of evidence of the extent of damage. The SCENT partnership had a meticulous discussion on these topics and for each one of these new requirements, it was decided whether the SCENT system design may include them, with small adjustments or additions to the work described in the GA or for some of them, it was decided that they are clearly out of scope of SCENT (e.g. the provision of evacuation routes for people during the flood event). In general, the SCENT scope remains the flood prevention phase, with some extensions that may facilitate the post-assessment phase from the relevant authorities (see for instance some aspects of USER\_F\_GEN\_3).

### 3.2.1 Functional Requirements

|                    |  |
|--------------------|--|
| Unsuique ID        | USER_F_GEN_1   |
| Classification     | GEN  |
| Title              | SCENT pilot campaigns for preparedness and provision phases regarding flooding should optimally run in late spring or early summer.  |
| Description        | Regional and local authorities plan cleaning of manholes, river bank, streams during summer; therefore SCENT pilot campaigns for the preparedness phase would maximize their impact when orchestrated to run during late spring or early summer. |
| Prioritisation     | Should   |
| Geographical scope | KIF  |
| Work Package       | WP7  |

|                    |  |
|--------------------|--|
| Unique ID          | USER_F_GEN_2   |
| Classification     | GEN  |
| Title              | Monitoring and assessing damages caused by flooding after the emergency phase.   |
| Description        | SCENT could monitor damages and assess the impact of flooding after the emergency phase has passed. This is important for planning construction works to prevent subsequent flooding events, assist regional and local authorities to the recovery of buildings and critical infrastructure. |
| Prioritisation     | Could  |
| Geographical scope | BOTH   |
| Work Package       | Cross-WP   |

|                |   |
|----------------|---|
| Unique ID      | USER_F_GEN_3  |
| Classification | GEN   |
| Title          | Monitoring flooding and its extent and criticality while the flooding phenomenon is in progress                                       |
| Description    | SCENT could monitor flooding and its trail during the emergency phase and raise alarms under certain circumstances; citizens can send |



|                    |   |
|--------------------|---|
|                    | information on the water level, damages in infrastructure, buildings, roads that are available to be used as evacuation routes. More intense rainfall periods are during the months April, October, November.                           |
| Prioritisation     | Could (partly – the aspects relevant to evacuation are not within the scope of SCENT; moreover the ability to run demonstration campaigns on-demand, i.e. during the flood event is challenging and again not within the project scope) |
| Geographical scope | BOTH  |
| Work Package       | Cross-WP  |

|                    |  |
|--------------------|--|
| Unique ID          | USER_F_GEN_4   |
| Classification     | GEN  |
| Title              | Feedback channel for requesting additional data  |
| Description        | Citizen participation could be augmented via establishing feedback channels for requesting additional data/images in order to improve knowledge about a specific event |
| Prioritisation     | Could  |
| Geographical scope | BOTH   |
| Work Package       | Cross-WP   |

|                    |   |
|--------------------|---|
| Unique ID          | USER_F_SENS_1   |
| Classification     | SENS/SIE  |
| Title              | Monitoring of water level, water surface velocity, DEM, soil moisture   |
| Description        | The SCENT low-cost data collection tools must monitor water level, water surface velocity and soil moisture. The drones must measure digital elevation. |
| Prioritisation     | Must  |
| Geographical scope | BOTH  |
| Work Package       | WP3/WP5   |

|                    |  |
|--------------------|--|
| Unique ID          | USER_F_SENS_2  |
| Classification     | SENS   |
| Title              | Monitoring of soil conductivity, water and air temperature   |
| Description        | The SCENT low-cost data collection tools could monitor soil conductivity, water and air temperature. |
| Prioritisation     | Could  |
| Geographical scope | KIF  |
| Work Package       | WP3  |

|                    |  |
|--------------------|--|
| Unique ID          | USER_F_SENS_3  |
| Classification     | SENS   |
| Title              | Geotagging and time-stamp                                    |
| Description        | All sensor parameters must be geotagged and time-referenced. |
| Prioritisation     | Must   |
| Geographical scope | BOTH   |
| Work Package       | WP3  |

|                    |   |
|--------------------|---|
| Unique ID          | USER_F_SENS_4   |
| Classification     | SENS  |
| Title              | Installation of telemetry based real-time monitoring systems  |
| Description        | The stakeholders identified the lack of real time monitoring systems in the Kifisos river basin and explained that for an early warning system for flooding to be fully operational, real-time telemetry based monitoring stations (e.g. water level, water velocity, rainfall) should be installed. This is essentially out of the scope of SCENT, yet limited number of stations will be installed in order to calibrate the citizen-sourced data, as there are currently no monitoring networks with the exception of the ones referred in Sections 3 and 4. |
| Prioritisation     | Out of scope / partly addressed   |
| Geographical scope | KIF   |

|              |     |
|--------------|-----|
| Work Package | WP3 |
|--------------|-----|

|                    |   |
|--------------------|---|
| Unique ID          | USER_F_SENS_5   |
| Classification     | SENS/SIE  |
| Title              | Installation of water level tapes and provision of water level info; measurement of water surface velocity through video  |
| Description        | Experts suggested the use of using camera footage to calculate water velocity and water level and also using water level tapes, attached at specific critical points of the river bank where citizens may help determining the real-time level by taking an image of the measurement. |
| Prioritisation     | Could   |
| Geographical scope | KIF   |
| Work Package       | WP3/WP5   |

|                    |  |
|--------------------|--|
| Unique ID          | USER_F_SENS_6  |
| Classification     | SENS   |
| Title              | Low cost sensors   |
| Description        | The sensors and portable devices that will collect images and relevant environmental parameters must be as low cost as possible. |
| Prioritisation     | Must   |
| Geographical scope | BOTH   |
| Work Package       | WP3  |

|                |  |
|----------------|--|
| Unique ID      | USER_F_SENS_7  |
| Classification | SENS   |
| Title          | Portability  |
| Description    | The sensors and portable devices should weigh less than 100 gr and be at most the size of a smartphone. Battery recharging should be as seldom as possible (for DAN, more than 24h would be required as many stakeholders are spending 2-3 days in the Delta). |



|                    |        |
|--------------------|--------|
| Prioritisation     | Should |
| Geographical scope | BOTH   |
| Work Package       | WP3    |

|                    |  |
|--------------------|--|
| Unique ID          | USER_F_SENS_8  |
| Classification     | SENS/SIE   |
| Title              | Potential use of Sentinel 2 data for DEM   |
| Description        | Sentinel-2 data is available for the Danube Delta region in <a href="http://85.204.145.163/Lidar/">http://85.204.145.163/Lidar/</a> . This data could be useful for a detailed existing dataset of DEM or for the validation of drone-generated DEM data |
| Prioritisation     | Could  |
| Geographical scope | DAN  |
| Work Package       | WP3/WP5  |

|                    |  |
|--------------------|--|
| Unique ID          | USER_F_GAME_1  |
| Classification     | GAME   |
| Title              | Game   |
| Description        | People have many things to worry about as it is, so SCENT should not feel like an obligation. In the DD, those living on the Delta are busy with their hard lives. In the Kifisos region, people struggle with the financial crisis/austerity. SCENT should therefore bring entertainment in the form of a game. |
| Prioritisation     | Should   |
| Geographical scope | BOTH   |
| Work Package       | WP2  |

|                |               |
|----------------|---------------|
| Unique ID      | USER_F_GAME_2 |
| Classification | GAME          |



|                    |   |
|--------------------|---|
| Title              | Moral reward  |
| Description        | Citizens need an incentive in the form of a moral reward (e.g. 'photo of the day/week') |
| Prioritisation     | Should  |
| Geographical scope | BOTH  |
| Work Package       | WP2   |

|                            |   |
|----------------------------|---|
| User Requirement Unique ID | USER_F_GAME_3   |
| Classification             | GAME  |
| Title                      | Competition   |
| Description                | Citizens get mobilised through friendly competition (ranking individuals/teams), visibility of action, points/star system |
| Prioritisation             | Should  |
| Geographical scope         | BOTH  |
| Work Package               | WP2   |

|                    |   |
|--------------------|---|
| Unique ID          | USER_F_CROWD_1  |
| Classification     | CROWD   |
| Title              | Access to their own contributions   |
| Description        | Citizens want to be able to access data related to environmental monitoring and want to be informed of how they contributed to them |
| Prioritisation     | Should  |
| Geographical scope | BOTH  |
| Work Package       | WP4/WP6   |

|                |                |
|----------------|----------------|
| Unique ID      | USER_F_CROWD_2 |
| Classification | CROWD          |

|                    |  |
|--------------------|--|
| Title              | Data acknowledgement   |
| Description        | Citizens want their contribution to be recognized, e.g. receive a notification/acknowledgement of receipt every time they upload a photo |
| Prioritisation     | Should   |
| Geographical scope | BOTH   |
| Work Package       | WP4  |

|                    |   |
|--------------------|---|
| Unique ID          | USER_F_CROWD_3  |
| Classification     | CROWD   |
| Title              | Formalisation in the input provided by citizens   |
| Description        | Authorities believe that text provided by citizens and accompanying their images should not be free and there should be some formalization so that misleading or exaggerated information should be minimized. |
| Prioritisation     | Should  |
| Geographical scope | KIF   |
| Work Package       | WP4   |

|                    |   |
|--------------------|---|
| Unique ID          | USER_F_CROWD_4                                    |
| Classification     | CROWD   |
| Title              | Geotagging and time-stamp                         |
| Description        | All images must be geotagged and time-referenced. |
| Prioritisation     | Must  |
| Geographical scope | BOTH  |
| Work Package       | WP4   |

|                |                         |
|----------------|-------------------------|
| Unique ID      | USER_F_CROWD_5          |
| Classification | CROWD                   |
| Title          | Smart phone application |

|                    |  |
|--------------------|--|
| Description        | The majority of stakeholders prefers the data collection interface to be available in the form of an app, rather than a web page. They mentioned that a standalone app is more clear to them, they are able to use it also offline, the process of providing consent to privacy questions is more clear cut. |
| Prioritisation     | Should   |
| Geographical scope | KIF  |
| Work Package       | WP4  |

|                    |  |
|--------------------|--|
| Unique ID          | USER_F_CROWD_6   |
| Classification     | CROWD (also relevant for GAME, AUTH)   |
| Title              | Color coding   |
| Description        | Users mentioned that using color coding as much as possible would make applications and interfaces much more user friendly |
| Prioritisation     | Could  |
| Geographical scope | DAN  |
| Work Package       | WP4  |

|                    |   |
|--------------------|---|
| Unique ID          | USER_F_AUTH_1   |
| Classification     | AUTH  |
| Title              | Fun facts   |
| Description        | A way to engage and sustain the interest of citizens was suggested to superimpose fun facts information relevant to the place of visits that could trigger the user’s interest and ask them to collect more images. |
| Prioritisation     | Could   |
| Geographical scope | KIF   |
| Work Package       | WP4   |

|           |               |
|-----------|---------------|
| Unique ID | USER_F_AUTH_2 |
|-----------|---------------|



|                    |   |
|--------------------|---|
| Classification     | AUTH  |
| Title              | Superposition of raw images and text for emergency and post-flooding phases   |
| Description        | The SCENT authoring tool could show to the authorities images and text descriptions taken from the citizens during or after the flooding event so that the damages and flood extent may be assessed. Filtering should be applied so that the amount of images is not overwhelming. Examples could include landslides, manholes, debris in the road. |
| Prioritisation     | Could   |
| Geographical scope | KIF   |
| Work Package       | WP4/WP5   |

|                    |   |
|--------------------|---|
| Unique ID          | USER_F_AUTH_3   |
| Classification     | AUTH  |
| Title              | Provision in a map of user-generated images concerning the post-assessment phase  |
| Description        | Authorities are interested – aside the processed outputs in the form of flood risk and hazard maps- in the provision in a map of user-generated geotagged and time-referenced images concerning the post-assessment phase. This should be in a user friendly format, with the option of textual descriptions accompanying the images; however the amount of information should not be overwhelming, some filtering should be preapplied. Density of observations in a visual way would also be very useful. |
| Prioritisation     | Could   |
| Geographical scope | KIF   |
| Work Package       | WP4/WP6   |

|                |  |
|----------------|--|
| Unique ID      | USER_F_AUTH_4  |
| Classification | AUTH/FLOOD   |
| Title          | Integration with existing Romanian authorities platforms |

|                    |   |
|--------------------|---|
| Description        | Integration of SCENT tools with ISU platform and Romanian waters platforms. |
| Prioritisation     | Could   |
| Geographical scope | DAN   |
| Work Package       | WP4/WP6   |

|                    |  |
|--------------------|--|
| Unique ID          | USER_F_SIE_1   |
| Classification     | SIE  |
| Title              | Points and Images of Interest for the Prevention Phase   |
| Description        | The stakeholders identified the following points and objects of interest as crucial for the flood prevention phase: vegetation in the river bank, waste and brought materials in the manholes, tree banks/branches, dustbins, cars and vehicles along the river bank or in smaller streams connected to the main river, waste and brought materials in the smaller streams connected to the main river, urban sites at small spatial scales e.g. buildings, blocks of flats. |
| Prioritisation     | Must   |
| Geographical scope | KIF  |
| Work Package       | WP5  |

|                    |   |
|--------------------|---|
| Unique ID          | USER_F_SIE_2  |
| Classification     | SIE   |
| Title              | Access to aerial images   |
| Description        | An efficient and low-cost way should be devised to access aerial photographs or satellite images of the pilot area. |
| Prioritisation     | Should  |
| Geographical scope | DAN   |
| Work Package       | WP5/WP3   |

|           |                |
|-----------|----------------|
| Unique ID | USER_F_FLOOD_1 |
|-----------|----------------|



|                    |   |
|--------------------|---|
| Classification     | FLOOD   |
| Title              | Use and integration with meteorological data  |
| Description        | The flooding models must take into account and integrated rainfall and meteorological data. There are several sources of such data, ranging from open but with higher granularity up to 10 minutes interval that are offered at a service fee |
| Prioritisation     | Must  |
| Geographical scope | BOTH  |
| Work Package       | WP6   |

|                    |  |
|--------------------|--|
| Unique ID          | USER_F_FLOOD_2   |
| Classification     | FLOOD  |
| Title              | Land-cover/use taxonomy should have CORINE as starting point, with extensions improving its accuracy   |
| Description        | Experts agreed that CORINE (less proposed LUCAS) should be the starting point for land-cover/use taxonomy. However, the majority agreed that it lacks the accuracy needed to closely monitor floods. Recommendations included the use of small spatial scales for urban sites, e.g. block or building. These parameters influence a lot the roughness coefficient of the regions close to the river. |
| Prioritisation     | Should   |
| Geographical scope | KIF  |
| Work Package       | WP1/WP6  |

|                |   |
|----------------|---|
| Unique ID      | USER_F_FLOOD_3  |
| Classification | FLOOD   |
| Title          | Recording and mapping scale for improved flood monitoring                               |
| Description    | Experts recommended recording and mapping land-use through aerial means at scale 1:1000 |
| Prioritisation | Could   |

|                    |          |
|--------------------|----------|
| Geographical scope | KIF      |
| Work Package       | Cross-WP |

|                    |  |
|--------------------|--|
| Unique ID          | USER_F_FLOOD_4   |
| Classification     | FLOOD  |
| Title              | Monitoring and modelling water level in the northern part of the Kifisos river basin.  |
| Description        | Although flooding recently occurs in the Western and Southern parts of Kifisos river, the actual status of water level in the northern parts is very important to be monitored as this causes flooding in the lower parts. |
| Prioritisation     | Should   |
| Geographical scope | KIF  |
| Work Package       | WP7/WP6  |

|                    |   |
|--------------------|---|
| Unique ID          | USER_F_ENGAGE_1   |
| Classification     | ENGAGE  |
| Title              | Involvement of local leaders  |
| Description        | Local opinion leaders and role models need to be involved and build trust. In DD, this could be a priest or a teacher. In Kifisos, it is best to stay away from clergy and politicians. NGOs, volunteer groups, activists, athletes are listened to more. |
| Prioritisation     | Should  |
| Geographical scope | BOTH  |
| Work Package       | WP8   |

|                |                      |
|----------------|----------------------|
| Unique ID      | USER_F_ENGAGE_2      |
| Classification | ENGAGE               |
| Title          | Involvement of media |



|                    |   |
|--------------------|---|
| Description        | The media needs to be involved in order for the dissemination to be dynamic and the awareness raising efficient. An example for Kifisos was SKAI TV channel Econews or equivalent slot. |
| Prioritisation     | Should  |
| Geographical scope | BOTH  |
| Work Package       | WP8   |

|                    |   |
|--------------------|---|
| Unique ID          | USER_F_ENGAGE_3   |
| Classification     | ENGAGE  |
| Title              | Feeling of belonging to group   |
| Description        | Citizens need to feel that they are not alone, but part of a community, a social movement |
| Prioritisation     | Should  |
| Geographical scope | BOTH  |
| Work Package       | WP8/WP2   |

|                    |   |
|--------------------|---|
| Unique ID          | USER_F_ENGAGE_4   |
| Classification     | ENGAGE  |
| Title              | Training SCENT participants   |
| Description        | Training of all groups of contributors: citizens/volunteers, authorities and civil protection teams using SCENT tools and participating in the SCENT large scale demonstration campaigns. In Danube Delta, it was also suggested to train young generation with SCENT portable sensors. |
| Prioritisation     | Must  |
| Geographical scope | BOTH  |
| Work Package       | WP8   |

|                |                 |
|----------------|-----------------|
| Unique ID      | USER_F_ENGAGE_5 |
| Classification | ENGAGE          |

|                    |   |
|--------------------|---|
| Title              | Use of social media for dissemination of SCENT  |
| Description        | Social media should be used for disseminating SCENT objectives, results and demonstrations. The following priority has been recommended: Facebook, Instagram and Twitter. |
| Prioritisation     | Should  |
| Geographical scope | BOTH  |
| Work Package       | WP8   |

|                    |   |
|--------------------|---|
| Unique ID          | USER_F_ENGAGE_6   |
| Classification     | ENGAGE  |
| Title              | Search volunteers in cyclists, trekking and outdoor activities  |
| Description        | The scope of SCENT is very much in alignment with certain groups of people, including companies organising trekking and other outdoor activities, cyclists. These could be interesting sources of SCENT dissemination and volunteers for the demonstration campaigns. |
| Prioritisation     | Could   |
| Geographical scope | BOTH  |
| Work Package       | WP7/WP8   |

|                    |  |
|--------------------|--|
| Unique ID          | USER_F_ENGAGE_7  |
| Classification     | ENGAGE   |
| Title              | Create training guidelines/handbook for flood events   |
| Description        | It was a common view that although in other critical events such as earthquakes and wildfires, people have been informed (e.g. at school) regarding the way that they should react, this is not the case with floods. Such a handbook would be a real contribution of SCENT. |
| Prioritisation     | Could  |
| Geographical scope | KIF  |
| Work Package       | WP8  |

|                    |  |
|--------------------|--|
| Unique ID          | USER_F_ENGAGE_8  |
| Classification     | ENGAGE   |
| Title              | Discussion and information exchange forum  |
| Description        | A forum for information exchange and discussion relevant to the citizen generated data, the campaigns could be useful. |
| Prioritisation     | Should   |
| Geographical scope | BOTH   |
| Work Package       | WP8  |

### 3.2.2 Non-Functional Requirements

|                    |   |
|--------------------|---|
| Unique ID          | USER_NF_INTER_1   |
| Classification     | INTER   |
| Title              | Flood (risk, hazard, vulnerability) maps should respect the EC Flood Directive 2007/60. |
| Description        | Flood (risk, hazard, vulnerability) maps should respect the EC Flood Directive 2007/60. |
| Prioritisation     | Should  |
| Geographical scope | KIF   |
| Work Package       | WP6   |

|                    |   |
|--------------------|---|
| Unique ID          | USER_NF_PERF_1  |
| Classification     | PERF  |
| Title              | Charging possibility/longer-lasting phone battery   |
| Description        | Citizens are sometimes out in the field several days in a row, without a possibility to charge their smartphones that may require daily recharging. |
| Prioritisation     | Should  |
| Geographical scope | DAN   |
| Work Package       | WP3   |

|                    |  |
|--------------------|--|
| Unique ID          | USER_NF_USE_1  |
| Classification     | USE  |
| Title              | Simple user interface  |
| Description        | In order to get ordinary citizens to use the tools, the user interface needs to be clear, simple and user friendly in every way. |
| Prioritisation     | Must   |
| Geographical scope | BOTH   |
| Work Package       | WP2,WP4  |

|                    |  |
|--------------------|--|
| Unique ID          | USER_NF_USE_2  |
| Classification     | USE  |
| Title              | Free software  |
| Description        | The software needs to be free of charge in order for citizens to get involved. |
| Prioritisation     | Must   |
| Geographical scope | BOTH   |
| Work Package       | Cross-WP   |

|                    |   |
|--------------------|---|
| Unique ID          | USER_NF_USE_3   |
| Classification     | USE   |
| Title              | Local language  |
| Description        | The SCENT interfaces to the users need to be offered in the local languages |
| Prioritisation     | Must  |
| Geographical scope | BOTH  |
| Work Package       | WP2,WP3,WP4,WP5   |

|           |               |
|-----------|---------------|
| Unique ID | USER_NF_USE_4 |
|-----------|---------------|

|                    |   |
|--------------------|---|
| Classification     | USE   |
| Title              | Different parameters shown for different operational stakeholders   |
| Description        | Different organisations and departments involved in flood prevention, monitoring and post-assessment have different requirements as to what kind of information should be shown to them. This should be easily configurable in the user interfaces. |
| Prioritisation     | Should  |
| Geographical scope | BOTH  |
| Work Package       | WP4/WP6   |

|                    |  |
|--------------------|--|
| Unique ID          | USER_NF_REL_1  |
| Classification     | REL  |
| Title              | Data quality assurance/credibility indication  |
| Description        | All authorities will use information sourced from citizens only if they are accompanied by an indication level of the data credibility/reliability. The indication should be optimally visualized for a quick assessment of the situation especially if used in the emergency or post-assessment phases. |
| Prioritisation     | Must   |
| Geographical scope | BOTH   |
| Work Package       | WP4/WP5/WP3  |

|                    |  |
|--------------------|--|
| Unique ID          | USER_NF_REL_2  |
| Classification     | REL  |
| Title              | Provision with respect to the cellular network signal  |
| Description        | Sometimes the signal is weak or there is no signal. Sometimes the Ukrainian network is stronger in the border region, and phones pick up the Ukrainian network, which is expensive for the user. |
| Prioritisation     | Must   |
| Geographical scope | DAN  |
| Work Package       | WP3/WP7  |



|                    |   |
|--------------------|---|
| Unique ID          | USER_NF_SEC_1   |
| Classification     | SEC   |
| Title              | Waterproof solution   |
| Description        | In order to reduce the risk of water-related damage, citizens should have a waterproof sleeve/cover for their smartphone. |
| Prioritisation     | Should  |
| Geographical scope | DAN   |
| Work Package       | WP3   |

|                    |  |
|--------------------|--|
| Unique ID          | USER_NF_SEC_2  |
| Classification     | SEC  |
| Title              | Data protection and privacy assurance  |
| Description        | Citizens need to know that their data and privacy are protected, that only administrators will have access to location data etc. |
| Prioritisation     | Must   |
| Geographical scope | BOTH   |
| Work Package       | Cross-WP   |

|                    |  |
|--------------------|--|
| Unique ID          | USER_NF_LEG_1  |
| Classification     | LEG  |
| Title              | Legal clearance and flight plan for drone flights  |
| Description        | Experts stressed the importance to get legal clearance as to over which regions the SCENT drone may fly and make sure that the framework and process is well described and followed, e.g. wrt submitting the flight plan in the respective authority |
| Prioritisation     | Must   |
| Geographical scope | KIF  |

|              |         |
|--------------|---------|
| Work Package | WP3/WP7 |
|--------------|---------|

|                    |   |
|--------------------|---|
| Unique ID          | USER_NF_OPEN_1  |
| Classification     | OPEN  |
| Title              | Provision of information generated by SCENT   |
| Description        | Citizens will only continue contributing to SCENT if information collected due to SCENT demonstration campaigns is openly accessible to everyone. |
| Prioritisation     | Should  |
| Geographical scope | BOTH  |
| Work Package       | WP7   |

## 4 Conclusions

This deliverable presented the major part of the work conducted in SCENT Task 1.1 ‘Definition of end-user and stakeholder needs relevant to citizen observatories’. In particular, the following topics were described and analysed:

- The participatory approach and methods used for the consolidation of appropriate stakeholders in both pilot areas and for the collection of the user requirements; aspects, such as motivation for using these approaches, their importance and theoretical background were mentioned.
- A list of relevant stakeholders (local, regional, and national) that have been contacted by the WP1 partners of the SCENT consortium; stakeholders comprised experts in the area of CO as well as active citizens and volunteers. Stakeholders have been asked to provide their viewpoints and knowledge regarding SCENT objectives, scope and tools through several means: questionnaires, semi-structured interviews and online surveys, as well as focus groups discussion. The partnership will remain in liaison with these stakeholders in the following project stages, in order to support and disseminate SCENT in a regional/national context.
- Questionnaires and online survey methods used as the first stage of the analysis: the questionnaires scope, methodology and results were discussed and main outcomes were presented.
- Focus groups discussion that took place in end of M3/beginning of M4 of the project; the methodology of organisation of the focus groups was explained and main results/proceedings of the discussion were also outlined.
- End user requirements list; the approach for extracting the user requirements was explained. Subsequently, the format used for describing them was provided. Finally, the report provided the user requirements, classifying them in various categories to make this list more readable and coherent.

The deliverable will serve as a basis for subsequent work in WP1, as the list of user requirements will feed into the SCENT system requirements as well as the SCENT system architecture tasks. Moreover, it will also be a reference point for all technical WPs (WP2-WP6) design and specifications phases.



## References

2.0, G. T., 2017. *Ground Truth 2.0*. [Online]

Available at: <http://www.gt20.eu/>

2017, 2017. *Disaster Management Source*. [Online]

Available at: [www.health.gov.fj/?page\\_id=2697](http://www.health.gov.fj/?page_id=2697)

Civil Protection Mechanism, E., 2017. *EC Civil Protection mechanism*. [Online]

Available at: [http://ec.europa.eu/echo/what/civil-protection/mechanism\\_en](http://ec.europa.eu/echo/what/civil-protection/mechanism_en).

[Accessed 2017].

Erasmus, 2017. [Online]

Available at: <http://erasmus-plus.ro/ro/arborele-problemei-si-arborele-solutiei-scrierea-proiectelor-erasmus/>

General Data Protection Regulation, E., 2016. *The EU General Data Protection Regulation*. [Online]

Available at: <http://www.eugdpr.org/>

[Accessed 19 9 2016].

Greenbaum, T. L., 1997. *The Handbook for Focus Group Research*. ISBN 0761912533 ed. s.l.:Sage Pubns.

Landsense, 2017. *The Landsense Citizen Observatory*. [Online]

Available at: <http://www.landsense.eu/>

Observatory, T. G., 2017. *The Grow Observatory*. [Online]

Available at: <http://growobservatory.org/>

Patton, M. Q., 2004. Qualitative research and evaluation methods. *Thousand Oaks*, Issue ISBN 978-0-7619-1971-1.

Taylor, L. &, 2002. *Qualitative Communication Research Methods*. ISBN 978-0-7619-2494-4 ed. s.l.:2nd edition.

Zacharias, N. T., 2012. Qualitative research methods for second language education: a coursebook. Volume Newcastle upon Tyne: Cambridge Scholars..

## Annex 1 Questionnaires and Online surveys for end user needs collection

The SCENT consortium decided to perform the end user needs collection through questionnaires and online surveys in three different levels. The first level targeted the policy makers, i.e. the stakeholder organisations in each region that are involved in the process of monitoring floods and flood risks as well as those that are obliged by law to deal with the flood consequences and effects. The second level of questionnaires targeted experts of the area, ranging from remote sensing and sensor equipment experts, flood modellers, local/regional and national authorities active in civil protection, civil protection NGOs, regional and national authorities responsible for the application of the EU flood related policy directive, as well as scientists working in data collection and analysis of parameters that may affect flooding (precipitation, water discharge, water level, surface velocity). Finally, the third level targeted citizens and volunteers are those that will be asked to participate in the large scale demonstration campaigns of SCENT in the third year of the project and use the SCENT tools.

### 1.1 Questionnaires for policy makers

This survey through Level I Questionnaire (for a complete description see Annex Annex 4 Questionnaires & online surveys) aims to understand policy makers opinions on some of the technologies which we are proposing in the SCENT project, specifically relating to flooding prevention and mitigation, and what they would require from the SCENT project as a complementary source of information for monitoring environmental changes in the Danube Delta and Kifisos river catchment areas.

#### Methodology

The questionnaire surveys were conducted in about 2 weeks starting from the middle of October 2016. Questionnaire Level I was translated from English into Romanian by the DDNI team and into Greek by Attica, then it was distributed to main operational stakeholders in the Danube Delta and Kifisos, Attica case studies. The questionnaires and Consent Forms were distributed by fax and e-mail with official addresses for the Romanian part (see Annex 5 - Example of Romanian Official Address Questionnaires Level I) and via email for the Greek part (see Annex 5- Example of Greek Email text for Questionnaires Level I).

In the tables below the organisation, name and the position of main operational stakeholders in the Danube Delta and Kifisos, Attica case studies, are listed with their approval, as follows:

#### **Contributors for Danube Delta case study:**

| ORGANIZATION                                     | NAME                   | POSITION                  |
|--|------------------------|---------------------------|
| Danube Delta Biosphere Reserve Authority (DDBRA) | Mrs. Benea Cornelia    | Deputy Executive Director |
| Tulcea Environmental Protection Agency (APM)     | Mrs. Parpală Sonia     | Counsellor                |
| Prefecture Tulcea                                | Mrs. Petroschi Daniela | Principal Counsellor      |
| Tulcea Water Management System (SGA)             | Mr. Lefter Constantin  | Chief engineer            |



|  |  |   |
|--|--|---|
| Danube Delta National Institute for Research and Development Tulcea (DDNI) | Mr. Covaliov Silviu<br>Mr. Dorosencu Alexandru<br>Mr. Lupu Gabriel<br>Mr. Alexe Vasile | Scientific Researchers on Biodiversity Conservation and Sustainability Department |
| Ornithological Romanian Society (SOR)                                      | Mr. Eugen Petrescu   | Vice-president  |

Table 3 Contributors for Danube Delta case study

**Contributors for Kifisos, Attica case study:**

| ORGANIZATION  | NAME               | POSITION   |
|---|--------------------|--|
| Directorate of Water (DOW)                            | Θεοδώρα Κόκλα      | Head of Directorate  |
| General Secretariat of Civil Protection (GSCP)        | Ανδρέας Αντωνάκος  | Department of Planning, Prevention & Response in Disasters |
| Directorate of Civil Protection / Attica Region (DCP) | ΔΑΒΑΚΗΣ ΕΥΣΤΡΑΤΙΟΣ | Head of Directorate  |

Table 4 Contributors for Kifisos, Attica case study

Below, the profiles of all organisations participating in this first level questionnaire for the Danube Delta case study may be found:

- *Danube Delta Biosphere Reserve Authority (DDBRA)* manages the natural heritage of the national interest of the Reserve and protects and conserves the physical and geographical units from Danube Delta Biosphere Reserve;
- *Tulcea Environmental Protection Agency (APM)* ensures, by specialised departments, achievement of environmental activities at Tulcea county level;
- *Tulcea Prefecture*, an administrative structure that allows local communities to solve local problems by their own authorities, under the control of state authorities;
- *Tulcea Water Management System (SGA)* applies Romanian Waters National Administration strategy and DobrogeaLitoral Water Directorate in Tulcea through functional component divisions. S.G.A. Tulcea has the following main attributions: provide technical support for the management of emergencies caused by floods, the county emergency committee; defense against floods through the work of the Water Management units found in its administration and manage the stocks of materials and specific means of defense against floods; maintenance and operation works of water management of the public domain of the state, as a defense against floods, found in administration; the approval and authorization from the viewpoint of the water management works and activities that take place on waters or related to waters; staff training and improvement within the field of water management in their own training units and / or in collaboration with other specialized institutions; yearbooks development, synthesis, studies, projects, instructions, books and publications in the field of water;
- *Danube Delta National Institute for Research and Development Tulcea (DDNI)* is a Romanian Research Institute, whose main purpose is the basic and applied research in ecology and environmental protection for the management substantiation in the Danube Delta Biosphere

Reserve (DDBR) and other wetlands of national and international importance on biodiversity conservation and sustainable development;

- *Romanian Ornithological Society (SOR)* conducts research activity that includes collection, analysis, evaluation and publication of information about wild birds in Romania; monitoring of certain species; conservation of Important Bird Areas (IBAs) in Romania - part of a worldwide program developed by BirdLife International; study and protection of bird species threatened or endangered nationally and globally; implementation of plans of action for the protection of these species.

In what follows, the profiles of organisations participating in the first level questionnaire of the Kifisos, Attica case study are presented:

- *Directorate of Water (DOW)* is responsible for the protection and management of water in Attica in accordance with the current legislation and in constant cooperation with the relevant Ministry of Environment.
- *General Secretariat of Civil Protection (GSCP)* is responsible for the preparation, mobilization and coordination of civil protection action, it forms the guidelines and the competences of each stakeholder in a case of a natural disaster, it follows the implementation of policy on civil protection and has some units for more specialized events such as chemical disasters etc.
- *Directorate of Civil Protection/Attica Region (DCV)* is the operational arm of Civil Protection in accordance with the competences of the Region, and is responsible to distribute to the responsible stakeholder the essential information during all the phases of a disaster for further actions.

### **Survey items overview:**

There were 7 question items listed in the questionnaire. The entire questionnaire may be found in Annex 4. This questionnaire is intended to investigate the general framework of existing monitoring of floods in the Danube Delta and Kifisos study areas, the objectives of monitoring, how collected data are used, who are the stakeholders involved in the monitoring process and what the role of citizens is in the monitoring framework.

The purpose of the first question was to understand if any monitoring frameworks exist in the pilot cases, what kind of data are collected (e.g. flood data), how often the data is collected, if the data are acquired from another institution, if the citizen-sourced data are collected and checked during a flood event. Question 2 shows which are the objectives for short, medium and long term management of floods, the reason for collecting data and how the data are used. Through question 3, the intention was to find out if the data collected from the monitoring system are used in any decision making and at what level (local, regional, national). Question 4 shows what kind of data were collected. Through question 5 the intention was to investigate how the collected data are stored, if these data are available to the public, if citizens have access to it. Question 6 answers to the whether the stakeholders collaborate with other institutions in case of a flood event. Finally, question 7 investigated the role of citizens in the monitoring framework and if the stakeholders considered that the involvement of citizens would be valuable in case of flood events.



### 1.1.1 Overview of results for Danube Delta

- In Danube Delta, the institutions which have a monitoring programme are Danube Delta National Institute (DDNI), Tulcea Water Management System (SGA), the county emergency committee and Prefecture Tulcea. Still there is a lack of data collection methodology regarding floods.
- The institutions involved have historic biotic data.
- There is a short and long-term planning for the response in case of emergencies and the management of consequences due to floods.
- The institutions with whom the stakeholders are collaborating in case of a flood event are: the city hall (mayor), public institutions (Tulcea Harbor, Border Police), Environmental Guard, “Danube Delta” Emergency Situation Inspectorate (ISU) for operative intervention, Local Committees for Emergency Situations for operative intervention and data transmission.
- The Citizens have a primary role in the monitoring process. They could organize awareness campaigns to educate other citizens in case of floods, providing field and historical data, as well as data on specific phenomena related to biodiversity monitored elements: special behaviour, invasions.

### 1.1.2 Overview of results for Kifisos, Attica

- There are no monitoring systems for flood related data and generally there is a lack of data collection methodology regarding floods. GSCP mentions that in the case of big-scale disasters they collect and distribute data to all stakeholders from the Copernicus Emergency Management Service (EMS) Program and that in some cases they cooperate with the Special Secretariat of Water.
- In terms of **Planning**, GSCP has a short and long-term planning for the response in emergencies and the management of consequences from floods. They also prepare guidelines for all stakeholders for preparation and readiness.
- No Historic data (Biotic, Abiotic, Societal Components) are selected
- **Prevention** of floods is based basically on references given written, or orally, from citizens for damages in the infrastructure in order to plan the maintenance, repair and construction of the flood protection infrastructure (in local, regional or national level according to where the jurisdiction is). The procedure is as follows:
  - DCP accepts and distributes to the responsible bodies demands from citizens for compensation of damages in their houses or companies. They also accept and distribute possible records from citizens for infrastructure affected by floods in the Region (such as points on roads, streams, channels and wells stormwater associated with the road network which is of competence of the Region). Note that these are not hydrological data.
  - **Response** is based on the guidelines which are given officially from GSCP in each stakeholder, in order to define the competences of each one in case of a flood.
- There is a big number of Stakeholders involved (see Figure 5). Ministries, GSCP, decentralized administration, regions, municipalities, police, fire departments, the National Centre for Emergencies (EKAV), the National Centre for Health Operations (EKEPY), the National Meteorological Service (EMY) etc. The role of each stakeholder is described in detail in the circular



from GSCP. Bellow there is a summary of the system followed in a case of an emergency: Ministries have a coordinating role. The General Secretariat for Civil Protection can declare an area in an emergency, and has the Operational Centre of Civil Protection that deals with disaster monitoring (natural and technological) and related issues 24 hours a day.

- EMY sends bulletins for extreme weather conditions and the Operational Centre of GSCP disseminates them in all responsible stakeholders

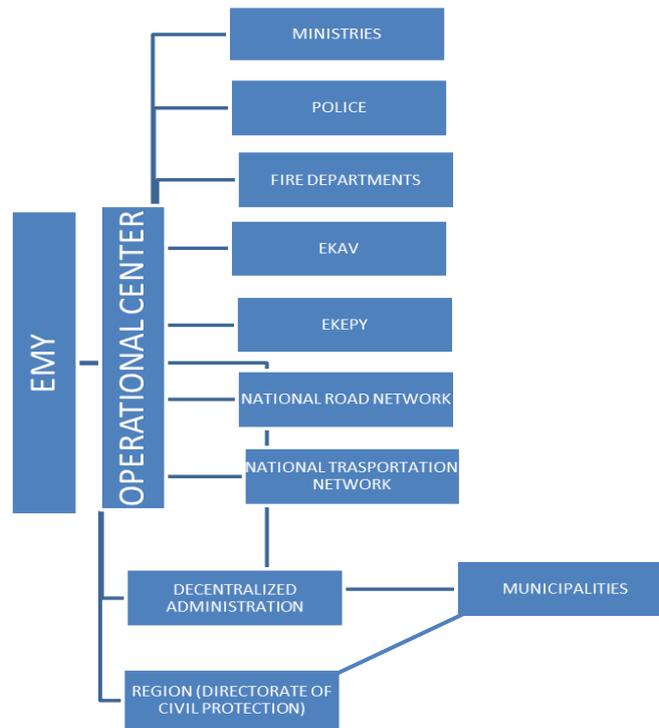


Figure 5 Flow chart for the dissemination of the extreme weather conditions bulletin to all responsible stakeholders

- Police, fire departments, EKA V (National Centre for Emergencies of Greece), EKEPY (National Centre for Health Operations of Greece) are the operational arms of the General Secretariat and are responsible for the disaster response and public safety.
- The role of municipalities in cases of flooding is associated with dealing with the problems that have been created locally (cleaning manholes, landslides in the municipal road network, aiding the work of the Fire Service in pumping etc.)
- The Region for floods is intended to remove hazards from the infrastructure of its jurisdiction and give assistance to municipalities following a formal request
- The Role of Citizens is important, however there is scepticism concerning the credibility of data and the real contribution that they could give to the institutionalized ways of communication and data sharing.

## 1.2 Questionnaires for expert groups

The second level of stakeholders contacted through the SCENT participatory approach of collecting end-user needs and requirements were experts that have a relation or relevance to the issue of flood

monitoring in the two regions, be it for the prevention, emergency or post-assessment phase. Experts contacted are ranging from researchers in flood modelling, experts (in both academia and industry) in sensors and in-situ equipment, local/regional and national authorities active in civil protection, civil protection NGOs, regional and national authorities responsible for the application of the EU flood related policy directive, as well as scientists working in data collection and analysis of parameters that may affect flooding (precipitation, water discharge, water level, surface velocity).

Due to the target audience, this questionnaire is of a more technical nature and comprises essentially 2 parts. The first part refers to enquiries regarding the existing monitoring systems in the two pilot regions (this maybe the result of another research project, of the initiatives of local or regional authorities or other sources). Moreover, the interviewees were asked to benchmark the existing systems in terms of current challenges, how they are managed and whether there are future plans concerning their sustainability. In addition, participants were asked to comment on the accuracy and update rated of current land-cover and land-use maps and how sufficient they are for flood monitoring as well as the (measurable) environmental parameters that they consider important for flood monitoring. Finally, the last section of the questionnaire attempted to capture the participants' views on the role of Citizen Observatories in flood monitoring, asking them if they consider VGI (Volunteered Geographic Information) systems may be complementary to in-situ monitoring, to which degree and what kind of issues they see in the long-term implementation of such a system (eg data quality, citizen engagement, security and data protection, commercial exploitation, lack of feedback to participants etc).

## Methodology

The questionnaire surveys for Questionnaire Level II were conducted in about 3 weeks during November 2016. The questionnaire Level II is provided in Annex 4 of the current deliverable. It was translated into local languages, but in Annex 4 the English version is provided. Level II questionnaire was distributed to more technical and scientific experts and aimed to select information regarding the existence of monitoring systems and the specification of User Requirements of the SCENT - Toolbox, in both case studies.

For both case studies, the stakeholders were *apriori* asked if they are willing to collaborate and contribute to the achievement of project's objectives, giving their approval to be mentioned and listed within the current deliverable (Table 5, 6).

For the Romanian case study, the filled questionnaires and the Consent Forms were collected through personal visits by staff (see Annex 6 - Example of Romanian Filled Questionnaires Level II and Annex 6 - Example of Romanian Consent Form Questionnaires Level II). All the Romanian institutions involved were interested in SCENT project and responded positively, completing the questionnaires and Consent Forms.

For the Greek case study, the filled questionnaires and the Consent Forms were collected also both via email as well as through an online survey, using the Qualtrics platform; this was decided so that it is easier for participants and to avoid emails being exchanged with consent forms and questionnaires filled in. The site survey was available in the link



[https://survey.eu.qualtrics.com/SE/?SID=SV\\_0J4x6DcXJJHaXFH](https://survey.eu.qualtrics.com/SE/?SID=SV_0J4x6DcXJJHaXFH) (for some examples of responses provided see Annex 6 - Example of Greek Filled Questionnaires Level II and Annex 6 - Example of Greek Consent Form Questionnaires Level II).

For the Danube Delta case study the questionnaires were distributed to the following technical and scientific institution: Danube Delta National Institute for Research and Development Tulcea, Danube Delta Biosphere Reserve Authority, The National Institute for Marine Research and Development “Grigore Antipa” Constanta, Prefecture Tulcea, Tulcea Environmental Protection Agency, Tulcea Water Management System, Tulcea City Hall, “Danube Delta” Emergency Situation Inspectorate, "Dunarea de Jos" University of Galati, Romanian Space Agency R.O.S.A., “GAVRILĂ SIMION” Eco-Museum Research Institute Tulcea, Romanian Border Police, Autonomous "River Administration of Lower Danube" Galati, National Agency for Land Development, National Institute of Hydrology and Water Management, National Meteorological Administration, Regional Meteorological Centre DOBROGEA, TEAMNET transforming technology, Special Telecommunications Service, DHI Romania, UM 01714 SULINA, AEROCONTROL, MDS ELECTRIC S.R.L..

In Greece, the questionnaires were distributed to the following contributors:

- Directorate of Water (DOW)
- National Observatory of Athens (NOA) is a research institution in Greece. Among its other scientific competences, NOA is responsible for Meteorological data provision and has established several meteorological stations in order to select data regarding weather conditions. NOA functions the website [meteo.gr](http://meteo.gr) for the dissemination of this data and the information of the public for the weather.
- Scientact is a private company with expertise in the field of high technology and its applications, and in the fields of environmental research and monitoring equipment. The Company cooperates with several partners including the public sector for the selection of environmental data.
- Hellenic Centre for Marine Research (HCMR) is a governmental research organization operating under the supervision of the General Secretariat for Research and Technology (GSRT) of the Ministry of Culture, Education and Religious Affairs. It aims to carry out scientific and technological research, and experimental development as well as the dissemination and implementation of produced results.
- Department of Water Resources and Environment (DoWRaE) is one of the five departments of the School of Civil Engineering of the National Technical University of Athens (NTUA) The main scientific areas dealt with by the Department relate to both the qualitative and quantitative aspects of the aquatic environment and the related civil engineering works.)
- Special Secretariat of Water / Ministry of Environment and Energy (SCoW) is responsible for the development and implementation of all programs related to the protection and management of the water resources of Greece, the coordination of all competent authorities dealing with the aquatic environment, the implementation of the Water Framework and the Marine Strategy Directives as well as of the 2007/60 Flood directive.

In the tables below the organisation, name and the position of researchers, experts, local/regional and national authorities active in civil protection, civil protection NGOs, regional and national authorities



responsible for the application of the EU flood related policy directive in the Danube Delta and Kifisos, Attica case studies responded positively to SCENT questionnaires:

**Contributors for Danube Delta case study:**

| ORGANIZATION   | NAME                      | POSITION  |
|--|---------------------------|---|
| National Agency for Land Development (ANIF)                                | Mr. Marius Damian         | Deputy Director   |
| Tulcea Water Management System (SGA)                                       | Mr. Lefter Constantin     | Chief engineer  |
| “GAVRILĂ SIMION” Eco-Museum Research Institute Tulcea (ICEM)               | Mr. Valentin Panait       | Scientific Researcher   |
| Danube Delta National Institute for Research and Development Tulcea (DDNI) | Mr. Covaliov Silviu       | Scientific Researchers on Biodiversity Conservation and Sustainability Department |
| Danube Delta National Institute for Research and Development Tulcea (DDNI) | Mr. Lupu Gabriel          | Scientific Researchers on Biodiversity Conservation and Sustainability Department |
| Danube Delta National Institute for Research and Development Tulcea (DDNI) | Mr. Dorosencu Alexandru   | Scientific Researchers on Biodiversity Conservation and Sustainability Department |
| Danube Delta National Institute for Research and Development Tulcea (DDNI) | Mr. Alexe Vasile          | Scientific Researchers on Biodiversity Conservation and Sustainability Department |
| Danube Delta National Institute for Research and Development Tulcea (DDNI) | Mr. Duralia Gabriel       | IT specialist   |
| Danube Delta National Institute for Research and Development Tulcea (DDNI) | Mr. Marinov Mihai         | Scientific Researchers on Biodiversity Conservation and Sustainability Department |
| Danube Delta National Institute for Research and Development Tulcea (DDNI) | Mr. Hanganu Jenică        | GIS Scientific Researchers  |
| Danube Delta National Institute for Research and Development Tulcea (DDNI) | Mr. Constantinescu Adrian | GIS Scientific Researchers  |

Table 5 Contributors for Danube Delta case study

**Contributors for Kifisos, Attica case study:**

| ORGANIZATION                        | NAME               | POSITION            |
|-------------------------------------|--------------------|---------------------|
| Directorate of Water (DOW)          | Θεοδώρα Κόκλα      | Head of Directorate |
| National Observatory of Athens      | Κώστας Λαγουβάρδος | Researcher          |
| Scientact                           | Δημήτρης Κουβάς    | Vice President      |
| Hellenic Centre for Marine Research | Ηλίας Δημητρίου    | Researcher          |

|   |                              |                |
|---|------------------------------|----------------|
| Department of Water Resources and Environment, School of Civil Engineering, National Technical University | Ιφιγένεια Κουτίβα            | Researcher     |
| Department of Water Resources and Environment, School of Civil Engineering, National Technical University | Αρχοντία Λύκου               | Researcher     |
| Institute of communication and computer systems (ICCS)  | Δημήτρης Καλογερας           | Researcher     |
| Special Secretariat of Water / Ministry of Environment and Energy   | Κωνσταντίνος Παπασπυρόπουλος | Geologist      |
| Special Secretariat of Water / Ministry of Environment and Energy   | Αθανασία Παρδάλη             | Civil Engineer |

Table 6 Contributors for Kifisos, Attica case study

### 1.2.1 Overview of results for Danube Delta

- Relevant institutions that have an exploratory research/ a monitoring program for the Danube Delta are: Romanian Waters and Danube Delta National Institute.
- National Agency for Land Development doesn't have a research/a monitoring program for Danube Delta. The unit explores the design of draining dams located in Tulcea County, the right bank of the Danube. We don't have own works in the Danube Delta. In 2012 dikes were built by Romanian Waters. Monitoring risk flood was until 2012.
- Romanian Waters have own studies. They have hydrometric stations, warning capability.
- Danube Delta National Institute has activity of monitoring species of birds and mammals of community species. Floods can affect directly or when spawning period.
- Monitoring of bird and mammal species in the program is working in several projects undertaken by DDNI. Data results are integrated into one database. Monitoring is planned in the medium and long term.
- Exploratory research/ monitoring is used in decisions taken at local, regional, national level.
- Data are available to Danube Delta Biosphere Reserve Authority, Ministry of Environment etc., when required.
- Data exchange is made between all institutions and companies that own works and construction of flood defenses (dikes, dams etc).
- Financing is not constant, thus mapping to different resources available from a number of years to another.
- A legislative framework, infrastructure and resources exist, but their operation is done with some gaps on financial resources.
- These problems can be alleviated by applying for projects funded by the European Commission or national projects, legislative initiatives, government programs.
- The parameters that are necessary to determine the extent and behaviour of floods in Danube Delta are: water level, water temperature, air temperature, water surface velocity, digital elevation.



- A Plan for Flood Risk Management has been developed. Areas of Potential Significant Flood Risk (APSER) have been identified.
- All stakeholders agree that the exploratory research/ monitoring program results used for the future changes and trends: climate changes, global changes, mitigation measures, for societal and economic impacts analysis and for Relative European legislative framework (e.g. Water Framework Directive, Flood Directive).
  - All Stakeholders agree that there are a lot of elements missing from current taxonomies describing rural areas. Precisely: Hydrographical network, geological & hydrological map
  - The availability of data on small spatial scales e.g. block or building, not just the availability of land uses on soil types.
  - Statistical data of people, households and infrastructure for assessing the vulnerability of an area against flooding and the estimation of potential losses.
  - Information relating to actual damage, the trail of flooding and the impact of a real past event is of great importance for future risk assessment studies of an area.
- The features of a long term flood monitoring program in the Danube Delta according to the stakeholders should be:
  - sections characteristic stable and representative for monitoring technical parameters;
  - information on all involved levels;
  - establish of the monitoring elements depending on the geographical conditions;
  - establish an information flow that lead monitoring data to prevent / reduce flood risk;
  - establish measures that set tasks / duties to prevent / reduce flood risk;
  - flood monitoring program in the Danube Delta must be rhythmic and consequent;
  - data accuracy, development of public databases with continuous update.
  - not process a large number of data and new parameters, but to well process the current data, and provide a vision on financial situation.

Below there are some Pie Charts about the level of agreement or disagreement of the participants for certain statements included in the questionnaire:

- *Maintaining accurate and updated land-cover and land-use maps is important for monitoring flood hazards and their environmental related issues.*

All the participants agree that it is very important for monitoring flood hazards and their environmental related issues to maintain accurate and updated land-cover and land-use maps for Danube Delta study case.

- *The accuracy of current land-cover and land-use maps (e.g. Corine Land Cover) is sufficient for monitoring flood hazards and their environmental related issues (see Figure 6).*



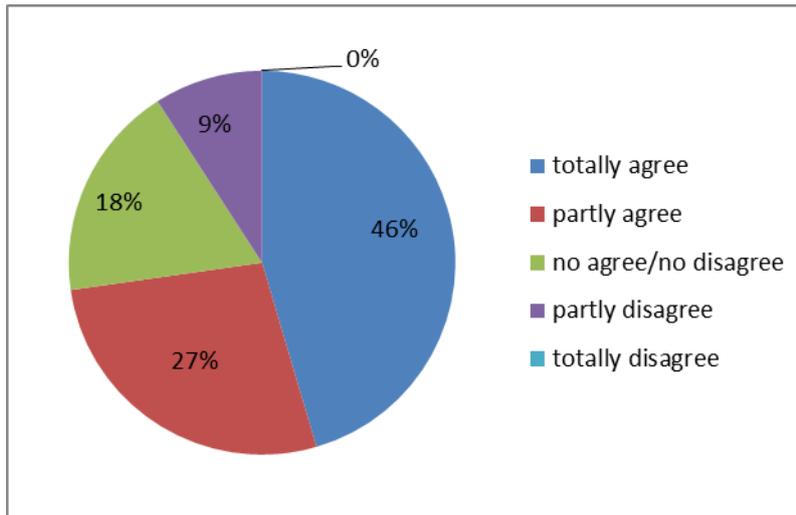


Figure 6 Satisfaction with the accuracy of current land-cover and land-use maps for monitoring flood hazards and their environmental related issues – Danube Delta.

- *The current rate of updates in land-cover and land-use maps (e.g. Corine Land Cover) is sufficient for monitoring flood hazards and their environmental related issues.*

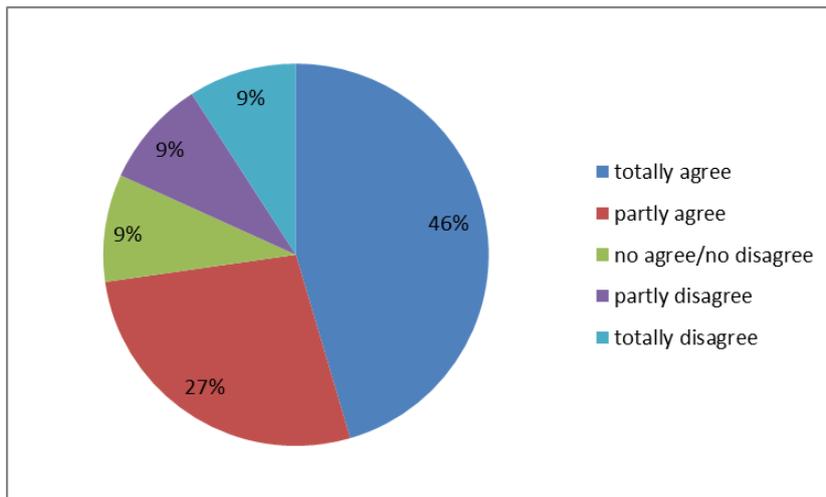


Figure 7 Satisfaction with the current rate of updates land-cover and land-use maps for monitoring flood hazards and their environmental related issues– Danube Delta

In Figure 7, 50% of respondents support that the current rate of updates in land-cover and land-use maps is sufficient for monitoring flood hazards and their environmental related issues in Danube Delta. 9% of respondents totally disagree because they support that a lower rate would be better (i.e. more frequent updates).

- *Current established taxonomies describing rural areas (eg references to ‘coniferous forest’, ‘mixed forest’, ‘sparsely vegetated areas’, ‘burnt areas’ in Corine Land Cover) are sufficient for monitoring flood hazards in those areas.*

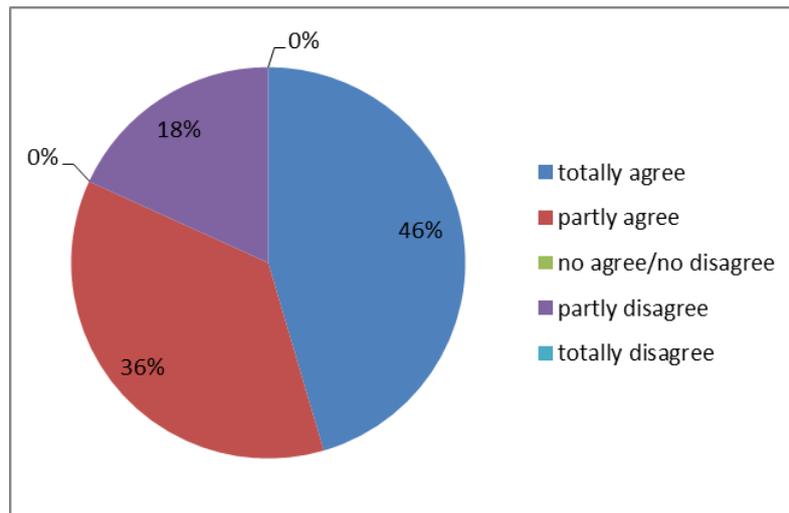


Figure 8 Satisfaction with current established taxonomies describing rural areas for monitoring flood hazards in those areas – Danube Delta

According to Figure 8, almost 46% of the stakeholders support that current established taxonomies describing rural areas in Corine Land Cover are sufficient for monitoring flood hazards in those areas and 18% of them argue that in Danube Delta is a lack of maps and locations and there are a lot of elements missing from current taxonomies describing rural areas: hydrographical network, geological & hydrological map; statistical data of people, households and infrastructure for assessing the vulnerability of an area against flooding and the estimation of potential losses; information relating to actual damage, the trail of flooding and the impact of a real past event is of great importance for future risk assessment studies of an area).

- *Current taxonomies describing urban areas (e.g. references to ‘industrial sites’, ‘dump sites’, ‘construction sites’, ‘road and rail networks’ in Corine Land Cover) are sufficient for monitoring flood hazards in those areas.*

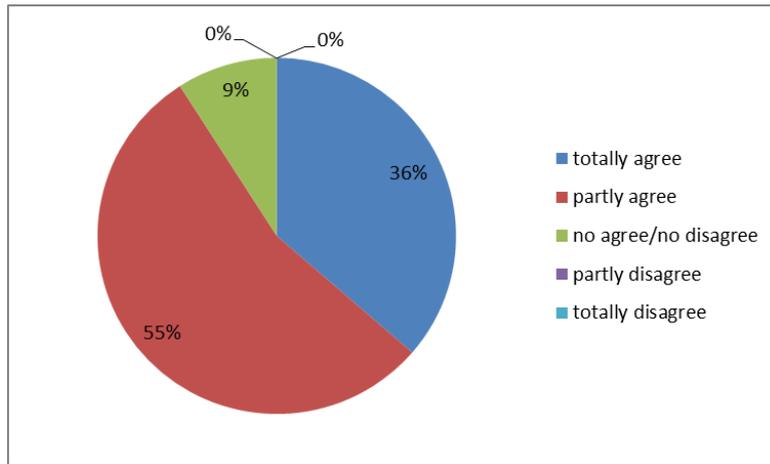


Figure 9 Satisfaction with currently established taxonomies describing urban areas for monitoring flood hazards in those areas – Danube Delta

As shown in Figure 9, more than half of respondents partly agree that the current taxonomies describing urban areas are sufficient for monitoring flood hazards in those areas and 9 % of stakeholders do not have a strong opinion on the issue, arguing that there are a lot of elements missing from current taxonomies describing urban areas, like:

- separation of “areas with deposits” in “areas with deposits of dangerous materials” and areas with deposits of common materials”;
  - limits polygon buildings.
- *In the below Pie Chart are represented the parameters that are necessary to determine the extent and behaviour of floods in Danube Delta region, from most important to less important.*

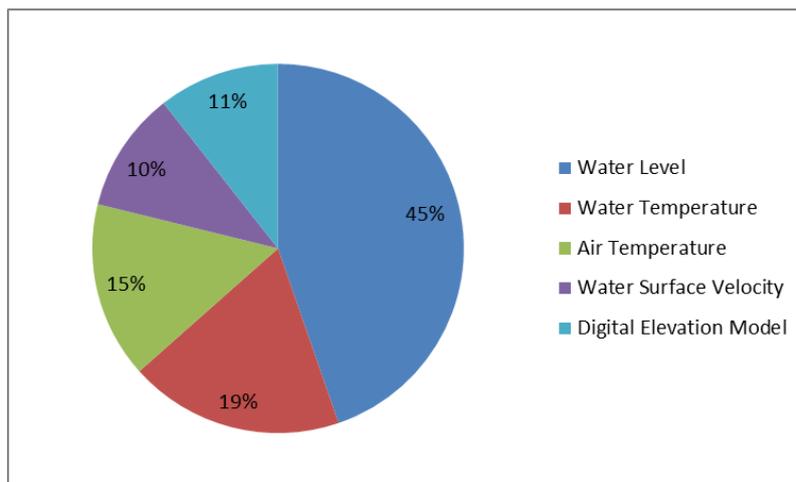


Figure 10 Parameters that are necessary to determine the extent and behaviour of floods in Danube Delta region, from most important to less important

As visualised in Figure 10, the most important parameter that is necessary to determine the extent and behaviour of floods in Danube Delta region is Water Level. On the second place as importance with 19% responses is Water Temperature.

Other parameters mentioned are: water conductivity, soil moisture, soil conductivity, the water flow rate, turbidity.

Below there are some further Pie Charts about the level of agreement or disagreement of the participants for certain statements:

- *Citizen sourced information is not relevant with the current flood monitoring programs of Kifisos River, Attica and Danube Delta.*

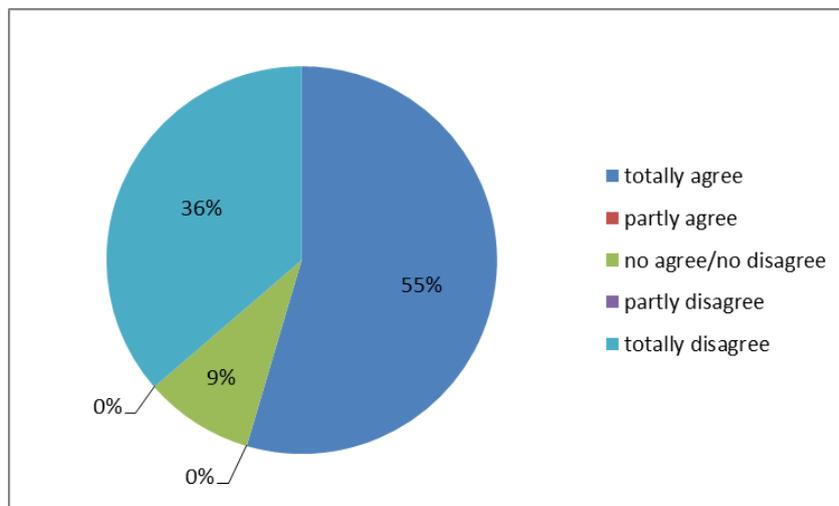


Figure 11 *Citizen sourced information is not relevant with the current flood monitoring programs of Kifisos River, Attica and Danube Delta*

Almost 55% of participants totally agree (Figure 11) that the citizen sourced information is not relevant with the current flood monitoring programs of Danube Delta and 36 % of them argue that the citizen sourced information is relevant with the current flood monitoring programs of Danube Delta.

- *Citizen sourced information could be of assistance to current flood monitoring programs of Kifisos River, Attica and Danube Delta however this kind of data is not sustainable.*

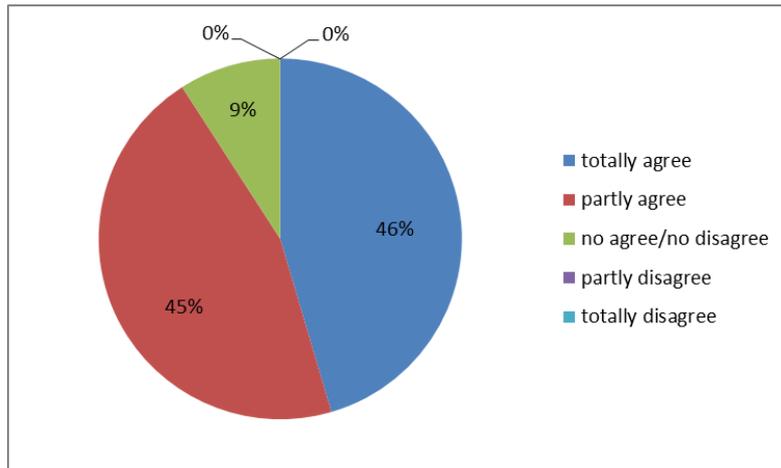


Figure 12 Citizen sourced information could be of assistance with the current flood monitoring programs of Kifisos River, Attica and Danube Delta

This analysis shows that a similar percentage of respondents totally or partly agree that the citizen sourced information could be of assistance (Figure 12) to current flood monitoring programs of Danube Delta however this kind of data is not sustainable.

- Citizen sourced information could be of assistance to current flood monitoring programs of Kifisos River, Attica and Danube Delta however this kind of data is insecure or has privacy issues.

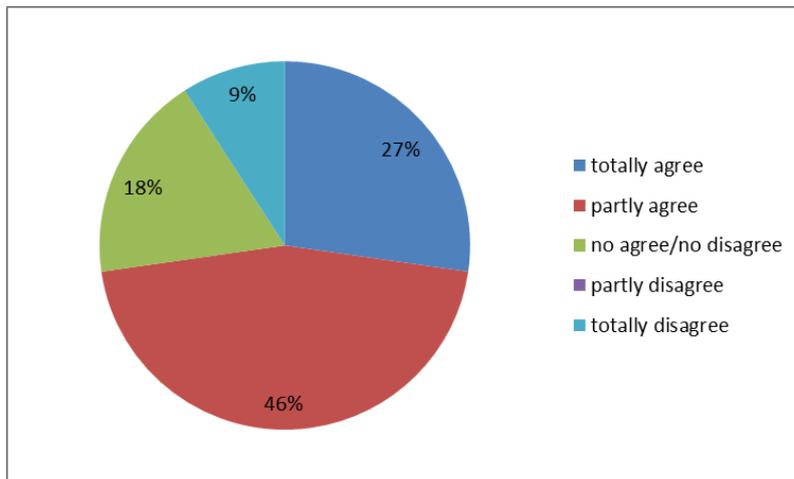


Figure 13 Citizen sourced information could be of assistance to current flood monitoring programs of Kifisos River, Attica and Danube Delta however this kind of data is insecure or has privacy issues

As shown in Figure 13, 46% of the stakeholders partly agree that the citizen sourced information could be of assistance to current flood monitoring programs of Danube Delta because this kind of data is insecure or has privacy issues.

The below Pie Charts show the opinion of participants regarding the aims of a CO.



- ‘I believe that VGI (Volunteered Geographic Information) and in general citizen-sourced information may provide valuable input for the monitoring of land-cover and land-use changes and for monitoring critical environmental phenomena such as floods’.

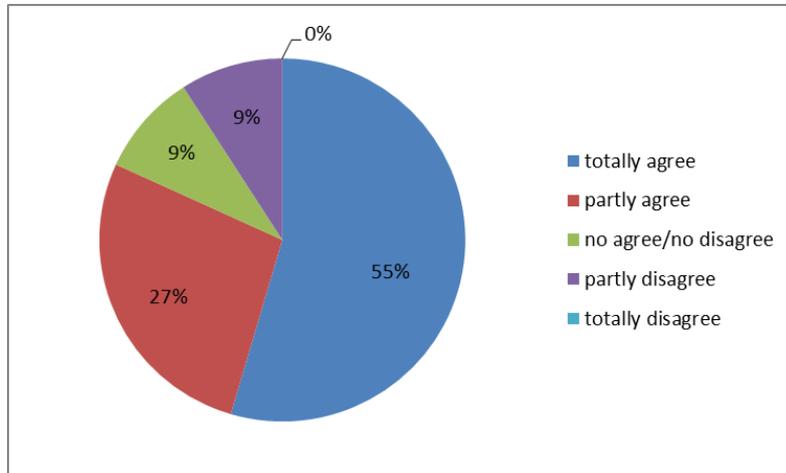


Figure 14 Citizen-sourced information may provide valuable input for the monitoring of land-cover and land-use changes and for monitoring critical environmental phenomena such as floods– Danube Delta

Figure 14 shows that 55% of participants totally agree that in general, citizen-sourced information may provide valuable input for the monitoring of land-cover and land-use changes and for monitoring critical environmental phenomena such as floods.

9% neither agree nor disagree arguing following reasons:

- Data quality and ways to validate it;
- Limited engagement of citizens;
- Lack of feedback to citizens on the impact of their actions;
- Insufficient training and/or exposure to technologies related to monitoring these issues.

The same percentage of 9% partly disagree for the following reasons:

- Data quality and ways to validate it;
- Limited engagement of citizens.

Finally, there is a final Pie Chart regarding the opinion of participants of which components a citizen observatory must include. They state their level of agreement/disagreement with the following statements.

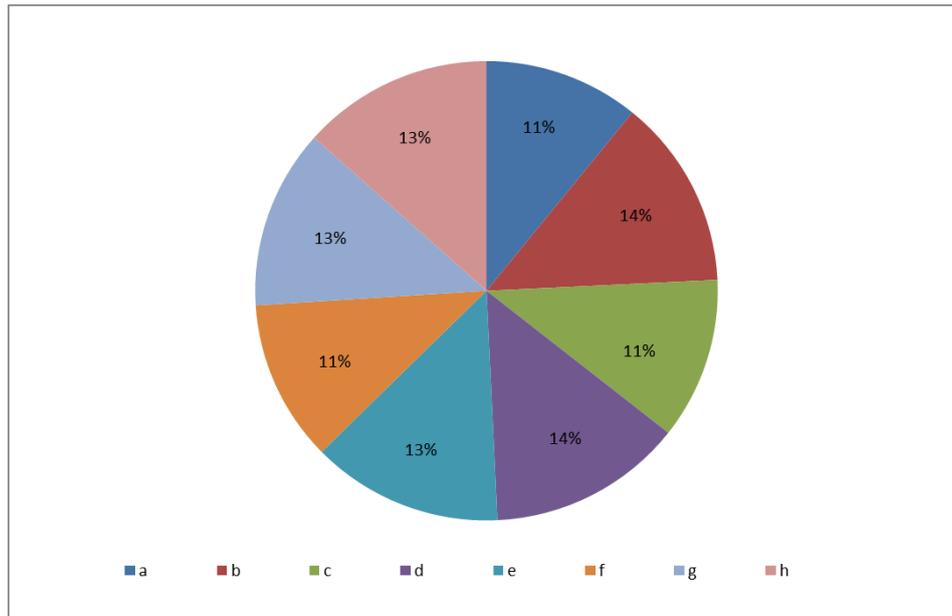


Figure 15 Opinion of participants of what components a citizen observatory must include – Danube Delta

The components that must be included in a citizen observatory are described in the legend of Pie Chart of Figure 15, as follows:

- a) A multidisciplinary advisory panel
- b) Well defined catalogues of information resources
- c) An online component that serves as a discussion and information exchange forum
- d) Active research, modelling and diagnostic programs to assist in the selection of the best indicators of environmental conditions (emergency situations), now and in the future
- e) Quality assurance programs for data collection and management to ensure comparability, accuracy, precision and usefulness over the long term
- f) Reporting element that regularly conveys the Citizen observatory findings to both scientific community and policy decision makers
- g) Open access to citizen sourced information
- h) Close coordination among related programs or organisations that may/want be involved.

Based on the analysis of the Pie Chart results in Figure 15, a similar percentage (14% of respondents) strongly agree that a citizen observatory must include the following most important components: *Well defined catalogues of information resources* and *Active research, modelling and diagnostic programs to assist in the selection of the best indicators of environmental conditions (emergency situations), now and in the future.*

A percentage of 13% of respondents consider that the following components are partially important: *Quality assurance programs for data collection and management to ensure comparability, accuracy, precision and usefulness over the long term, Open access to citizen sourced information* and *Close coordination among related programs or organisations that may/want be involved.*

Regarding the importance of the following components: *A multidisciplinary advisory panel, Reporting element that regularly conveys the Citizen observatory findings to both scientific community and policy*

*decision makers and an online component that serves as a discussion and information exchange forum, a total of 11 % of stakeholders neither agree nor disagree.*

### 1.2.2 Overview of results for Kifisos Attica, Greece

- There is a lack of data concerning flood hazards and their environmental related issues. Only two stakeholders have established monitoring systems. Precisely:
  - The National Observatory of Athens operates about 30 automatic weather stations in Attica and will install two level meters at selected sites by the end of 2016. Data are used for the information of the public about the rainfall through [www.meteo.gr](http://www.meteo.gr). They concern short-term planning and are not used for any decision making process. They also use an open data sharing policy where daily data are given for all of their stations in [www.meteo.gr/meteosearch](http://www.meteo.gr/meteosearch) page. Ten-minute measurements are given either with charge or through partnerships and the data are used to determine the level of emerging threats related to flood events.
  - Scientact industrial partner has installed telemetric rain gauge network on behalf of EYDAP. The network was designed and was installed in order to estimate the volume of rainwater that will have to be managed by the sewerage network. They concern short-term planning and are used for a decision making process in a local level giving warnings and/or determine the level of emerging threats related to flood events.
- All Stakeholders agree that there are a lot of elements missing from current activities of exploratory research/ monitoring.
  - Lack of data and institutional framework
  - Duplication of tasks
  - Insufficient real time equipment
  - Lack of operational monitoring and early warning systems for flooding issues
  - Lack of cooperation between the policy makers and researchers or other organizations that can provide the above systems
  - The maintenance of the infrastructure and technical limitations in relation to their acquisition cost
  - Lack of continuity in data
  - No preventive and protective measures
  - Lack of alignment between the National, Regional and Local level policies
- Lack of substantial education both for the officials and residents of areas with potentially high flood risk causing ignorance of the public regarding flood protection issues and how their own movements can affect the flood risk.
- Solutions proposed:
  - Installation of private stations
  - Enhancement of relevant infrastructure
  - Closer cooperation between scientific institutions and bodies responsible for policy making and flood risk management
  - Integrating existing monitoring infrastructure in new funded plans.
  - Implementation of the Flood Risk Management Plans in accordance with the requirements of Directive 2007/60 EC, in conjunction with the Directive 2000/60 EC.



Below there are some Pie Charts about the level of agreement or disagreement of the participants for certain statements included in the questionnaire concerning land-cover and land-use maps:

- *Maintaining accurate and updated land-cover and land-use maps is important for monitoring flood hazards and their environmental related issues.*

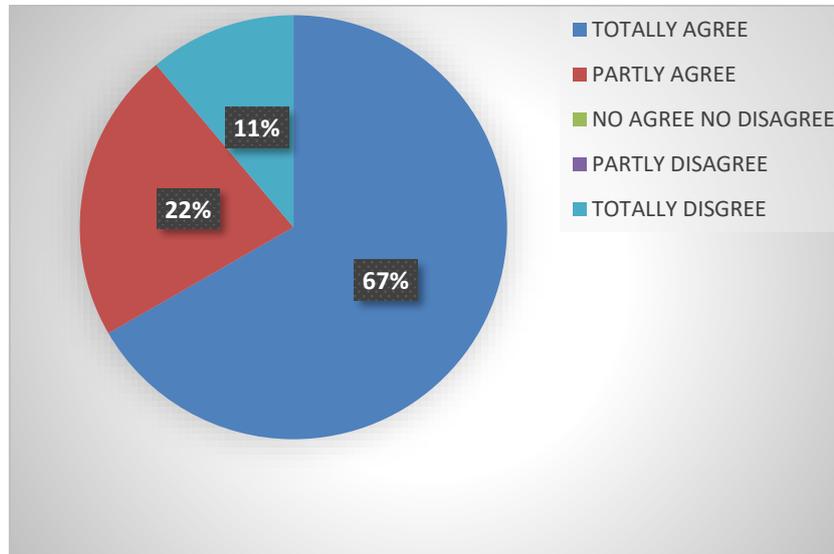


Figure 16 Maintaining accurate and updated land-cover and land-use maps is important for monitoring flood hazards and their environmental related issues - Attica

As shown in Figure 16, the big majority of the stakeholders recognize the importance of maintaining accurate and updated land-cover and land-use maps for monitoring flood hazards and their environmental related issues.

- *The accuracy of current land-cover and land-use maps (e.g. Corine Land Cover) is sufficient for monitoring flood hazards and their environmental related issues (Figure 17).*

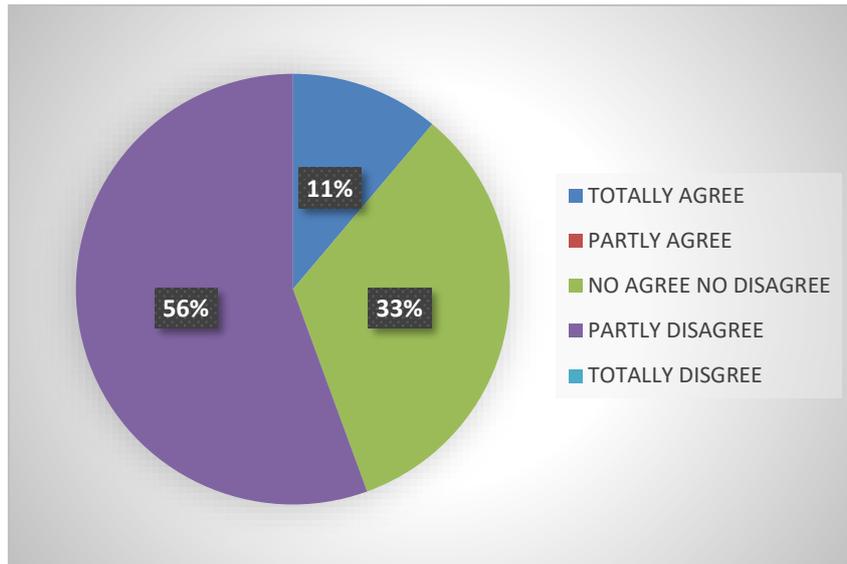


Figure 17 Satisfaction with the accuracy of current land-cover and land-use maps for monitoring flood hazards and their environmental related issues - Attica

- The current rate of updates in land-cover and land-use maps (e.g. Corine Land Cover) is sufficient for monitoring flood hazards and their environmental related issues.

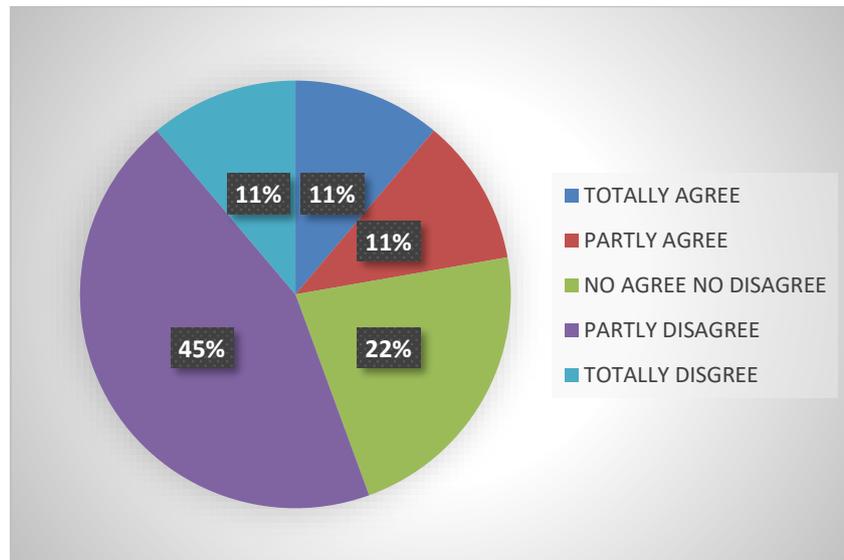


Figure 18 Satisfaction with the current rate of updates in land-cover and land-use maps for monitoring flood hazards and their environmental related issues - Attica

From both the pie charts above (Figures 17 and 18), limited satisfaction is shown concerning the accuracy and the current rate of updates in land-cover and land-use maps.

- *Current established taxonomies describing rural areas (e.g. references to ‘coniferous forest’, ‘mixed forest’, ‘sparsely vegetated areas’, ‘burnt areas’ in Corine Land Cover) are sufficient for monitoring flood hazards in those areas*

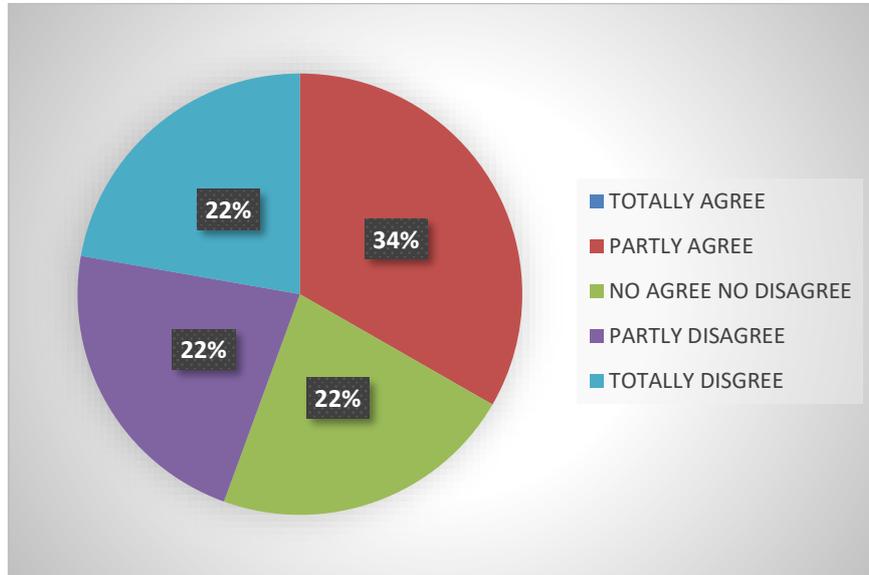


Figure 19 Satisfaction with current established taxonomies describing rural areas for monitoring flood hazards in those areas - Attica

Although the points of view vary, a big majority of Stakeholders agree that there are a lot of elements missing from current taxonomies describing rural areas, as shown in Figure 19. Precisely:

- Hydrographical network, geological & hydrological map
- The availability of data on small spatial scales e.g. block or building, not just the availability of land uses on soil types.
- Statistical data of people, households and infrastructure for assessing the vulnerability of an area against flooding and the estimation of potential losses.

Information relating to actual damage, the trail of flooding and the impact of a real past event is of great importance for future risk assessment studies of an area.

- *Current established taxonomies describing urban areas are sufficient for monitoring flood hazards in those areas*

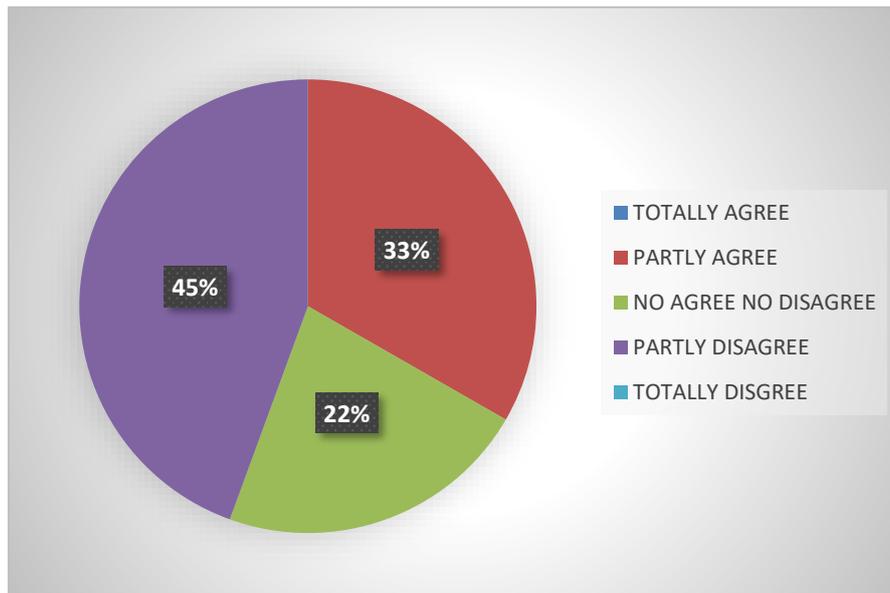


Figure 20 Satisfaction with current established taxonomies describing urban areas for monitoring flood hazards in those areas - Attica

Similarly to rural areas, a significant percentage of stakeholders agree that there a lot of elements missing from current taxonomies describing urban areas, as shown in Figure 20. Precisely:

- Limits polygon buildings,
- Available roads for identifying evacuation routes or possible construction of shelters
- The state of the drainage network of rainwater (design, maintenance mode)
- Artificial barriers to the runoff of rainwater (vehicles, dustbins, road)

**Note:** In addition to European land use data sources (Corine Land Cover), there are relevant national databases that have higher spatial resolution and include much more recent and accurate data (e.g. OPEKEPE, Greek Payment Authority of Common Agricultural Policy, etc.). Modern remote sensing technologies have begun to be used by the stakeholders and are expected to solve partly the lack of recent data of high precision on land use.

- *In the below Pie Chart shown in Figure 21, the parameters that are necessary to determine the extent and behavior of floods in Kifisos river are depicted.*

Water level, water surface velocity and digital elevation are according to the participants the most important features for the determination of the extent and behavior of floods in Kifisos river, with soil moisture coming next. Soil conductivity and water temperature were also selected by a small percentage which shows that there a lot of parameters that influence a river’s behavior.

Additionally, there were other important parameters mentioned that should be under consideration:

- Existing flood protection measures and their characteristics e.g. culverts, cross sections arranged sections, interconnected drainage network, etc.

- Analysis at a river basin level of second order at least, according to the hydrographic network before and after urbanization.
- Rainfall
- The environmental program “openmet-HMIFOTS” was mentioned as a program that fulfils the future needs based on the current situations.

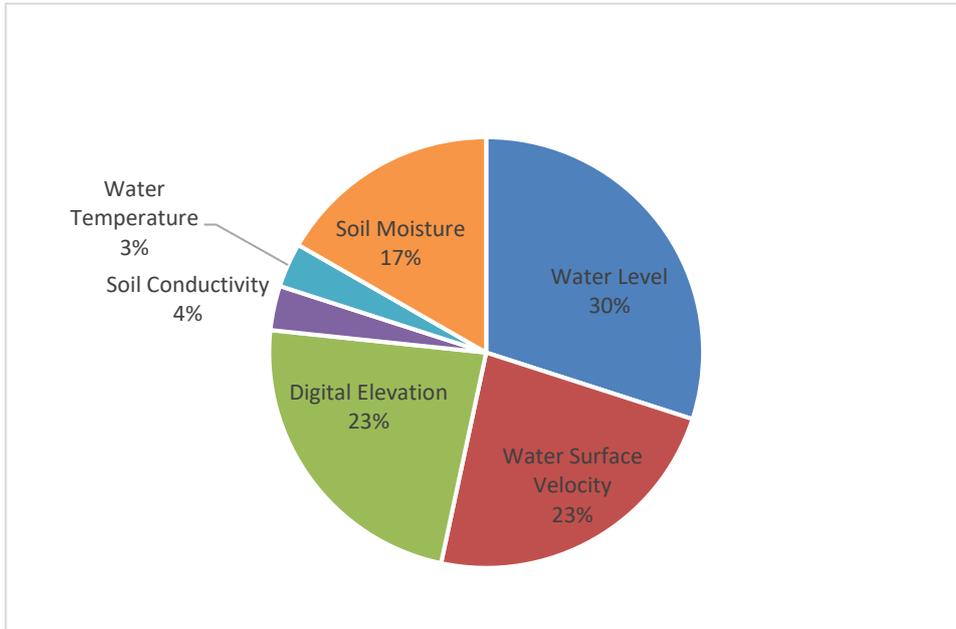


Figure 21 Parameters that are necessary to determine the extent and behavior of floods in Kifisos river

Below there are some additional Pie Charts (in Figures 22-24) about the level of agreement or disagreement of the participants on the importance of citizen sourced information:

- *Citizen sourced information is not relevant with the current flood monitoring programs of Kifisos River, Attica and Danube Delta*

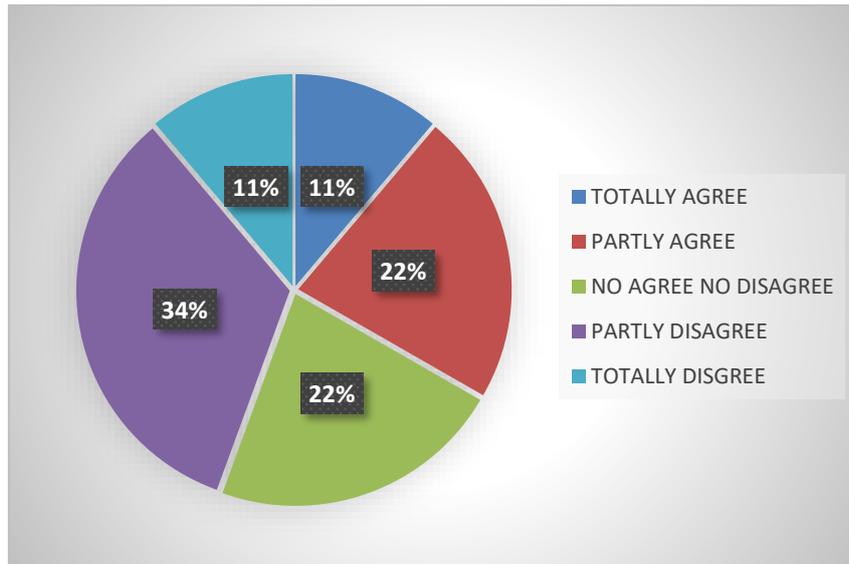


Figure 22 Citizen sourced information is not relevant with the current flood monitoring programs of Kifisos River, Attica and Danube Delta

- Citizen sourced information could be of assistance to current flood monitoring programs of Kifisos River, Attica and Danube Delta however this kind of data is not sustainable.

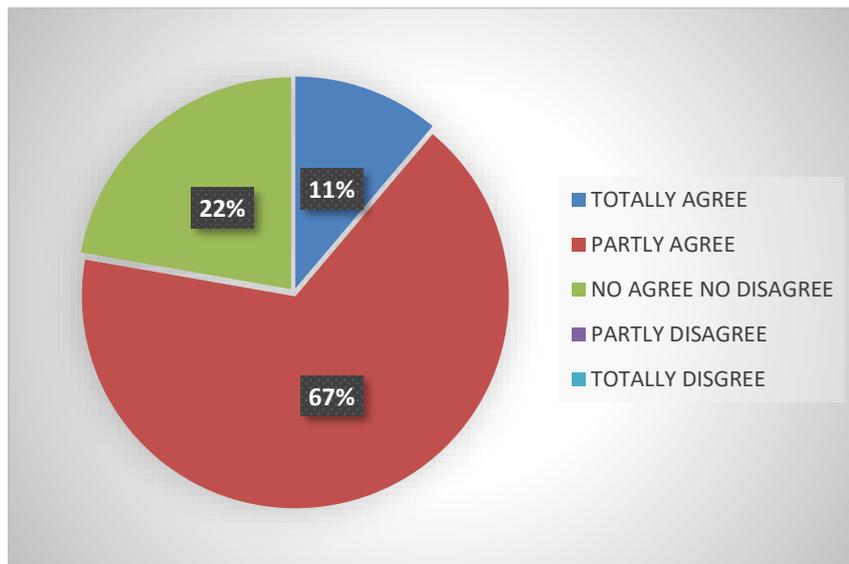


Figure 23 Citizen sourced information could be of assistance with the current flood monitoring programs of Kifisos River, Attica and Danube Delta however this kind of data is not sustainable

- Citizen sourced information could be of assistance to current flood monitoring programs of Kifisos River, Attica and Danube Delta however this kind of data is insecure or has privacy issues.

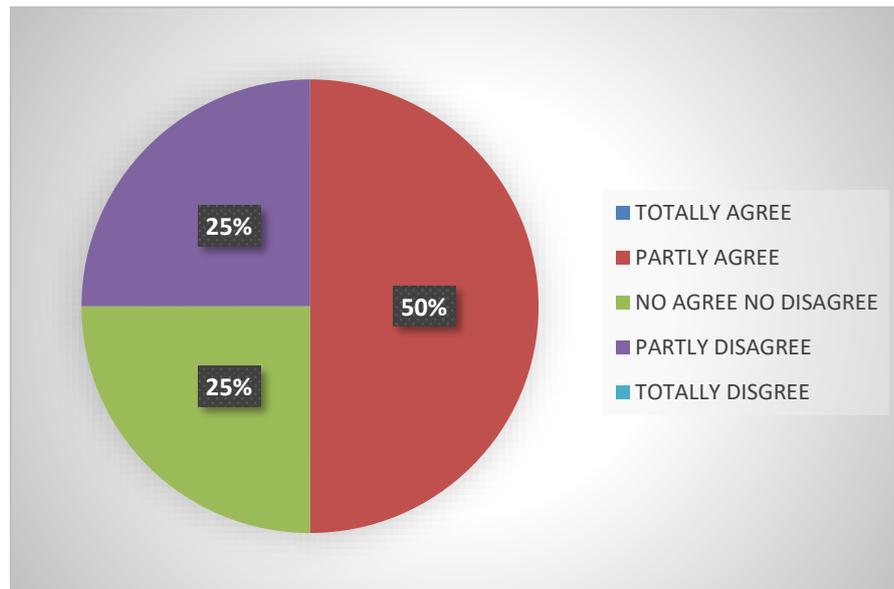


Figure 24 Citizen sourced information could be of assistance to current flood monitoring programs of Kifisos River, Attica and Danube Delta however this kind of data is insecure or has privacy issues.

The conclusions from the above pie charts, show that the big majority of stakeholders recognize the importance of citizen sourced information, however due to the fact that currently there is no such flow of communication, there is a scepticism about the relevance of this kind of information and its credibility. Privacy issues also are important and should be taken into consideration.

Features of a long term monitoring program for **Kifisos River** according to participants should be:

- A telemetric monitoring network of parameters must be implemented from selected points of control
- Permanently measuring networks, with live measurements online
- Automatic monitoring stations concerning the level and water velocity in different parts of the river, which will operate telemetrically and will provide an early warning system for potential flood events. This system could be combined with a hydraulic model for flood risk assessment using prognostic meteorological data
- Staff for maintenance
- Meteorological stations and metering stations of runoff which will also capture sections
- The creation of an experimental basin for exploration
- Development of a collection and processing of data software
- Simulation of rainfall catchment for conclusions
- Flood Analysis and creation of raining curves (if no historical data)
- Flood risk maps
- Recording and mapping of land use at a scale of at least 1: 1000
- Configuration and modelling of flood risk in conjunction with meteorological data and updated land use
- Training executives of the municipalities and the Region as well as citizens groups in flood risk management

- Recording of citizens and / or municipalities / Region vulnerability of storm water drainage network (construction, maintenance mode) and the particularities of each region
- Education of residents in downstream areas to increase the capacity of the population against flood risk

Finally, there is a final set of Pie Charts about the opinion of participants in general regarding the aims of a CO.

- *‘I believe that VGI (Volunteered Geographic Information) and in general citizen-sourced information may provide valuable input for the monitoring of land-cover and land-use changes and for monitoring critical environmental phenomena such as floods’.*

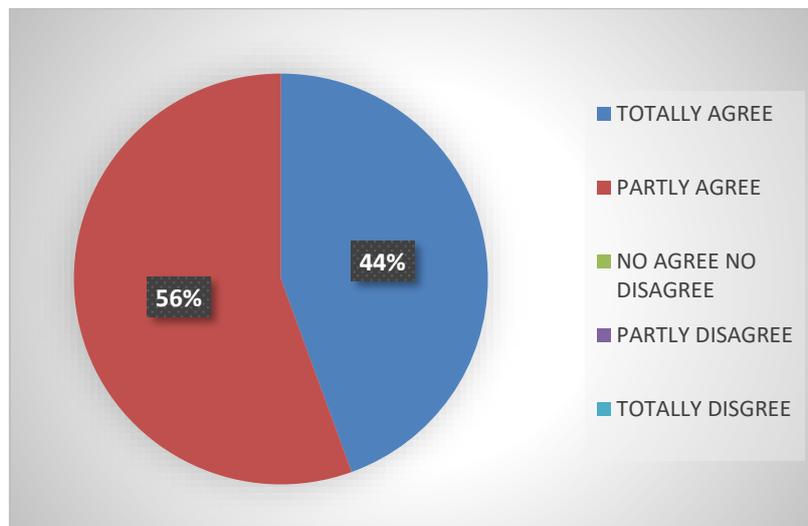


Figure 25 Citizen-sourced information may provide valuable input for the monitoring of land-cover and land-use changes and for monitoring critical environmental phenomena such as floods’ - Attica

As depicted in Figure 25, all stakeholders agree that VGI could be a valuable input for the monitoring of land-cover and land-use changes and for monitoring critical environmental phenomena such as floods’.

- Regarding the essential components of a citizen observatory almost all participants agree that all of the bellow features are important:
  - a. A multidisciplinary advisory panel
  - b. Well defined catalogues of information resources
  - c. An online component that serves as a discussion and information exchange forum
  - d. Active research, modelling and diagnostic programs to assist in the selection of the best indicators of environmental conditions (emergency situations), now and in the future
  - e. Quality assurance programs for data collection and management to ensure comparability, accuracy, precision and usefulness over the long term

- f. Reporting element that regularly conveys the Citizen observatory findings to both scientific community and policy decision makers
- g. Open access to citizen sourced information
- h. Close coordination among related programs or organisations that may/want be involved

### 1.3 Online survey for citizen needs

The purpose of the online survey was to understand the requirements of citizens for the SCENT toolbox, as users of the SCENT toolbox. This survey was created in conjunction with Task 2.2 which seeks to assess the attitudes of local citizens with regards to how they can be involved in SCENT. This section focuses on questions inputted by partners for Task 1.1 and results from questions related to Task 2.2 will be covered in Deliverable 2.2.

Partners of the SCENT Consortium inputted questions related to their area of expertise to determine what citizens would require from the SCENT toolbox. An outline of the questionnaire is provided in Annex 4. The survey was inputted into Qualtrics, an online survey tool, translated into the Romanian and Greek language and distributed via email by SOR colleagues to citizens in the Danube Delta, Romania and HRTA and Attica to citizens in Attica Region, Greece. The survey was also distributed amongst organisations in the UK and Ireland in English to understand user requirements from other parts of Europe.

#### 1.3.1 Overview of results for Danube Delta

41 responses were collected from citizens in the Danube Delta. The average respondent was aged 25-34 years (male=51%, female=49%), finished education when 20 or more years old and was in full time employment.

##### *Smartphones*

As depicted in Figure 26, 90% own a smartphone: 8% use iOS, 73% use Android, 19% use Windows, 90% have a data plan, 100% have Bluetooth on their device.

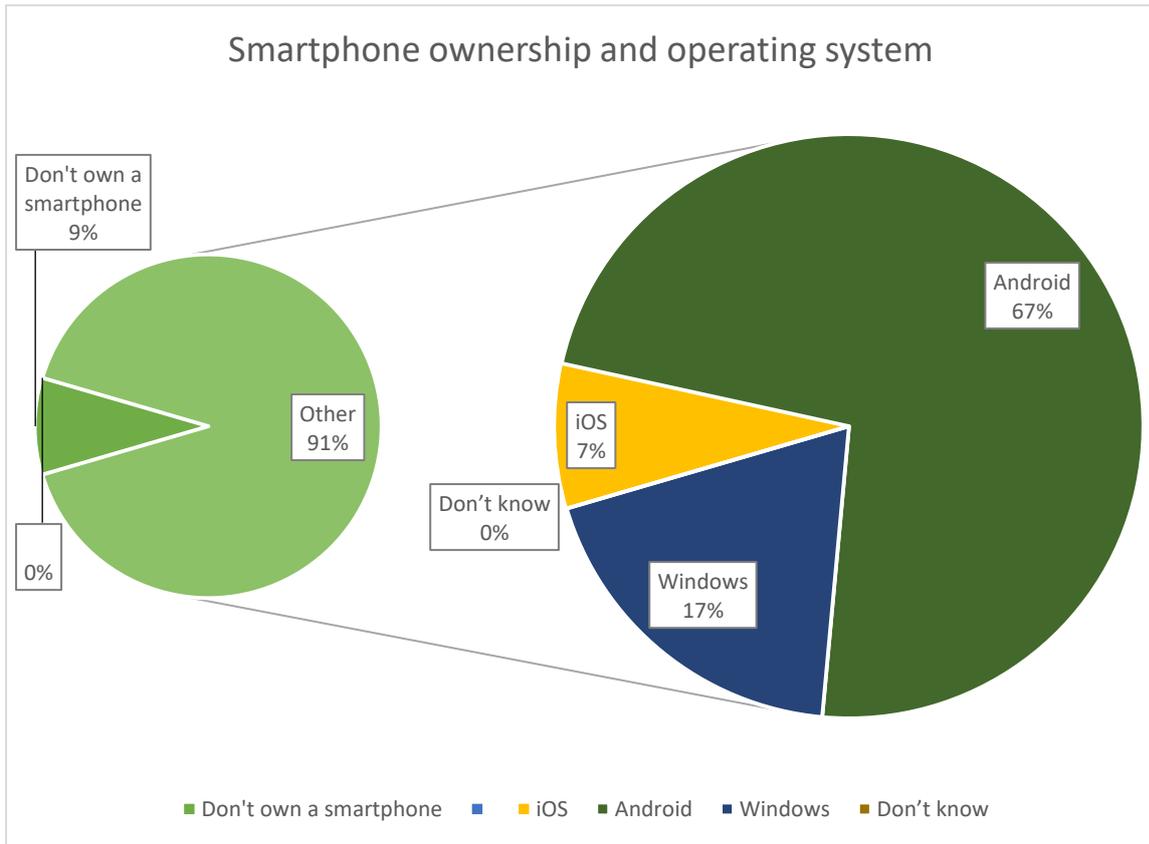


Figure 26 Smartphone ownership and operating system – Danube Delta

93% of respondents use the internet on their smartphone more than once each day. Social networks are very popular – used every day by 85% of respondents. Taking pictures with smartphones is also a common activity, 61% of respondents use their phone to take pictures at least a few times per week. Contributing to blogs and forums is less popular, 78% would rarely or never do this. 15% would share content online such as pictures and articles at least once per day. Facebook is the most popular social media network used by 95% of respondents. LinkedIn (29%), Google+ (22%) and Instagram (12%) are also popular with those who use social networks. Messaging applications are used by 85% of respondents more than a few times a month, Facebook messenger (73%) and WhatsApp (70%) are most used.

### Gaming applications

34% of respondents play games on their mobile phone. There is a preference for collaborative games, 5% like immersive/augmented reality games. Citizens are generally willing to be involved in SCENT, as shown in Figure 27, as follows: 37% on a regular basis, 10% are not willing to be involved.

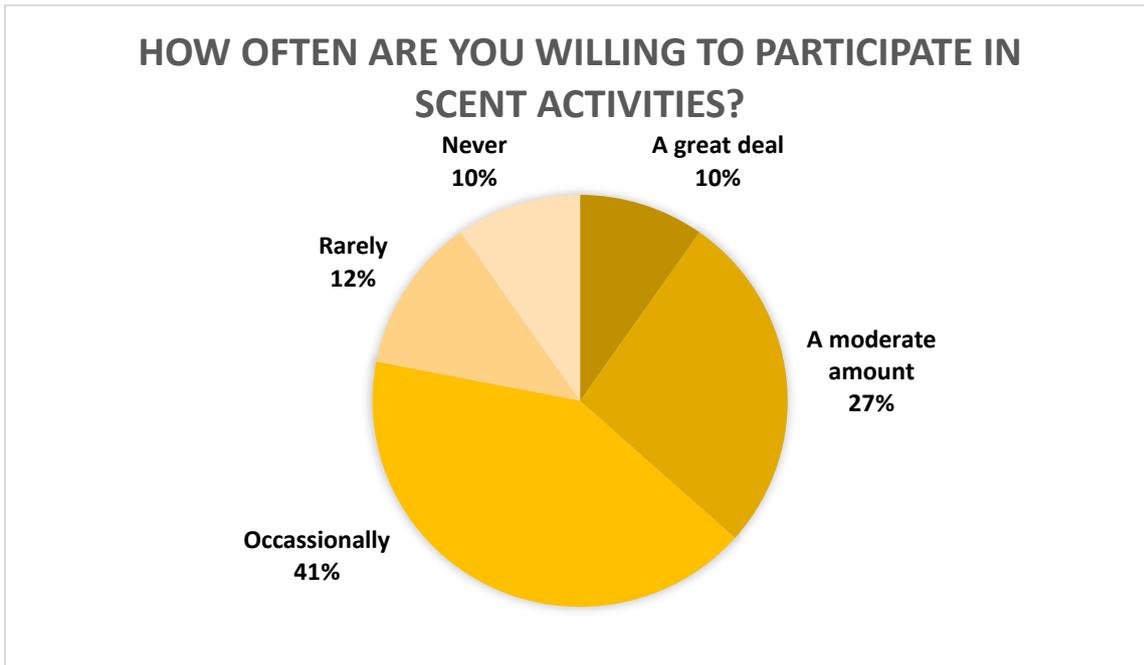


Figure 27 How often are you willing to participate in SCENT activities– Danube Delta

*Portable sensors*

39% would be willing to carry portable sensors, 51% maybe willing, 5% unwilling and 5% don't know. Preference for a portable sensor system weighing less than 500g (49%), the size of a smartphone (72%), and no clear preference for the battery life of the device. Respondents exhibited no particular preference for the type of feedback from the application (Statistics of personal uploaded sensor data (41%); statistics of uploaded sensor data from the overall citizen community (41%); other (18%)), and prefer to annotate their contributions with free text in their local language (29%) or in English (37%).

*Drones*

No one responded saying they definitely owned a drone, one responded maybe and one responded Don't know. These results are based on these two responses. Both maybe willing to use their drone for SCENT, both use their drone for work purposes, one has a very small camera with a Light Detection and Rating (LiDAR) sensor and would desire feedback of their own personal uploaded drone data.

*Crowd-sourcing platforms*

35% would be willing to provide a text description of the environment surrounding them, 51% maybe willing, 7% unwilling and 7% don't know. 53% are willing to fill out some short questionnaires from their mobile phone, 32% maybe willing, 13% unwilling and 3% don't know. 63% are willing to provide photos, 30% maybe willing and 7% unwilling. 61% know what a Quick Response (QR) code is, 27% know what a beacon is.



*Flood models*

31% know what a flood model is, 31% know the difference between a flood hazard map and a flood risk map. 24% know how to interpret a flood map. 69% of those who know what a flood model is trust the results of flood maps as a result of modelling and 77% think that flood models can improve the predictability of maps. 59% of all citizens are willing to get involved in collecting data for flood modellers.

**1.3.2 Overview of results for Kifisos, Attica**

94 responses were collected from citizens in the Attica Region. The average respondent was aged 35-44 years (male=53%, female=47%), finished education when 20 or more years old and was in full time employment.

*Smartphones*

As shown in Figure 28, 88% own a smartphone: 20% use iOS, 75% use Android, 1% use Windows, 4% Don't know. 90% have a data plan, 96% have Bluetooth on their device

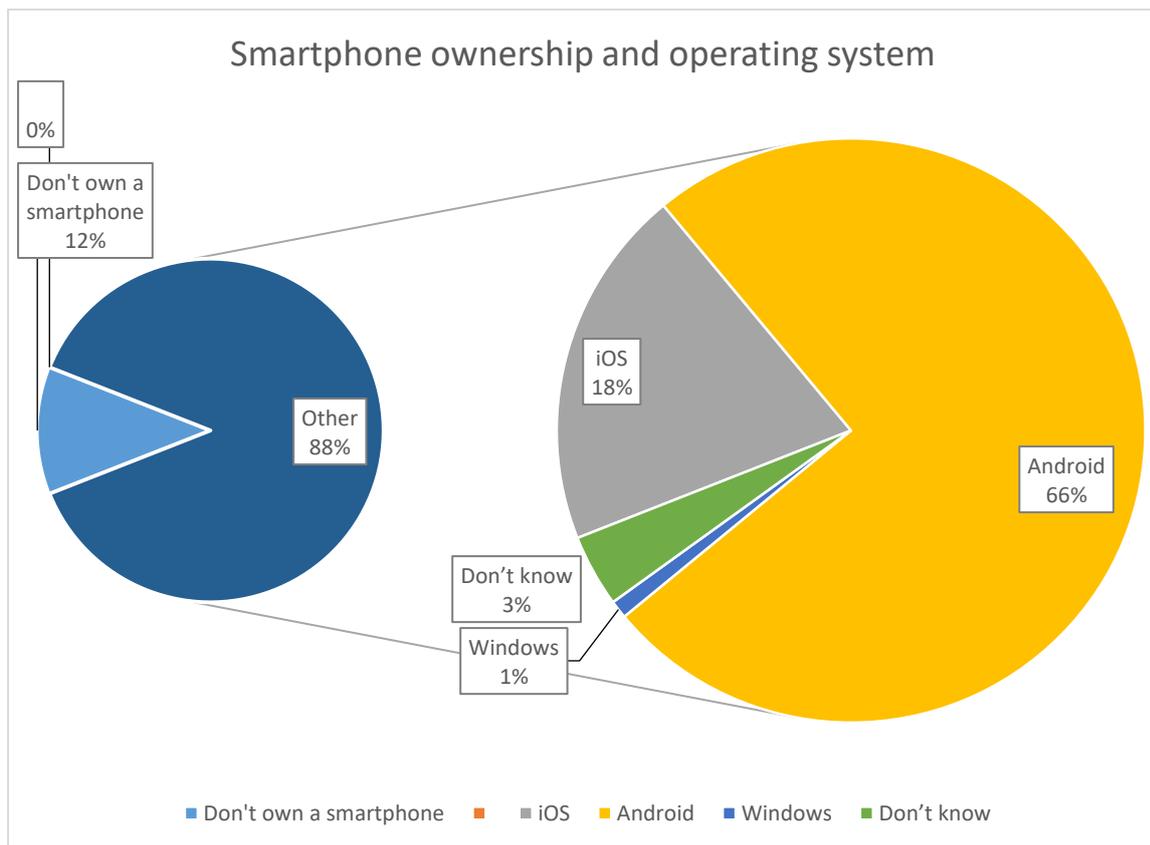


Figure 28 Smartphone ownership and operating system –Kifisos/Attica

78% of respondents use the internet on their smartphone more than once each day. Social networks are very popular – used every day by 71% of respondents. Taking pictures with smartphones is also a common activity, 77% of respondents use their phone to take pictures at least a few times per week.

Contributing to blogs and forums is less popular, 57% would rarely or never do this. 36% would share content online such as pictures and articles at least once per day. Facebook is the most popular social media network used by 80% of respondents. LinkedIn (49%), Instagram (37%) and Google+ (33%) are also popular with those who use social networks. Messaging applications are used by 90% of respondents, Facebook messenger (76%), WhatsApp (40%) and Viber (25%) are most used.

*Gaming applications*

34% of respondents play games on their mobile phone. There is a preference for collaborative games, no clear preference regarding immersive reality games. Citizens are generally willing to be involved in SCENT as seen in Figure 29, but less than a quarter on a regular basis and 10% are not willing to be involved.

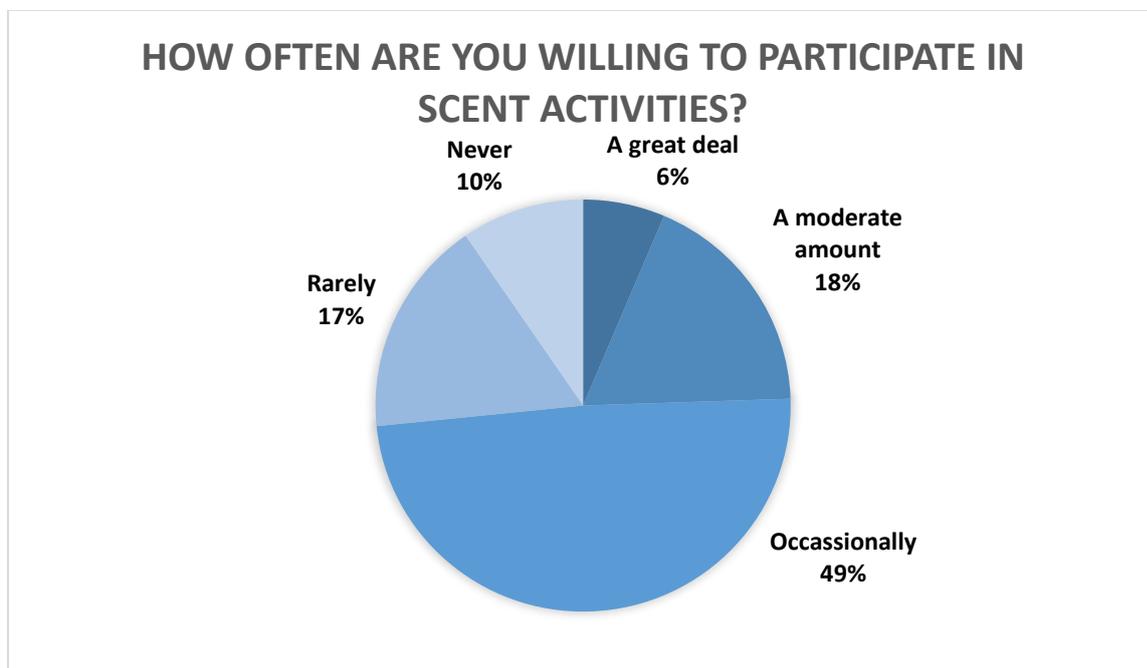


Figure 29 How often are you willing to participate in SCENT activities– Kifisos/Attica

*Portable sensors*

31% would be willing to carry portable sensors, 46% maybe willing, 11% unwilling and 10% don't know. Preference for a portable sensor system weighing less than 100g (49%), the size of a smartphone (46%), which needs charging once a week (48%). Respondents desire feedback from the overall citizen community on the data uploaded (77%), and prefer to annotate their contributions by selecting from a dropdown menu (31%).

*Drones*

6 respondents (6%) definitely own drones. 4 are willing to use them in SCENT, 5 have "small" optical cameras.



*Crowd-sourcing platforms*

20% would be willing to provide a text description of the environment surrounding them, 52% maybe willing, 20% unwilling and 8% don't know. 46% are willing to fill out some short questionnaires from their mobile phone, 37% maybe willing, 16% unwilling and 1% don't know. 45% are willing to provide photos, 18% maybe willing, 36% unwilling and 1% don't know. 43% know what a QR code is, 25% know what a beacon is.

*Flood models*

30% know what a flood model is, 21% know the difference between a flood hazard map and a flood risk map. 11% know how to interpret a flood map. 41% of those who know what a flood model is trust the results of flood maps as a result of modelling and 89% think that flood models can improve the predictability of maps. 51% of all citizens are willing to get involved in collecting data for flood modellers.

**1.3.3 Overview of results for UK and Ireland**

44 responses were collected from citizens in the UK and Ireland. The average respondent was aged 35-44 years (female=61%, male=39%), finished education when 20 or more years old and was in full time employment.

*Smartphones*

As seen in Figure 30, 95% own a smartphone: 38% use iOS, 62% use Android, all those who own a smartphone have a data plan and Bluetooth on their device.

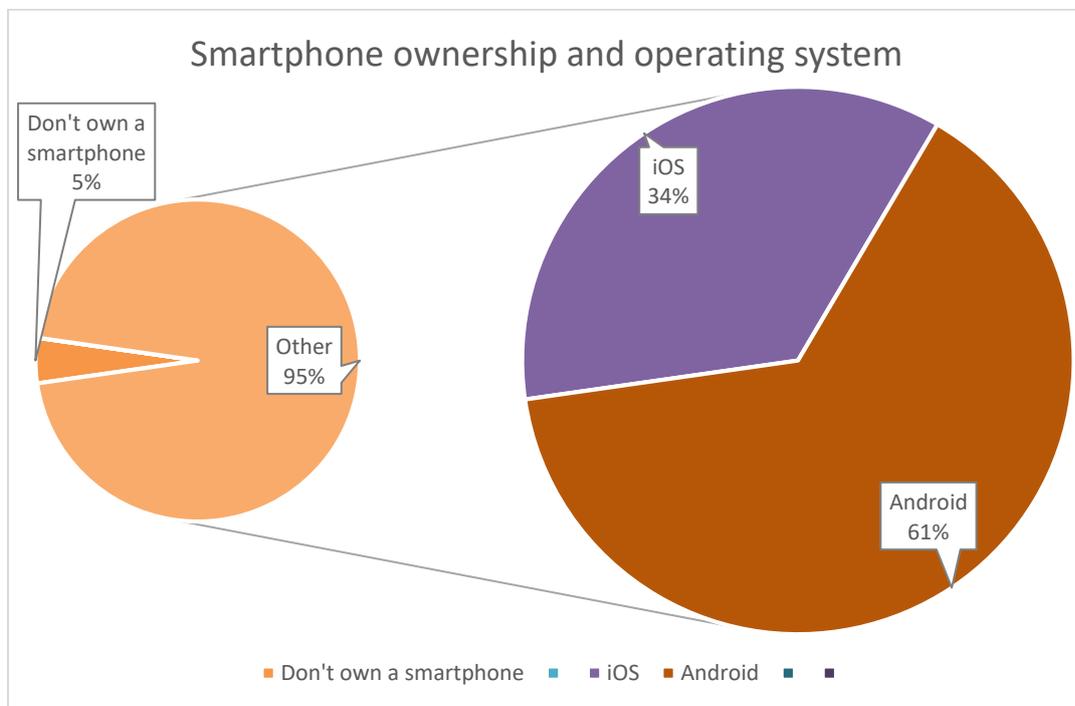


Figure 30 Smartphone ownership and operating system – UK/Ireland

88% of respondents use the internet on their smartphone more than once each day. Social networks are popular – used every day by 61% of respondents. Taking pictures with smartphones is also a common activity, 81% of respondents use their phone to take pictures at least a few times per week. Contributing to blogs and forums is less popular, 75% would rarely or never do this. 31% would share content online such as pictures and articles at least once per day. Facebook is the most popular social media network used by 88% of respondents. Twitter (66%), LinkedIn (64%), and Instagram (31%) are also popular with those who use social networks. Messaging applications are used by 73% of respondents more than one per day, WhatsApp (89%) and Facebook Messenger (55%) are most used.

*Gaming applications*

27% of respondents play games on their mobile phone. There is a preference for competitive games, 25% like immersive/augmented reality games. Citizens are generally willing to be involved in SCENT as shown in Figure 31, 30% on a regular basis, but 9% are not willing to be involved.

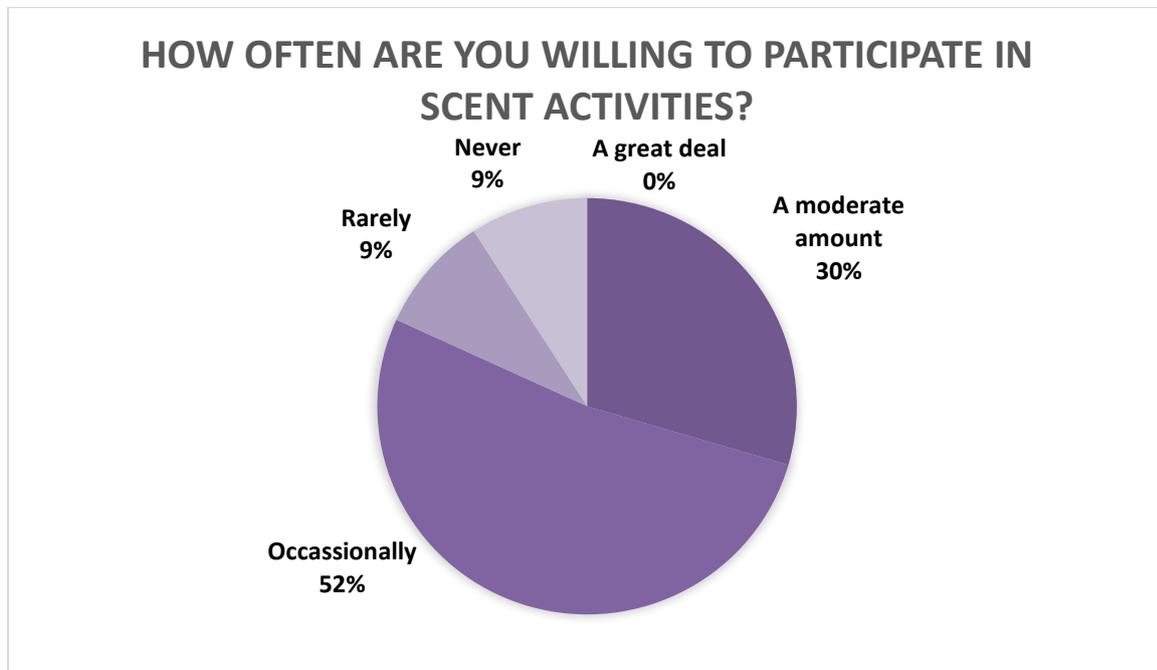


Figure 31 How often are you willing to participate in SCENT activities – UK/Ireland

*Portable sensors*

36% would be willing to carry portable sensors, 45% maybe willing, 14% unwilling and 5% don't know. Preference for a portable sensor system weighing less than 500g (44%), the size of a smartphone (73%), and battery life of the device to be such that it needs charging once a week (45%). Respondents exhibited a preference for statistics of uploaded data to come from the overall citizen community (79%) (Statistics of personal uploaded sensor data (13%); other (8%)), and prefer to annotate their contributions with free text in English (37%) or select from a drop down menu (44%).

### *Drones*

5 respondents (11%) own drones and use it for leisure. 1 is willing to use their drone for SCENT. They all have a “very small” or “small” optical camera with a multicopter. There is no consensus over expectation of feedback from SCENT as a user of a drone.

### *Crowd-sourcing platforms*

37% would be willing to provide a text description of the environment surrounding them, 42% maybe willing, 19% unwilling and 2% don't know. 58% are willing to fill out some short questionnaires from their mobile phone, 26% maybe willing and 16% unwilling. 50% are willing to provide photos, 36% maybe willing, 12% unwilling and 2% don't know. 59% know what a QR code is, 25% know what a beacon is.

### *Flood models*

71% know what a flood model is, 34% know the difference between a flood hazard map and a flood risk map. 34% know how to interpret a flood map. 58% of those who know what a flood model is trust the results of flood maps as a result of modelling and 74% think that flood models can improve the predictability of maps. 61% of all citizens are willing to get involved in collecting data for flood modellers.



## Annex 2 Focus groups for end user needs collection

### 2.1 Introduction explaining the method followed for focus groups

In this phase the main objective was to ensure the full engagement of the stakeholders identified within previous stages in order to collect needs and requirements relevant to citizen observatories. Moreover, to fulfil the above objective it was important to apply active participation by adopting the focus group methodology.

Focus group (FG) is a technique used to better understand how people feel or think about an issue, idea, product, or service. Focus groups are used to gather opinions. Participants are selected because they have certain characteristics in common that relate to the topic of the focus-group, hence homogeneity is key to maximizing disclosure among focus group participants. A focus group is composed of 7-12 people, being the optimal size to promote discussion and enable the facilitator to keep the group on task. Focus groups are structured around a set of carefully predetermined questions – usually no more than 10 – but the discussion is free-flowing.

In order to collect user requirements for active citizen participation in the environmental policy making process through the SCENT toolbox, two Focus Groups were carried out in both case studies, one in Tulcea for Danube Delta case study and one in Athens for Kifisos River.

Each of the Focus Groups consisted of three stages, as shown in Figure 32:



Figure 32 Focus Group stages

Each stage has its own specific characteristics and allocation of tasks and responsibilities follows:

#### Stage 1 - Conceptualisation and preparation

The following steps were conducted in order to complete this stage:

##### STEP 1 Describe the assignment and define the objective

In this step were set tasks and goals to be pursued in then FG. The Romanian-Greek team had in its composition specialists in socio-anthropology, soil science, geomorphology, GIS & remote sensing, facilitators (advisors, translators, process facilitator and process co-facilitator). The objective is to draw up end user needs and requirements necessary for an active and user-friendly SCENT toolbox based on active participation of stakeholders.

##### STEP 2 Decide on participants and dates

This step consisted in establishing the participants (between 10 to 12 persons for optimal results) who covered the full range of social and environmental range, especially related to floods, as presented in the 2nd Stage of FG. Regarding the dates, each FG lasted for 2 days (28-28 November for Danube Delta and 1-2 December for Kifisos River). Also it was established the location for each

FG: Danube Delta National Institute, Tulcea Municipality and National Technical University of Athens.

**STEP 3 Logistics**

DDNI and ATTICA team sent invitations to all the participants that took part in the Focus Group. This step also referred to verify invitation to participants by phone and organise all needed materials.

**STEP 4 Organise the venue**

**STEP 5 Collecting information and participants**

The core of the team established and elaborated the needed maps for the FG Session. The elaborated and used maps were as follows: topographical map with land use, aerial photo maps with administrative boundaries.

**Stage 2 – Focus-group Session**

The Focus Groups took place in Tulcea municipality and Athens, lasting for two days, on 28-29 November 2016 and 1-2 December 2016. The 1<sup>st</sup> Day was addressed to the Authorities, NGOs, Operational ‘people’ and its main objective was to gather information in relation with citizens and volunteers attitude and views regarding their role in monitoring environmental events. The 2<sup>nd</sup> Day gathered all the Experts in order to debate the Existing monitoring system of environmental events and how they can be extended with the participation of citizens. The Focus Group programme can be found in Annex 7.

To promote discussion and enable the facilitator to keep the group on task, the Focus Group for Danube Delta consisted of 11 participants in the 1<sup>st</sup> day and 8 in the 2<sup>nd</sup>, listed with their approval, as shown in the table below:

| Day 1 – Danube Delta Case study |   |   |                          |  |                                  |
|---------------------------------|---|---|--------------------------|--|----------------------------------|
| Project members                 |   |   | Stakeholders             |  |                                  |
| Name                            | Institution   | Function/position in FG                               | Name                     | Institution  | Function                         |
| Mr. Iulian Nichersu             | Danube delta National Institute for Research and Development (DDNI) | Scientific Senior Researcher/ Facilitator             | Mr. Simion Eduard Lucian | Tulcea County Council  | Vice-president                   |
| Ms. Eugenia Marin               | Danube delta National Institute for Research and Development (DDNI) | Scientific Researcher Socio-Economics/ Co-facilitator | Mr. Nicu Acsentiev       | Danube Delta Biosphere Reserve Administration Tulcea (DDBRA) | Superior environmental inspector |



|                       |   |  |                           |  |                                  |
|-----------------------|---|--|---------------------------|--|----------------------------------|
| Ms. Florentina Sela   | Danube delta National Institute for Research and Development (DDNI) | Scientific Researcher Socio-Economics / Co-facilitator             | Ms. Veronica Toma         | Danube Delta Biosphere Reserve Administration Tulcea (DDBRA)               | Environmental inspector          |
| Mr. Cristian Trifanov | Danube delta National Institute for Research and Development (DDNI) | Scientific Researcher Geomorphology / Observer                     | Mr. Veronel Parpala DDBRA | Danube Delta Biosphere Reserve Administration Tulcea (DDBRA)               | Superior environmental inspector |
| Mr. Marian Mierla     | Danube delta National Institute for Research and Development (DDNI) | Scientific Researcher GIS /Observer                                | Mr. Daniel Sofrone        | Romanian Border Police   | Principal Police Inspector       |
| Mr. George Athanasiou | Institute of Communication and Computer Systems (ICCS)              | Scientific Researcher Electrical and Computer Engineering/Observer | Mr. Constantin Lefter     | “Romanian Waters” National Administration (NARW), Tulcea Water Directorate | Chief engineer                   |
| Ms. Amy Hume          | CARR Communication  | Behavioural Change Researcher/Observer                             | Mr. Daniel Petrov         | “ Danube Delta” Emergency Situation Inspectorate (ISU)                     | Chief Inspector                  |
| Ms. Linda Henriksson  | CARR Communication  | H2020 Account Executive/Observer                                   | Ms. Sonia Parpala         | Environmental Protection Agency  | Counsellor                       |
|                       |   |  | Ms. Daniela Petroschi     | Prefecture Tulcea  | Principal Counsellor             |
|                       |   |  | Ms. Liliana Teodorof      | Danube delta National Institute for Research and Development (DDNI)        | Head of Chemistry Laboratory     |
|                       |   |  | Mr. Eugen Petrescu        | Ornithological Romanian Society (SOR)                                      | Vice-president                   |

**Day 2 – Danube Delta Case study**

| Project members     |  |   | Stakeholders              |             |                             |
|---------------------|--|---|---------------------------|-------------|-----------------------------|
| Name                | Institution                                      | Function                                  | Name                      | Institution | Function                    |
| Mr. Iulian Nichersu | Danube delta National Institute for Research and | Scientific Senior Researcher/ Facilitator | Mr. Lucian-Dănuț Păscălin |             | Telecommunications engineer |



|                       |   |  |                     |  |                              |
|-----------------------|---|--|---------------------|--|------------------------------|
|                       | Development (DDNI)  |  |                     |  |                              |
| Ms. Eugenia Marin     | Danube delta National Institute for Research and Development (DDNI) | Scientific Researcher Socio-Economics/ Co-facilitator              | Mr. Soava Vasile    | “ Danube Delta” Emergency Situation Inspectorate (ISU)                     | First Deputy Chief Inspector |
| Ms. Florentina Sela   | Danube delta National Institute for Research and Development (DDNI) | Scientific Researcher Socio-Economics / Co-facilitator             | Ms. Veronica Toma   | Danube Delta Biosphere Reserve Administration Tulcea (DDBRA)               | Environmental inspector      |
| Mr. Cristian Trifanov | Danube delta National Institute for Research and Development (DDNI) | Scientific Researcher Geomorphology / Observer                     | Mr. Daniel Costencu | “Romanian Waters” National Administration (NARW), Tulcea Water Directorate | Electronics engineer         |
| Mr. Marian Mierla     | Danube delta National Institute for Research and Development (DDNI) | Scientific Researcher GIS /Observer                                | Mr. Gabriel Duralia | Danube delta National Institute for Research and Development (DDNI)        | IT specialist                |
| Mr. George Athanasiou | Institute of Communication and Computer Systems (ICCS)              | Scientific Researcher Electrical and Computer Engineering/Observer | Mr. Grigoras Ion    | Danube delta National Institute for Research and Development (DDNI)        | GIS experts                  |
| Ms. Amy Hume          | CARR Communication  | Behavioural Change Researcher/Observer                             | Mr. Jenica Hanganu  | Danube delta National Institute for Research and Development (DDNI)        |                              |
| Ms. Linda Henriksson  | CARR Communication  | H2020 Account Executive/Observer                                   | Ms. Liliana Torok   | Danube delta National Institute for Research and Development (DDNI)        |                              |

Table 7 Focus group participants/stakeholders - Danube Delta case study

Kifisos River case study

| Day 1 – Kifisos Case study |             |                         |              |             |          |
|----------------------------|-------------|-------------------------|--------------|-------------|----------|
| Project members            |             |                         | Stakeholders |             |          |
| Name                       | Institution | Function/position in FG | Name         | Institution | Function |



|                        |   |  |                       |  |   |
|------------------------|---|--|-----------------------|--|---|
| Mr. Iulian Nichersu    | Danube delta National Institute for Research and Development (DDNI) | Scientific Senior Researcher/ Facilitator  | Ms Roula Arabatzi     | Region of Attica/ Directorate of Technical Works                             | Head of Department of Hydraulic Works                         |
| Ms. Eugenia Marin      | Danube delta National Institute for Research and Development (DDNI) | Scientific Researcher Socio-Economics/ Co-facilitator                            | Mr Eustratios Davakis | Region of Attica/ Directorate of Civil Protection                            | Head of Directorate   |
| Ms. Athanasia Tsertou  | Institute of Communication and Computer Systems (ICCS)              | Senior Researcher, SCENT Project Manager / Observer                              | Ms Aspasia Karamanou  | Region of Attica/ Directorate of Civil Protection                            | Head of Department of Civil Protection of the Central Athens) |
| Ms. Mary Miska         | Region of Attica/ Directorate of Developmental Planning             | Head of the Department of Implementation of Programs and Projects / Observer     | Ms Konstantina Perrou | Municipality of Piraeus/Department of Civil Protection and Crisis Management | Head of Department of Civil Protection                        |
| Ms Alexopoulou Dimitra | Region of Attica/ Directorate of Developmental Planning             | Employee of the Department of Implementation of Programs and Projects / Observer | Ms Martha Perdikaki   | NTUA   | PhD Researcher in the field of Water Recharge                 |
| Mr Charis Georgiou     | HRTA  | Rescuer/ Researcher in University of Athens                                      | Mr Gerasimos Lykos    | HRTA   | Rescuer   |
| Mr. George Athanasiou  | Institute of Communication and Computer Systems (ICCS)              | Scientific Researcher Electrical and Computer Engineering / Observer             | Ms Eva Kesselring     | HRTA   | Rescuer   |
| Ms Anna Antonakopoulou | Institute of Communication and Computer Systems (ICCS)              | Researcher, Project Manager / Observer   |                       |  |   |
| Ms. Amy Hume           | CARR Communication  | Behavioural Change Researcher/Observer   |                       |  |   |
| Mr Antreas Kallioras   | Institute of Communication and Computer Systems (ICCS)              | Environmental Engineer / Observer  |                       |  |   |

|                                   |   |   |                                  |  |   |
|-----------------------------------|---|---|----------------------------------|--|---|
| Mrs. Linda Henriksson             | CARR Communication  | H2020 Account Executive/Observer                                      |                                  |  |   |
| Mr Spyros Chrissanthakopoulos     | HRTA  | President of HRTA   |                                  |  |   |
| <b>Day 2 – Kifisos Case study</b> |   |   |                                  |  |   |
| <b>Project members</b>            |   |   | <b>Stakeholders</b>              |  |   |
| <b>Name</b>                       | <b>Institution</b>  | <b>Function</b>   | <b>Name</b>                      | <b>Institution</b>   | <b>Function</b>                           |
| Mr. Iulian Nichersu               | Danube delta National Institute for Research and Development (DDNI) | Scientific Senior Researcher/Facilitator                              | Mr Ilias Dimitriou               | Hellenic Centre for Marine Research (HCMR), Institute of Marine Biological Resources and Inland Waters | Senior Researcher                         |
| Ms. Eugenia Marin                 | Danube delta National Institute for Research and Development (DDNI) | Scientific Researcher Socio-Economics/ Co-facilitator                 | Ms Konstantina Nika              | Ministry of Environment and Energy, Special Secretariat for Water                                      | Head of Special Secretariat for Water     |
| Ms. Athanasia Tsertou             | Institute of Communication and Computer Systems (ICCS)              | Senior Researcher, SCENT Project Manager                              | Ms Athanasia Pardali             | Ministry of Environment and Energy, Special Secretariat for Water                                      | Employee of Special Secretariat for Water |
| Ms. Mary Miska                    | Region of Attica/ Directorate of Developmental Planning             | Head of the Department of Implementation of Programs and Projects     | Mr Konstantinos Paspaspyropoulos | Ministry of Environment and Energy, Special Secretariat for Water                                      | Employee of Special Secretariat for Water |
| Ms Dimitra Alexopoulou            | Region of Attica/ Directorate of Developmental Planning             | Employee of the Department of Implementation of Programs and Projects | Mr Michalis Diakakis             | University of Athens, Department of Geology  | Senior Researcher                         |
| Mr. George Athanasiou             | Institute of Communication and Computer Systems (ICCS)              | Scientific Researcher Electrical and Computer Engineering             | Ms Vasiliki Kotroni              | National Observatory of Athens   | Research Director                         |
| Mr Antreas Kallioras              | Institute of Communication and Computer Systems (ICCS)              | Environmental Engineer  | Mr Kostas Lagouvardos            | National Observatory of Athens   | Research Director                         |

|                               |  |   |                      |  |   |
|-------------------------------|--|---|----------------------|--|---|
| Ms. Amy Hume                  | CARR Communication                                     | Behavioural Change Researcher/Observer      | Mr Dimitrios Kouvas  | Scientact  | Vice President of Scientact                                 |
| Ms. Linda Henriksson          | CARR Communication                                     | H2020 Account Executive/Observer            | Ms Ifigeneia Koutiva | Department of Water Resources and Environment (NTUA) | Researcher  |
| Mr Spyros Chrissanthakopoulos | HRTA   | President of HRTA                           | Ms Archontia Lykou   | Department of Water Resources and Environment (NTUA) | Researcher  |
| Mr Charis Georgiou            | HRTA   | Rescuer/ Researcher in University of Athens | Mr Giorgos Tentes    | Green2sustain  | Marketing and Business Development Manager at Green2Sustain |
| Ms Anna Antonakopoulou        | Institute of Communication and Computer Systems (ICCS) | Researcher, Project Manager                 | Mr Gerasimos Lykos   | HRTA   | Rescuer   |
|                               |  |   | Ms Eva Kesselring    | HRTA   | Rescuer   |

Table 8 Focus group participants/stakeholders – Kifisos river case study

Both Focus Groups were divided in the following topics, ordered into a logical flow, as follows:

|   | <b>Day 1 - Addressed to the Authorities, NGOs, Operational 'people</b>   | <b>Day 2 – Addressed to the Technical Experts</b>  |
|---|--|--|
| 1 | COs & their potential for influencing flood management & prediction: relevance, sustainability, data quality, data privacy | CO cookbook  |
| 2 | Existing monitoring systems: alarms potential, challenges & gaps (relation to policy making)                               | Existing monitoring systems: alarms potential, challenges & gaps (relation to policy making) |
| 3 | Citizen Observatory cookbook   | Challenges and gaps in land-cover/use maps: accuracy, renewal period, taxonomy               |
| 4 | Crowd-sourcing platform: smartphones & image capturing   | Portable sensors & drones for on-site data collection  |
| 5 | Gamification & serious games for engaging citizens   | Authoring tool for customizing the platform wrt local/social features                        |
| 6 | Exploitation of the toolbox and continuation of the SCENT movement   | Assessment of crowd-sourced data contribution for flood modelling & flood risk               |
| 7 | Training & early childhood education programme   | Exploitation of the toolbox and continuation of the SCENT movement                           |

Table 9 Focus groups topics



### Stage 3 – Analysis of Results

A qualitative research analyse was conducted for each focus group on main topics mentioned above.

## 2.2 Overview of results and key points from the Danube Delta focus groups

**Topic 1. COs & their potential for influencing flood management & prediction.** In this topic, it was determined to what extent do the institutions own a monitoring system and how the citizens can be involved/integrated in the actual monitoring system.

Tulcea Water Directorate has its own monitoring system with agents in different locations in Danube Delta and an automatic monitoring system (water levels, precipitations) in peripheral locations of delta, such as Maliuc, Periprava, Sulina and Sfantu Gheorghe. At regional level it has 47 hydrometric stations of which 11 on lakes, 22 on rivers, 6 on channels, 8 coast stations. Also the monitoring system consists of 118 hydrogeological drillings, 28 pluviometric stations, 14 quality control divisions for river waters, 29 quality control divisions for the natural lake waters, 17 quality control divisions for the sea waters, 21 control divisions for the flow drawing and restoring.

Together with the Galati Lower, Danube River Administration has created an online application with the Danube water levels, minimum depths measured on Danube (<http://www.afdj.ro/en>). In relation to this existing platform, the Tulcea City Hall mentioned that for the moment is the only one they are using and mentioned it as being very helpful.

“Danube Delta” Emergency Situation Inspectorate (ISU): At national level, there is the National Management System for Emergency Situations (NMSES) that was created in 2004 through the Emergency Ordinance 21/2004. NMSES works to prevent and manage emergency situations and ensuring the coordination of human, material, financial and otherwise necessary for restoring normality status. The national system is organized as follows:

- a) Committees for emergency situations;
- b) General Inspectorate for Emergency Situations;
- c) Professional community public services for emergency situations;
- d) Operative centres for emergency situations;
- e) Military action

It was stated during the discussions that at observation level they have flood agents in the field who are represented by the Chiefs of Volunteer Service for Emergency Situations, who activate under the City Halls and is mainly composed of local community members. They collect the data from the field (written report) and send it further to the central station of ISU, data which is used in the prevention phase of floods.

Tulcea Prefecture: At County level there is the County Committee for Emergency Situations which is organized as inter-institutional body to support the emergency management, component of the National Management System for Emergency Situations, which includes chiefs devolved, decentralized, managers and directors of institutions that hold or manage economic risk sources in



the county. The County Committee for Emergency Situations is led by the Prefect. At Local level there is the Local Committee for Emergency Situations which is led by the Mayor.

The Permanent Technical Secretariat County Committee for Emergency Situations is provided by the Inspectorate for Emergency Situations "DELTA" Tulcea County - Operational Centre. Within the County Committee is organised the Technical Support Group for management of emergency situations caused by floods, hazardous weather, hydraulic structures accidents and accidental pollution. It is composed of representatives of Water Management System, Hydro technical Systems, Environmental Protection Agency, County Commissioner of the National Environmental Guard, territorial units of the National Land Development Agency, the S.C. "Hidroelectrica" S.A., National Forests - ROMSILVA, Lower Danube River Administration, other holders of hydrotechnical construction of flood defenses, the National Centre for Meteorological Forecasting and Regional Meteorological Centres.

Both County and Local Committees for Emergency Situations act in all three stages of an emergency: prevention, operational and resilience.

Regarding the existing monitoring system, the data is collected in the field by the flood agents of the volunteer emergency service who has the duty to write an operative report in 24h of the event (data regarding damages, houses affected etc.) and to send the report further to Tulcea Water Management System (SGA Tulcea) and in case of major damages to the Tulcea Prefecture. The data might be also collected by local citizens, who announces the Local Council, but must be further verified in the field by the Local Committee for Emergency Situations and take a decision based on it.

Based on the discussions Figure 33 was designed to describe the institutional data flow chart for prevention:

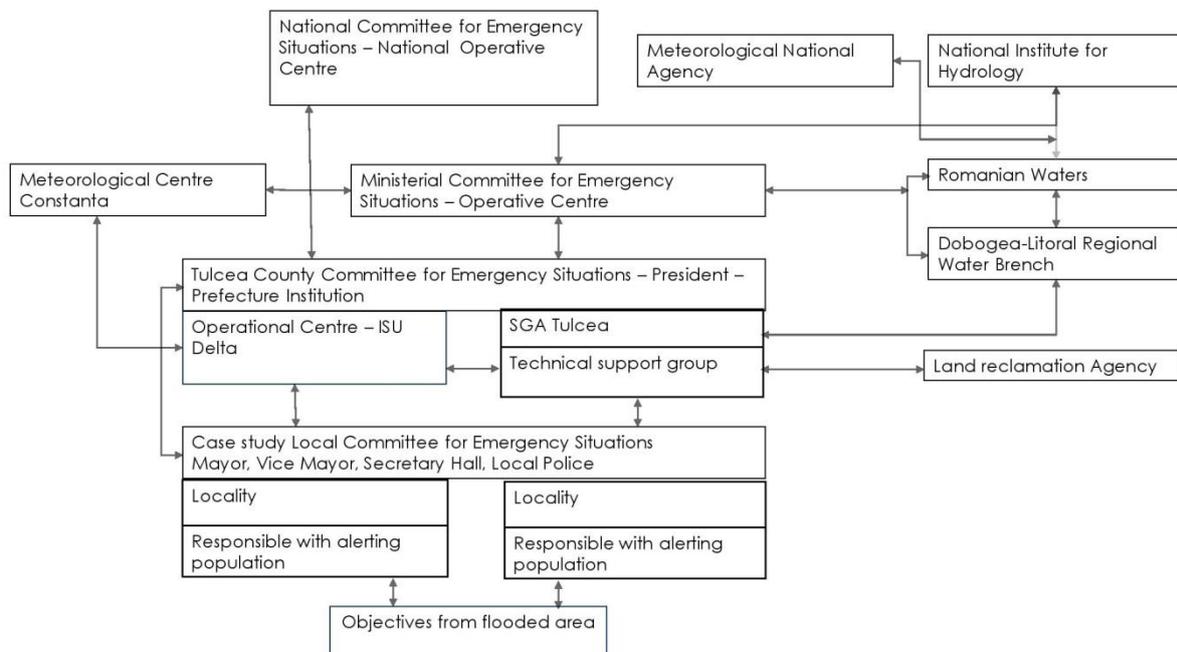


Figure 33 Data flow chart for prevention for Danube Delta case study

| Existing human resources for data collection  | Existing technical resources for data collection  | Existing actual issues  |
|---|---|---|
| DDBRA field ecological agents   | SGA automatic monitoring system (water levels, precipitations, water quality) in the area | Lack of information form citizens (source: Tulcea city hall)  |
| Flood agents of local volunteer emergency services under Local Council (National strategy for Flood Prevention) |   | Lack of a platform collecting real time data in case of an emergency (source: Tulcea city hall)                 |
| Tulcea Water Directorate (SGA) field agents   |   | Lack of an integrated system in order to share the existing information towards population (source: SGA Tulcea) |

Table 10 Existing resources (human/technical) and issues

As stated by all participants the involvement of citizens in actual monitoring system is urgent and necessary, mentioning in the same time that there is not at the moment any platform receiving this kind of data. The citizens can have an important role in all three stages: prevention, operational, resilience.

**Topic 2. Existing monitoring systems. Is CO a step from monitoring to wisdom?**

This topic focused on the existing relationship Monitoring-Citizen and Citizen – Knowledge:

| <b>MONITORING-CITIZEN</b><br><i>How can integrate citizens in monitoring system?</i>  | <b>CITIZEN-KNOWLEDGE</b><br><i>How can improve accuracy and better knowledge?</i>   |
|---|---|
| Correlating of the scent platform with the existing ones  | Local people are “the experts” in knowing the area, especially the oldest ones but the young generation is the one who actually can get actively involved |
| Developing the social-media system for joining  | Collaboration between young generation and older one  |
| Motivating citizens and further maintaining them engaged in the process   | Necessity of training both groups of observers: simple or competent services  |
| Data validation   | Data quality assessment: necessity of a quality filter of data collected by citizens  |
| For functionality and efficiency, the existing agents in the field should be provided with sensors, assuring in this way a quality filter of data collected | Having a feedback for the citizens, helping in this way the creation of knowledge   |



|   |   |
|---|---|
| Define simple terminology (avoiding technical vocabulary) in order for the citizens to understand | In the phase of intervention citizens can react by uploading pictures, geotagging and providing time references |
| Giving feedback to citizens is essential to keep them involved                                    | Increasing the awareness level  |

Table 11 Existing Monitoring-Citizen and Citizen – Knowledge relationships - Danube Delta

**Topic 3. Citizen Observatory cookbook**

Regarding the involvement of each component (*people, technology and process*) in a CO, all stakeholders stressed the necessity and utility in terms of cost effectiveness of involving *people* in creating the SCENT toolbox, hence the relevant percentage is 60 %. On the other hand, the *technology* component was designated the second most important with 22%, as shown in Figure 34. They justified their responses by the fact that at the moment there is a lack of information from the citizens and it is vital to get them engaged, as well as a lack of a platform collecting real time data in case of an environmental emergency.

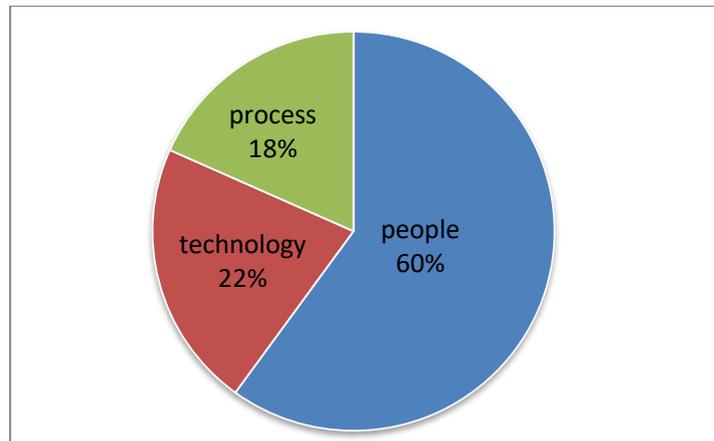


Figure 34 Distribution of percentage of involvement by components: people, technology and process

Further, the interaction with the SCENT objectives was analysed by ranking the smart collaborative technologies (SMT) characteristics needed for CO architecture, on a scale of importance from 1 to 9 depending, from their own point of view, as shown in the table below:

| Notes  | 1 | 2 | 3 | 4 | 5  | 6  | 7    | 8    | 9    |
|--|---|---|---|---|----|----|------|------|------|
| SMT  |   |   |   |   |    |    |      |      |      |
| low-cost and portable data collection tools  |   |   | √ | √ |    |    | √    | √√√√ | √√√√ |
| an innovative crowd-sourcing platform  |   |   |   |   | √  | √√ | √√   | √√√  | √√√  |
| serious gaming applications for a large-scale image collection and semantic annotation |   |   |   |   | √√ | √  | √√√√ | √√√  | √√   |



|   |  |  |   |   |   |     |       |        |      |
|---|--|--|---|---|---|-----|-------|--------|------|
| a powerful machine learning based intelligence engine for image and text classification                                 |  |  | √ |   |   | √   | √√    | √√√√   | √√√  |
| an authoring tool for an easy customization by policy makers  |  |  |   |   | √ | √√√ | √√√   | √√√    | √    |
| numerical models for mapping land-cover changes to quantifiable impact on flood risks                                   |  |  |   | √ |   | √√  | √√√√√ | √√     | √    |
| a harmonization platform, consolidating data and adding it to GEOSS and national repositories as OGC-based observations |  |  |   |   |   |     | √     | √√√√√√ | √√√√ |

Table 12 Analysis of the smart collaborative technologies (SMT) characteristics needed for CO architecture, on a scale of importance – Danube Delta

For the first characteristic of *low-cost and portable data collection tools*, it can be observed that most of them ranked it with high importance (8 and 9), emphasizing that the tools must not be very expensive, in order for all the citizens to afford them. In the same scale was mentioned *a powerful machine learning based intelligence engine for image and text classification* stating that for the moment there is a lack of such a powerful engine and that is a priority. Because all the mentioned characteristics have to be harmonised this last one got the highest classification (10 of the stakeholders ranked it within 8 and 9 class of importance). Both *an innovative crowd-sourcing platform* and *the serious gaming applications* were found important too, as they stated that the platform should be very attractive and motivate the community to get engaged.

**Topic 4. Crowd-sourcing platform: smartphones & image capturing**

For the Danube Delta case study, regarding the tools for collecting crowd-source data was mentioned the most used social-media platform: Facebook, for communication, dissemination, providing and hence, inform citizens with environmental data. It is a good channel for citizens to receive a feedback as well, in order to assure and maintain their commitment. In the preventing phase of an environmental emergency, the stakeholders considered that the Short Message Service (SMS) is a very useful tool, in order to warn citizens in situations when the GSM signal is lost or weak. For the moment, even the Tulcea Water Management System (SGA Tulcea) receives this type of information by SMS. As well, was mentioned that the application which will be developed within SCENT project should have a central data base with all the citizens phone numbers. Another alternative for data collection was radio communication system, in case the GSM signal is lost or weak.



In order to motivate citizens to get involved in data collection, was suggested to provide volunteers with smartphones that have capabilities of geo-tagging photos; hence the citizens will be given the devices only with the precise request (protocol) to take a certain number of pictures and further load them into the system. Further, they can be given a thematic when gathering images, themes as: infrastructure, buildings, land use.

Regarding the use of smartphone applications, it can be observed that 53% of the Focus Group respondents (both authorities and technical experts) are frequently using them, meanwhile 13% are not using them or use rarely (Figure 35). Nevertheless, asked how important is the use of a smartphone application in the SCENT project, all the stakeholders unanimously agreed that this tool is very important and useful and they are 100 % interested

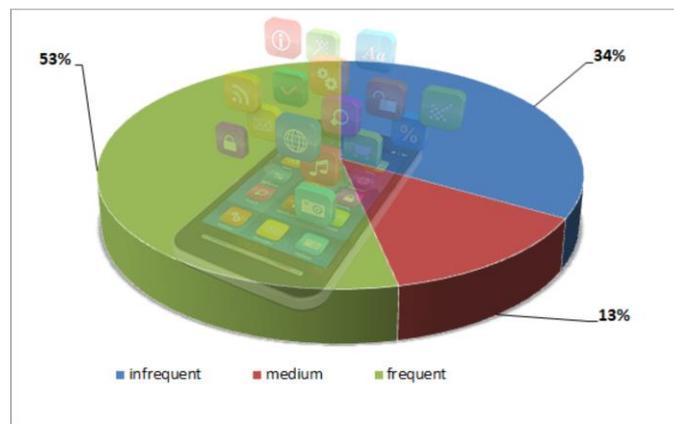


Figure 35 Use of Smartphone applications among Danube Delta Focus Group stakeholders

Further, in relation with the 3<sup>rd</sup> topic, the stakeholders were asked to rank, in order of importance, the social impact of the Citizen Observatories (as shown in Figure 36) which involve citizens as active partners in environmental monitoring and decision-making. Hence, the Danube Delta FG participants stated that the involvement of citizens in CO will have a major impact on *increasing public awareness*, by making citizens understand the environmental (flood related) problems and concerns and get better informed about the Environment, in the long term. The lack of awareness of flood risk is treated as an indicator of vulnerability to flooding. Awareness of existing risks is the first step towards preparedness. Further, they all highlighted that developing and implementing the CO process will *increase public engagement*, making citizens understand the direct effect of their collecting and providing reliable environmental data, and will empower citizens to improve their own habitat and wellbeing. By bringing different community groups together, the CO is expected to build social capital and assure *social teaming*, and also to bring positive *social changes* in the behaviour of citizens involved (by children trainings, guidelines and creativity groups) but also of local authorities and relevant stakeholders.

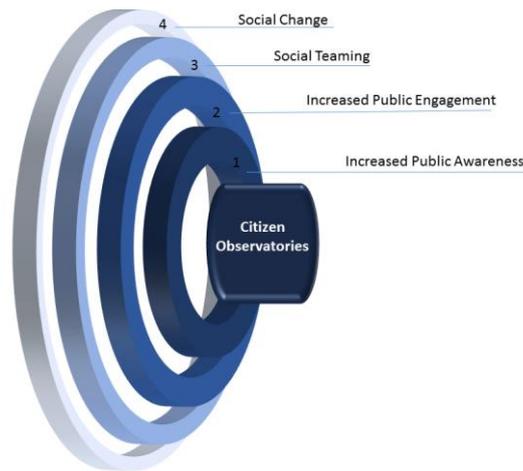


Figure 36 The social impact of Citizen Observatories

**Topic 5. Gamification & serious games for engaging citizens**

All the stakeholders agreed that the platform should be quite attractive, in order for the citizens involved not to lose their interest on long term. Hence, the gaming was seen as a solution in this sense, by promoting competitiveness among volunteers. This type of activity is foreseen to have a higher success amongst the younger generations. This will be a win-win situation as the SCENT application will help the youth learn about their relation to the environment, their territory and the issues affecting it.

**Topic 6. Exploitation of the toolbox and continuation of the SCENT movement**

Regarding the toolbox exploitation, the stakeholders agreed that there should be a free one opened for the general public and another (maybe) commercial one, but was not decided how. Another purpose of using the SCENT toolbox is the educational one in schools. They mentioned that there should be a double access of the toolbox: both for the citizens and authorities (prevention and operational), but the level of access must be established. It was mentioned that, for the moment, there is not such an integrated application (that collects data from the citizens and at the same time used for warning) and that the SCENT one would be a very important in terms of forecasts, predictions, warnings, awareness and should be linked with the existing warning systems of the authorities.

**Topic 7. Training and early childhood education programme**

An aspect all the stakeholders stated is that the main category of people who are about to get engaged in using the SCENT application should be the existing volunteers (the field agents who are collecting environmental data from the area) assuring in this way a first quality filter of data collected, based on their knowledge and experience. As for the new volunteers, the necessity of training was mentioned as being very important in order to make sure that the data will be collected in the best way possible. One recommendation was to organise trainings and educational classes in Danube Delta schools on environmental issues, with focus on floods. The introduction of SCENT in school curricula, i.e. familiarising children with the SCENT applications was also mentioned. One method identified in

training them was using games based on models, as for example to show them at a certain water level how the area can be flooded.

Another aspect was to involve, as volunteers in Danube Delta case study, the fisherman communities who know the area very well and based on SCENT training to provide reliable data.

#### ***Topic 8. Portable sensors & drones for on-site data collections***

The parameters that are important for flooding (monitoring and prevention) were identified: water level, discharge, water temperature especially during winter season, soil and dams' moisture, precipitations, air temperature. Very important in monitoring were underlined the infrastructure elements and their status, as for example the state of dams who are protecting the localities against floods, as well the roads which will assure the accessibility of operational teams in case of emergency. The portable sensors should be placed in situ near strategic objectives such as electrical transformers, gas transformers. The necessity of a collaboration between crowd sourcing producers and modelers was also mentioned. By using the drones, the volunteers can provide important information, as for example data on height houses, or data from critical situations such as water torrents – in the operational phase. They can also contribute in the post-assessment phase to damage assessment data that can be further used in flood risk maps.

#### ***Topic 9. Authoring tool for customizing the platform wrt local/social features***

All stakeholders, both authorities and technical experts, underlined the necessity of a filtering data mechanism but also of a high number of volunteers in order to have reliability of information collected (the information is more trustworthy).

#### ***Topic 10. Challenges/gaps in land-cover/use maps & Assessment of crowd-sourced data contribution for flood modelling & flood risk***

It was mentioned that there is the Corine Land Cover inventory whose interpretation of the satellite image is of 1 m and it captures changes at 6 years. Further, the Copernicus programme through Sentinel-1 can provide moisture data at 5 days. It must be seen that there is an interest from users in the field of floods on land use changes, especially on embankments and access roads, they are very important elements of infrastructure that satellite images can help by updating at 5-7 days. However, there is no real time and very detailed data, hence the SCENT application is very important and necessary in this context.

Two seasons for the prevention phase in which the volunteers can get involved were identified: during late spring and late summer, as for the operational/emergency phase are mentioned the months of May, June (large amount of rainfall combined with snowmelt).

## 2.3 Overview of results and key points from the Kifisos Attica focus groups

### Topic 1. COs & their potential for influencing flood management & prediction.

The panel of the first day consisted more of civil protection and operational teams at regional level (Attica Region), local level (municipalities) and of NGOs/rescue teams and volunteers. They identified the following main points regarding the current status of flood management and prediction and where a CO can ‘fit in’ in order to augment/extend existing mechanisms and operations:



Figure 37 Disaster Management Source: [www.health.gov.fj/?page\\_id=2697](http://www.health.gov.fj/?page_id=2697)

- It was emphasized that a CO can be important for all the phases of a flood event reflected in Figure 37, i.e. Preparedness, Response/Emergency/Alarm, Recovery and Mitigation
- It was mentioned that economies of scale and limited funds of all public authorities relevant to flooding are one of the most urgent and pressing reasons why COs are very relevant and interesting in this application.
- Current citizen involvement in Kifisos River Basin, Attica is only for making formal complaints in the local or regional authority in order to report damages and ask for compensation; it never targets the preparedness phase. There is a strong wish from the stakeholders that citizens are engaged in the preparedness phase, an objective that is perfectly aligned with SCENT scope and objectives.
- Aspects that can be monitored from the citizens through SCENT and are very important for the preparedness phase include but are not limited to the following:
  - Waste and brought materials in the manholes
  - Tree banks, tree branches, cars along the river bank or in smaller streams connected to the main river
  - Waste and brought materials in the smaller streams connected to the main river

The optimal period to have pilots regarding these activities are late spring, early summer where cleaning of all relevant parts takes place

- Civil protection representatives agreed that even though SCENT was not meant to address the actual emergency phase, this potential application would be very important to assist them in their work and to the evaluation of the situation. For instance currently there are incidents reported

through phone and the local or regional authority are obliged by law to determine their validity through an onsite visit; assisting them with a photo of the situation would add credibility or prioritization to the emergency without alleviating the need to actually assess the validity of the request.

- A consensus of all operational stakeholders however was that the quality of information/data provided is an important issue and that it is better that there is some sort of formalization to the input provided by citizens rather than allowing for free text or unstructured information as this can be easily misleading; Another concern besides data credibility/validity is the potential amount of the information in a case of a flood event and whereas this can actually be helpful or a burden. The role of the panic element was mentioned as a possible threat and a main cause for wrong information. Filtering techniques are suggested as a potential solution for processing info and evaluating them in order to produce risk maps and avoid just a simple overload of pictures.
- Regarding user anonymization or not, there was no real consensus on the matter; In some municipalities, there is currently a smartphone app where citizens can report street potholes; this is quite successful however there was a comment as to whether the current modus operandi (it operates with username and not with real citizen identities) is the best given that there is some effort to identify malicious or fake data.

The panel of the second day concentrated more on the existence of monitoring systems and how their shortcomings and gaps reveal the huge potential of a CO in flood monitoring and management. There are very few systems already in place in Kifisos river basin:

- Essentially, there is currently a number of meteorological stations installed in the area, as well as a number of drills for potential ground water monitoring system installation. The National Observatory of Athens is the owner of many of these stations (meteorological) and they maintain a very good monitoring system for rainfall in the region. They have also recently deployed a smartphone app (called METEONOW app) that inputs crowd-sourced information in the sense that citizens may report the extent of meteorological phenomena as they perceive them and thus fill the gaps for local phenomena monitoring.
- Moreover, HMRC has a pilot meteorological forecasting system, called POSEIDON that however concentrates on Spercheios River and not on Kifisos.
- There was a consensus that there are no other systems in place, eg to monitor water level, flow, discharges etc.
- Regarding flood risk maps, the Ministry of Environment and Energy, Special Directorate of Water is the authority responsible for implementing the 2007/60 Flood Directive. They have a repository with data (from 2012 and earlier) regarding flood risk, flood hazard and flood vulnerability maps. All such maps are freely available at their website ([floods.ypeka.gr](http://floods.ypeka.gr)) where it is evident where monitoring stations are installed. Maps are updated every 6 years.



**Topic 2. Existing monitoring systems. Is CO a step from monitoring to wisdom?**

This topic focused on the existing relationship Monitoring-Citizen and Citizen – Knowledge:

| <b>MONITORING-CITIZEN</b>   | <b>CITIZEN-KNOWLEDGE</b>  |
|---|---|
| <i>How can citizen sourced data be integrated in existing systems?</i>  | <i>How can CO improve accuracy and lead to better knowledge?</i>  |
| Technological tools should be easy to use so that they stimulate and not hinder citizen sourced information   | Mass participation resolves up to a certain degree issues of data credibility and trustworthiness, hence engagement is crucial for CO success                                       |
| Social media role is very important to create awareness and keep it   | Necessity of training all groups of observers: citizens/volunteers as well as civil protection teams using SCENT; a tool that would educate the users is important                  |
| Citizens can be the best sensors (able to process and combine information) and the worst sensors at the same time, eg propagating false information, exaggerating about event scales<br>Consensus that seeing SCENT as a game would most probably help collecting more and more frequent inputs | Data quality assessment: necessity of a quality filter of data collected by citizens, all data should be geotagged and time referenced.   |
| Interaction of citizens with the system is important, e.g. it could be interesting that the system asks user for additional data/images   | Feedback should be provided to citizens both in an immediate instance (when they have sent the information, as an acknowledgement) and also regarding where their feedback was used |

Table 23 Existing Monitoring-Citizen and Citizen – Knowledge relationships - Attica

**Topic 3. CO cookbook**

Regarding the percentage of involvement by components (people, technology and process) the stakeholders seem to converge that an optimal mix would be 80% People, 10% Technology, 10% Processes. The viewpoints regarding the importance of SCENT technology and awareness components for implementing a successful CO are reflected in the following table.

| Notes<br>SMT                                | 1 | 2 | 3 | 4 | 5 | 6 | 7        | 8    | 9        | 10       |
|---|---|---|---|---|---|---|----------|------|----------|----------|
| low-cost and portable data collection tools |   |   |   |   |   |   | √√√√√√√√ | √√√√ | √√√√√√√√ | √√√√√√√√ |



|   |  |  |    |   |          |          |          |          |      |
|---|--|--|----|---|----------|----------|----------|----------|------|
| an innovative crowd-sourcing platform   |  |  |    |   | √√√√     | √√√√√√   | √√√√√    | √√√√√√√√ | √√   |
| serious gaming applications for a large-scale image collection and semantic annotation                                  |  |  |    | √ | √        | √√√√√√√√ | √√√√√√   | √√√√     | √√√√ |
| a powerful machine learning based intelligence engine for image and text classification                                 |  |  |    |   | √√       | √√       | √√√√√√√√ | √√√√√√   |      |
| an authoring tool for an easy customization by policy makers  |  |  | √√ | √ | √√√√√√√√ | √√√√     | √√√√     | √√       |      |
| numerical models for mapping land-cover changes to quantifiable impact on flood risks                                   |  |  | √  |   | √√√√√√√√ | √√√√√√   | √√       | √        |      |
| a harmonization platform, consolidating data and adding it to GEOSS and national repositories as OGC-based observations |  |  |    |   |          | √√√√√    | √√√√     | √√√√√    |      |

Table 14 Analysis of the smart collaborative technologies (SMT) characteristics needed for CO architecture, on a scale of importance - Attica

For the first characteristic of *low-cost and portable data collection tools*, it can be observed that most participants ranked it with high importance (8 and 9), emphasizing the low cost and the usability of the tools. Most participants also consider equally important the crowd-sourcing platform (innovation is considered less important than usability of course) and also the serious gaming for creating and sustaining engagement and the machine learning intelligence engine in order to provide analytics capabilities to currently manual decisions making. Regarding technology usage in general in the CO, a common belief was that by definition, SCENT seems to not be targeted to special categories of people, e.g. the elderly that are not very familiar with the smartphone usage.

**Topic 4. Crowd-sourcing platform: smartphones & image capturing**

1. Increased Public Awareness
2. Social teaming
3. Increased Public Engagement
4. Social Change

Regarding tools for collecting crowd-sourced information, there was discussion as to whether existing channels like Facebook, Twitter and Instagram or simply a web page combined with SMS triggers could be used for gathering input. The consensus seems to be that most people are in preference of having a separate SCENT app in order to be able to do things offline and to have functionality collected in one single application. Moreover, it is considered a more clear-cut solution to ask privacy and consent questions (as to regarding the use of photos and other data) prior to installation of an app with the user being able to provide their consent or not. Several participants stated that having feedback from the system such as an ACKnowledgement (ACK) of their data being accepted by the server is important for them; moreover, fun facts information as done by Google is considered a nice way to attract their attention to the app. This will help with maintaining users for longer periods.

**Topic 5. Gamification & serious games for engaging citizens**

An almost unanimous view was the importance of gamification and serious games as a critical factor for the success of this project and of COs in general. The majority of the participants considered that even though locality plays a role (in the sense that citizens of municipalities recently affected by floods as the ones of the Western-Southern suburbs of Athens, eg Peristeri, Faliro, Moschato, Rentis, Nikaia are more probable to be interested in getting involved), engaging citizens through such means is also of utmost importance. The majority was of the view that it is more likely that people will use SCENT toolbox as a game (even more, as a competitive game in an individual, local or regional level) or because they feel that they are part of a team, than being engaged to it as an issue of societal obligation. This is more evident for the younger generations; these tools seem to be much more attractive than more old-fashioned ways of involvement and a lot of effort should be put into the design of the games to make them attractive.

**Topic 6. Exploitation of the toolbox and continuation of the SCENT movement**

All participants agreed that the engagement of citizens is maybe the most crucial part of the SCENT objectives for a successful Citizen Observatory; they also stressed the fact that you could note an initial interest for instance following some publicity, a press release or a dissemination event, however keeping the interest of citizens vivid for longer periods is something much more challenging. One of the most important facts is feedback provided to the participants: this should include an immediate acknowledgement of the reception of the information/data they have sent as well as a post-notification about where this information has been used and in what ways has it improved current flood monitoring or management. Participants indicated the following social media to be more relevant as well as popular in the Kifisos river basin (in a priority order): Facebook, Instagram, Twitter. A large number of participants pointed out the need to engage some popular personalities (however not from the political scene), e.g. actors, musicians, environmental organisations (WWF) to advertise



SCENT objectives and tools and this could increase the project activities credibility. Others brought to the discussion the idea of using companies or organisations that organise outdoor activities (e.g. trekking, cyclists) to adopt the SCENT toolbox and promote them for their members.

Finally, regarding exploitation of the citizen sourced information, there seemed to be different opinions regarding the commercial exploitation of the information: some mentioned that they would be willing to provide it even for commercial exploitation as long as they were convinced that it will be for a good cause, i.e. flood prevention or monitoring; some others were more sceptical; however all agreed that it is best to be clear towards the participants as to the exploitation of their data prior to being asked to use the SCENT toolbox and technologies.

### ***Topic 7. Training and early childhood education programme***

All participants and especially the ones involved in civil protection emphasised the importance of training of volunteers and citizens to use SCENT apps so that their contributions may actually be of use to the authorities and not the opposite; the same recommendation applies to the authorities/users of the SCENT apps. Consensus was that even though for other types of emergency, there is training and guidelines of how people should react (e.g. for earthquakes, for wildfire), for flooding emergencies training is very much missing. SCENT could use this gap in order to stress the importance of its objectives and achievements.

Many emphasised also that a good way to approach the issue is also to reveal the positive/ecology aspects of the Kifisos river, which is usually treated as a problem due to its flooding and not many people know for instance that in some parts, there is also unchannelised river basin which they could visit. This could also be the theme of SCENT organised school trips to certain regions especially in the northern part of the river that could stimulate children interest in the river and its protection.

### ***Topic 8. Portable sensors & drones for on-site data collections***

The panel of the second day of the workshop was requested to identify parameters that are important for flooding (monitoring and prevention) and there was consensus of the following parameters being of interest:

- Water level
- Velocity of surface water
- Moisture
- Rainfall
- Water temperature
- Air temperature
- Vegetation in the river bank
- Waste and brought materials in the manholes
- Tree banks, tree branches, cars along the river bank or in smaller streams connected to the main river
- Waste and brought materials in the smaller streams connected to the main river



Several innovative ideas were brought into the table to alleviate the budget issue and the limited monitoring systems that exist to assist SCENT in its activities. Stakeholders agreed that although citizen sourced information is very important, it is equally important to have some specific measuring points with more accurate in-situ equipment that can also be used to calibrate people-centric sensor web. Ideas that were brought up included the use of using camera footage to calculate water velocity and water level and also using water level tapes, attached at specific critical points of the river bank where citizens may help determining the real-time level by taking an image of the measurement; another idea was to monitor people mobility during an emergency via using the cells of the mobile network from their smartphone signals. Finally, regarding drones, everyone seemed to agree that this is very important source of information yet the legal framework for operation was not clear and that they can definitely be used only in the prevention and the post-assessment phase and not in the emergency phase.

#### ***Topic 9. Authoring tool for customizing the platform wrt local/social features***

The system usability and especially the user interface is considered very important to the authorities; current structures and tools of the authorities should be considered in the interoperability design. The interface should have a straightforward way to visualise the density of observations as well as the credibility factor determined by the SCENT toolbox regarding the observations. For the emergency phase, individual images (geotagged) could also be of interest however there should be a filtering mechanism so that the authorities are not overloaded with information. Moreover, discussion should take place with the specific stakeholders, as different departments (e.g. Civil protection, hydraulic works, etc.) require different parameters and aspects to be presented to them.

#### ***Topic 10. Challenges/gaps in land-cover/use maps & Assessment of crowd-sourced data contribution for flood modelling & flood risk***

Flood modellers (both working in research projects and academic institutions and the national authorities) all agreed that current flood risk maps and flood hazard maps are updated in intervals which are not satisfactory enough. Modellers mentioned that current taxonomies used for similar purposes are Corine Land Cover and Lucas (less often) however everyone agreed that they are insufficient for a detailed and real-time monitoring. Experts also overstated the importance of scale in performing and validating flood simulations. A system where the density of observations is easily visualised to the authority would be very attractive in order to be able to appreciate the importance of information generated by citizens.

Moreover, from certain stakeholders it was emphasized that the underground water network is very important for assessing the parameters leading to flooding and usually there is insufficient information for this; a rough workaround for this would be to have citizens take images also of the metal manhole covers in order to have an approximation of the network. Parameters that are interesting to know are the water levels in the higher and the medium part of the Kifisos river, despite the fact that these regions are not suffering flooding; the reason is that due to the behavior of the flood in these two regions, phenomena have an avalanching effect in the lower parts of the river basin. Regarding optimal

periods, for the prevention phase, it seems that pilot campaigns should better take place in late spring/early summer, whereas for the emergency/flooding monitoring phase, if this is to be considered within the SCENT scope, then April, October and November are the months where rainfall is more intense and flood events are more frequent.



### Annex 3 Informed consent forms

For the needs of Task 1.1 and the current deliverable, there was essentially one consent form, provided in two different formats; one handed over to participants of the focus groups and to people interviewed or e-mailed in order to fill in the questionnaires and one appended to the beginning of the online surveys which followed a simpler approach, where the participants were asked to click if they agree with the various statements. Nevertheless, the content in both formats is the same and is provided below. One should note that the consent forms were translated in Greek and Romanian language so that there is no language barrier for the participants.

#### Informed consent form SCENT project

You are being asked to participate in a research study for the SCENT project. Participation is completely voluntary. Please read the information about the project, its aims, and the gathering of user needs in the SCENT Content Sheet and ask questions about anything that you do not understand.

I, the undersigned, confirm that (please tick box as appropriate):

|    |   |                          |
|----|---|--------------------------|
| 1. | I have read and understood the information about the project, as provided in the SCENT Content Sheet.   | <input type="checkbox"/> |
| 2. | I have been given the opportunity to ask questions about the project and my participation.  | <input type="checkbox"/> |
| 3. | I voluntarily agree to participate in the project.  | <input type="checkbox"/> |
| 4. | I understand I can withdraw myself and my data from the project at any time without giving reasons and that I will not be penalised for withdrawing nor will I be questioned on why I have withdrawn. | <input type="checkbox"/> |
| 5. | The procedures regarding confidentiality have been clearly explained (in this case anonymisation of data) to me.  | <input type="checkbox"/> |
| 6. | If applicable, separate terms of consent for interviews, audio, video or other forms of data collection have been explained and provided to me.   | <input type="checkbox"/> |
| 7. | The use of the data in research, publications, sharing and archiving has been explained to me. I understand that data will either be destroyed or reused at the end of the research.                  | <input type="checkbox"/> |
| 8. | I understand that other researchers will have access to this data only if they agree to preserve the confidentiality of the data and if they agree to the terms I have specified in this form.        | <input type="checkbox"/> |
| 9. | Select only <b>one</b> of the following:  | <input type="checkbox"/> |



## Annex 4 Questionnaires & online surveys

### Questionnaire addressed to policy makers (Level I)

The questionnaire addressed to policy makers in the two regions was also translated to the local languages (Greek, Romanian) however in this deliverable the English version is provided:

1. Regarding existing monitoring frameworks
  - a. Does your institution own any monitoring system that collects flood related data?
  - b. If answer to previous question is yes please specify the type of data that is collected: water levels, discharges, other (please specify);
  - c. How often is data collected: twice a day, daily, weekly, monthly, other (please specify)
  - d. What is the monitoring network based on? sensor data, on-site collection done by your employees, combination of the above (please mention %), other (please specify)
  - e. Is the monitoring system covering the whole area (i.e. DD or Kifisos catchment)?
  - f. If the answer to previous question is no, what is the area that is covered by the monitoring system?
  - g. Though you collect data, are you also acquiring data from another institution? (If yes, please mention the name of the institution(s))
  - h. If you are not the owner of a monitoring system, are you still collecting data, by acquiring it from another institution? (If yes, please mention the name of the institution(s))
  - i. During a flood event are you in any way collecting and verifying data coming from citizens reporting it? (If yes, please describe)
2. Objectives for Short Term, Medium and Long
  - a. What is the reason for collecting data? Short term planning, medium term planning, long term planning (for protection against flood)
  - b. How is collected data used? Taking decisions in flood emergency situations, incorporated in a modelling framework, other (please specify)
  - c. Are there any decision taken based on data provided by the monitoring system? (please detail the protocol)
3. Is data collected from the monitoring system used in any decision making and at which level (local, regional, national)?
  - a. If yes, how are the data used in decision making? Are the data processed first?
  - b. Could you please provide one or two use cases of the data in decision making? Please describe the actors and their actions.
4. Historic data (Biotic, Abiotic, Societal Components): Apart from flood data, are you collecting the following type of data? Biotic, abiotic, societal components
5. Dissemination (reports, publications, etc.)
  - a. Is collected data stored as written reports, electronic reports, databases, other (please specify)
  - b. Is collected data publicly available?



- c. If answer is yes, please detail how and where?
  - d. If answer to b. is yes, do citizens have access to it?
6. Resources, stakeholders involved?
- a. List the institutions with whom you are collaborating in case of a flood event?
  - b. . Please mention and describe the input of each stakeholder you are involving in the monitoring process.
7. What is the role of citizens in the monitoring framework?
- a. For flood related problems do you consider that citizen involvement would be valuable?
  - b. If yes, in which way citizens could be of help? Collecting data throughout the year; informing about special issues during a flood event; other (please explain)

**Questionnaire addressed to experts (flood modellers, sensor experts, remote sensing experts, national and regional authorities, meteorological data providers, etc.) (Level II)**

1. Do you own an exploratory research/ a monitoring program for the [Kifisos River, Attica Region or Danube Delta] regarding flood hazards and their environmental related issues?
- a. If yes, please mention the type of exploratory research/ monitoring you are carrying out.
  - b. Please describe/mention briefly the concept, strategy, legal framework.
  - c. Are the objectives of exploratory research/ monitoring targeting Short and/or Medium and/or Long term planning?
  - d. Is data collected from the exploratory research/ monitoring used in any decision making and at what level (local, regional, national)?
  - e. Do you follow any open data sharing policy in this exploratory research/monitoring program? If yes, please detail.
  - f. Does it provide warnings and/or determine the level of emerging threats related to flood events?
2. What is missing from the current activities of exploratory research/ monitoring? Problems can be relevant but not limited to infrastructure costs, maintenance costs, unavailability of data for monitoring, low engagement of the policy makers, technical constraints of monitoring equipment, or other.
3. Are these issues managed currently? How are these problems solved/mitigated currently? Are there any future developments of this activities (EC-funded or national projects, legal initiatives, governance programs)?
4. Please provide your agreement/disagreement (1=strongly disagree, 5=strongly agree) with the following statements:
- a. Maintaining accurate and updated land-cover and land-use maps is important for monitoring flood hazards and their environmental related issues.



- b. The accuracy of current land-cover and land-use maps (egCorine Land Cover) is sufficient for monitoring flood hazards and their environmental related issues.
  - c. The current rate of updates in land-cover and land-use maps (egCorine Land Cover) is sufficient for monitoring flood hazards and their environmental related issues.
  - d. Current established taxonomies describing rural areas (eg references to ‘coniferous forest’, ‘mixed forest’, ‘sparsely vegetated areas’, ‘burnt areas’ in Corine Land Cover) are sufficient for monitoring flood hazards in those areas.
    - i. If your answer is less than 4 please shortly describe elements or features missing
  - e. Current taxonomies describing urban areas (eg references to ‘industrial sites’, ‘dump sites’, ‘construction sites’, ‘road and rail networks’ in Corine Land Cover) are sufficient for monitoring flood hazards in those areas.
    - i. If your answer is less than 4 please shortly describe elements or features missing
  
- 5. What are the parameters that are necessary to determine the extent and behavior of floods in your region (Kifisosriver, Attica Region or Danube Delta)? Please select one or more from the following list: water level, water conductivity, soil moisture, soil conductivity, water temperature, air temperature, water surface velocity, digital elevation, other. Are these parameters monitored? Is there an open data base comprising all these parameters?
  
- 6. Please mention if you are aware of the existence of any environmental program that fulfills the future needs based on the current situations?
  
- 7. Please mention your agreement/disagreement (1=strongly disagree, 5 =strongly agree) with the following statements:
  - a. Citizen sourced information is not relevant with the current flood monitoring programs of Kifisos River, Attica and Danube Delta
  - b. Citizen sourced information could be of assistance to current flood monitoring programs of Kifisos River, Attica and Danube Delta however this kind of data is not sustainable.
  - c. Citizen sourced information could be of assistance to current flood monitoring programs of Kifisos River, Attica and Danube Delta however this kind of data is insecure or has privacy issues.
  
- 8. What should be the features of a long term flood monitoring program in the Kifisos River, Attica Region or Danube Delta?
  
- 9. Are the exploratory research/ monitoring program results used:
  - a. For the future changes and trends (Climate changes, global changes, mitigation measures etc?)
  - b. For societal and economic impacts analysis
  - c. Relative European legislative framework (e.g. WFD, Flood Directive etc)



10. Please state your level of agreement with the following statement (1=strongly disagree, 5=strongly agree): ‘I believe that VGI (Volunteered Geographic Information) and in general citizen-sourced information may provide valuable input for the monitoring of land-cover and land-use changes and for monitoring critical environmental phenomena such as floods’. If your answer is 1-3, please select from the following list reasons for this or add one that is not included:
- a. Data quality and ways to validate it
  - b. Limited engagement of citizens
  - c. Lack of feedback to citizens on the impact of their actions
  - d. Insufficient training and/or exposure to technologies related to monitoring these issues
  - e. Policy makers are not willing to use this information
  - f. Security and data protection issues
  - g. Fear that the input provided by citizens will be commercially exploited by a company without their consent and knowledge
  - h. Other, please describe.
11. Please state your level of agreement/disagreement with the following statements (1=strongly disagree, 5=strongly agree). A citizen observatory must include the following components
- a. A multidisciplinary advisory panel
  - b. Well defined catalogues of information resources
  - c. An online component that serves as a discussion and information exchange forum
  - d. Active research, modelling and diagnostic programs to assist in the selection of the best indicators of environmental conditions (emergency situations), now and in the future
  - e. Quality assurance programs for data collection and management to ensure comparability, accuracy, precision and usefulness over the long term
  - f. Reporting element that regularly conveys the Citizen observatory findings to both scientific community and policy decision makers
  - g. Open access to citizen sourced information
  - h. Close coordination among related programs or organisations that may/want be involved

### Questionnaire addressed to citizens and volunteers (Level III)

The third level of questionnaires is addressed to citizens and volunteers. This comprised two parts: one that is mostly relevant to the current citizen attitudes towards environmental issues and their contribution to them which is relevant to Task 2.2 and, thus, will be presented in Deliverable 2.2 SCENT Research Report on citizen attitudes and behaviours and one which is related to gathering input from the citizen/user needs regarding SCENT innovations and components; the latter is shown in what follows:

1. Smartphone use
  - a. Do you own a smartphone? (Yes, No, Don’t know) – (If No is selected, Then Skip to 1.e.)



- b. If yes, which operating systems is it running? (multiple choice: iOS, Android, Windows, Others, Don't know)
- c. Do you have a data plan (a data plan allows you to access the Internet from your phone via cellular network)? (Yes, No, Don't know)
- d. Does your phone have Bluetooth? (Yes, No, Don't know)
- e. Please indicate in the table below how often you engage in the following. (Multiple times per day; Once per day, Few times per week, Few times per month, Rarely, Never)
  1. Use the Internet on your smartphone? – (Displayed if Yes is selected in 1.a.)
  2. Use social networks e.g. Facebook, Twitter, etc.?
  3. Contribute to public forums or blogs?
  4. Use your phone to take pictures?
  5. Use messaging apps (WhatsApp, Facebook Messenger etc.)?
  6. Share content online e.g. upload pictures, share articles, etc.?
- f. Which social networks do you use? Please select all that apply. (Facebook, Twitter, Google+, LinkedIn, Instagram, Other) – (Skipped if Never is selected in 1.e.2)
- g. Which chat applications do you use? Please select all that apply. (WhatsApp, Telegram, Facebook Messenger, Slack, Hangouts, Other) – (Skipped if Never is selected in 1.e.5)
- h. Which forums or blogs do you use? – (Skipped if Never is selected in 1.e.3)

## 2. On SCENT gaming applications

- a. Do you play games with your mobile device? (Yes, No, Don't know) – (If No is selected, Then Skip to 2.d)
- b. Which type of games do you like to play? (Free text)
- c. Do you like immersive/augmented reality games? (for example Pokemon Go!) (Yes, No, Don't know)
- d. How often are you willing to participate in SCENT activities? These activities may include the following:
  - We will send you pictures of both urban and rural landscapes and you will need to describe what you see.
  - We will organize demonstration campaigns where citizens will visit specific sites in your local area and be asked to take photos with their smartphones? (A great deal, A moderate amount, Occasionally, Rarely, Never)
- e. When playing a game, do you prefer to collaborate or compete? (Compete, Collaborate, Neither, Don't know) – (Skipped if No is selected in 2.a)

## 3. On SCENT portable devices



- a. Would you be willing to carry a portable sensor system for contributing to environmental monitoring and flood risk mapping? (Yes, no, maybe, don't know) – (If No is selected, Then Skip to 3.f)
- b. What is the ideal weight of a portable sensor system that you are willing to take while making on-site visits? (Less than 100 gr, Less than 250 gr, Less than 500 gr)
- c. What is the ideal size of a portable sensor system that you are willing to carry while making on-site visits? (A packet of matches, The size of a smartphone, The size of a tablet)
- d. What is the expected battery lifetime that you expect from the aforementioned system? (Needs charging every 24 hours, Needs charging every 48 hours, Needs charging once a week)
- e. What kind of feedback do you expect as a user of the sensor monitoring smartphone application?
  - i. Statistics of personal uploaded sensor data?
  - ii. Statistics of uploaded sensor data from the overall citizen community?
  - iii. Other?
- f. You will be invited to take an image from your smartphone and also insert some text describing what you have captured. Do you prefer that this is
  - i. Free text in local language
  - ii. Free text in English or local language (indifferent)
  - iii. Selection from a drop-down list
  - iv. Selection from a list of images.

#### 4. On SCENT drones

- a. Do you own a drone? (Yes, No, Don't know) – (If No is selected, Then Skip to 5.a)
- b. Would you be willing to deploy your own drone for the SCENT project?
- c. Do you use your drones for leisure or work? (Leisure, Work, Both)
- d. Do you own one or more drones with a camera? (Yes, No, Don't know)
- e. Is your drone with camera a multicopter or a fixed wing? (Multicopter, Fixed Wing, I own both)
- f. If you own a drone with a camera, which size class is it? (Very Small (like for instance Hubsan x4, or Parrot MiniDrone, or MJX RC X400 or similar), Small (like for instance 3DR Solo model, or DJI Phantom/Mavic or Yuneek Breeze or similar or Parrot Disco FPV fixed wing example), Medium (like for instance DJI Inspire, or Yuneek Typhoon or similar), Large/Professional (like for instance DJI Matrix100 or 600, DJI Spreading Wings S900/1000, or SenseFlyBee or Gatewing X100 or similar)
- g. What kind of sensor has your drone onboard? (Optical camera, Infrared camera, Thermal camera, Hyperspectral camera, LiDAR, Other .....(specify))
- h. What kind of feedback do you expect as a user of Drones?

- i. Photos and Maps generated with your personal uploaded Drone data?
- ii. Photos and Maps of your uploaded Drone data from the overall citizen community?
- iii. Other?

#### 5. On SCENT crowd-sourcing platform

- a. Would you be willing to contribute to environmental monitoring and flood risk mapping by providing us with some textual description of the environment surrounding you? (Yes, No, Maybe, Don't know)
- b. Would you be willing to contribute to environmental monitoring and flood risk mapping by filling some short questionnaires from your mobile phone? (Yes, No, Maybe, Don't know)
- c. Would you be willing to contribute to environmental monitoring and flood risk mapping by taking pictures of the surrounding environment and sharing them with us? (Yes, No, Maybe, Don't know)
- d. Do you know what a QR code is and how to use them? (Yes, No, Don't know)
- e. Do you know what is a beacon and how it works? (Yes, No, Don't know)

#### 6. On flood models

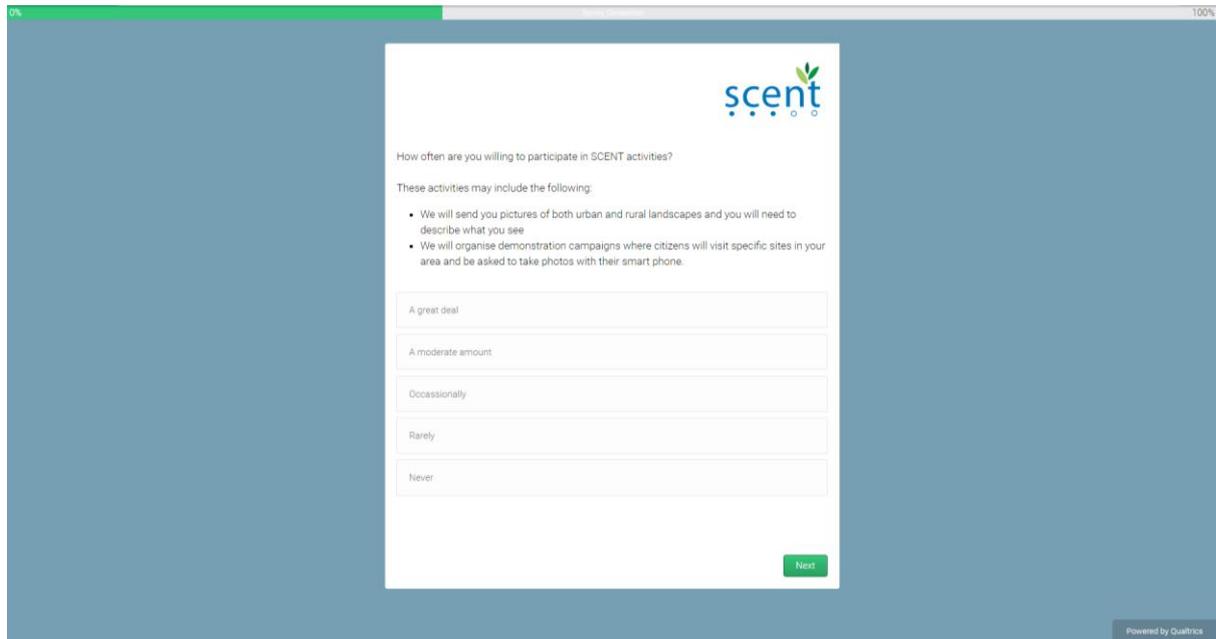
- a. Do you know what a flood model is? (Yes, No, Don't know)
- b. Do you know what is the difference between a flood hazard map and a flood risk map? (Yes, No, Don't know)
- c. Do you know how to interpret (read) a flood map? (Yes, No, Don't know)
- d. Do you trust results shown by a flood map as a result of a model? (If No is selected in 6.a, Then Skip to 6.f)
- e. Do you think that a flood model can improve flood predictability, and as such safety against flood, if data collected by citizens is provided to modellers?
- f. Are you willing to get involved in collecting data to be used by flood modellers? (Yes, No, Don't know)

#### 7. Demographics

- a. Age group (Under 18, 18-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75+, prefer not to say)
- b. Gender (Male, Female, Other, Prefer not to say)
- c. Postcode
- d. Employment status (Employed full time, Employed part time, Unemployed looking for work, Unemployed not looking for work, Retired, Student, Disabled) – (If Unemployed looking for work, Unemployed not looking for work, Student or Disabled is selected, Then Skip to 7.f)
- e. Occupation
- f. Home ownership (Own outright, Own with a mortgage, Rental, Living with family, Other)
- g. Level of education: Age they finished education (15 years or less, 16-19 years old, 20 or more years old, Still in education)



### Example page from Online Survey (English)



0% 100%



How often are you willing to participate in SCENT activities?

These activities may include the following:

- We will send you pictures of both urban and rural landscapes and you will need to describe what you see
- We will organise demonstration campaigns where citizens will visit specific sites in your area and be asked to take photos with their smart phone.

A great deal

A moderate amount

Occasionally

Rarely

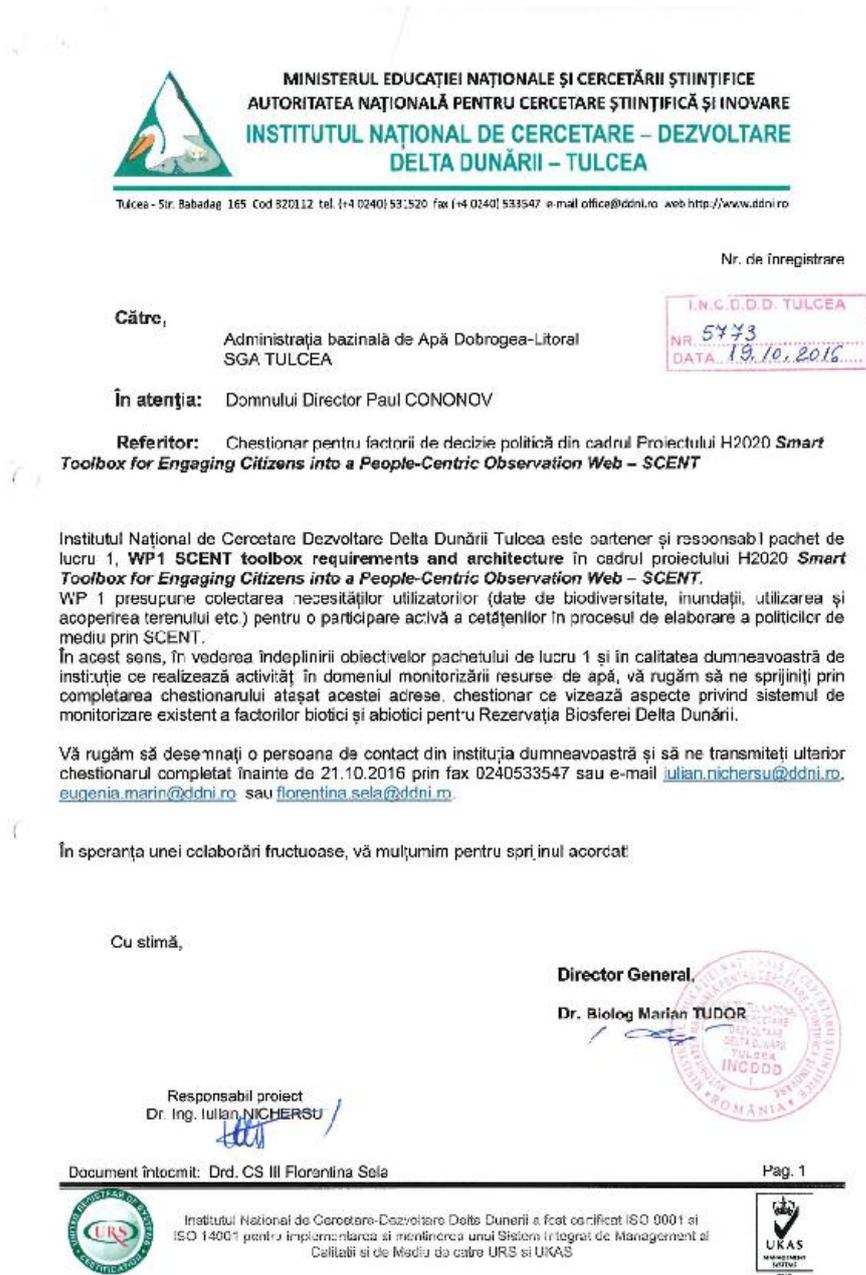
Never

[Next](#)

Powered by Qualtrics

## Annex 5 Example of Official Address Questionnaires Level I

Example of Romanian Official Address Questionnaires Level I



**MINISTERUL EDUCAȚIEI NAȚIONALE ȘI CERCETĂRII ȘTIINȚIFICE**  
**AUTORITATEA NAȚIONALĂ PENTRU CERCETARE ȘTIINȚIFICĂ ȘI INOVARE**  
**INSTITUTUL NAȚIONAL DE CERCETARE – DEZVOLTARE**  
**DELTA DUNĂRII – TULCEA**

Tulcea - Str. Babadag 165 Cod 820112 tel. (+4 0240) 531520 fax (+4 0240) 533547 e-mail office@ddni.ro web http://www.ddni.ro

Nr. de înregistrare

**Către,** Administrația bazinală de Apă Dobrogea-Litoral  
 SGA TULCEA

**În atenția:** Domnului Director Paul CONONOV

**Referitor:** Chestionar pentru factorii de decizie politică din cadrul Proiectului H2020 *Smart Toolbox for Engaging Citizens into a People-Centric Observation Web – SCENT*

Institutul Național de Cercetare Dezvoltare Delta Dunării Tulcea este partener și responsabil pachet de lucru 1, **WP1 SCENT toolbox requirements and architecture** în cadrul proiectului H2020 *Smart Toolbox for Engaging Citizens into a People-Centric Observation Web – SCENT*. WP 1 presupune colectarea necesităților utilizatorilor (date de biodiversitate, inundații, utilizarea și acoperirea terenului etc.) pentru o participare activă a cetățenilor în procesul de elaborare a politicilor de mediu prin SCENT. În acest sens, în vederea îndeplinirii obiectivelor pachetului de lucru 1 și în calitate dumneavoastră de instituție ce realizează activități în domeniul monitorizării resurse de apă, vă rugăm să ne sprijiniți prin completarea chestionarului atașat acestei adrese, chestionar ce vizează aspecte privind sistemul de monitorizare existent a factorilor biotici și abiotici pentru Rezervația Biosferei Delta Dunării.

Vă rugăm să desemnați o persoană de contact din instituția dumneavoastră și să ne transmiteți ulterior chestionarul completat înainte de 21.10.2016 prin fax 0240533547 sau e-mail [julian.nichersu@ddni.ro](mailto:julian.nichersu@ddni.ro), [eugenia.marin@ddni.ro](mailto:eugenia.marin@ddni.ro) sau [florentina.sela@ddni.ro](mailto:florentina.sela@ddni.ro).

În speranța unei colaborări fructuoase, vă mulțumim pentru sprijinul acordat.

Cu stimă,

**Director General,**  
**Dr. Biolog Marian TUDOR**

Responsabil proiect  
 Dr. Ing. Iulian NICHERSU

Document întocmit: Drd. CS III Florantina Sela Pag. 1

Institutul Național de Cercetare-Dezvoltare Delta Dunării a fost certificat ISO 9001 și ISO 14001 pentru implementarea și menținerea unui Sistem Integrat de Management al Calității și de Mediu de către URS și UKAS



## Example of Greek Email text accompanying Questionnaire Level I



Αγαπητή/έ,

Σας γράφουμε για να ζητήσουμε τη βοήθεια σας σε μια έρευνα που διεξάγουμε στο πλαίσιο του ευρωπαϊκού ερευνητικού έργου SCENT. Στόχος της έρευνας είναι να ευαισθητοποιήσει πολίτες αλλά και ειδικούς όπως εσείς, στο να συμμετάσχουν ενεργά στην παρακολούθηση περιβαλλοντικών φαινομένων στην περιοχή τους. Το έργο ευελπιστεί να επηρεάσει φορείς τοπικής, περιφερειακής και εθνικής πολιτικής σε περιβαλλοντικά ζητήματα.

Παρακάτω παραθέτουμε το σύνδεσμο στην έρευνα αυτή ώστε να ακούσουμε τις απόψεις σας για τις πλημμύρες στην περιοχή σας και πώς μπορεί να βελτιωθεί η διαχείριση και η πρόβλεψή τους. Στο έργο SCENT θα κάνουμε χρήση μιας εργαλειοθήκης από καινοτόμες τεχνολογίες για την βελτίωση και επικαιροποίηση των χαρτών και κατ' επέκταση την βελτίωση μοντέλων πρόβλεψης πλημμυρών. Οι τεχνολογίες περιλαμβάνουν φορητούς αισθητήρες χαμηλού κόστους, πλατφόρμα πληθοπορισμού (crowd-sourcing), ψηφιακά παιχνίδια για τη συλλογή φωτογραφιών μεγάλης κλίμακας, μηχανική εκμάθηση (machine learning) για την ταξινόμηση φωτογραφιών και κειμένου, αριθμητικά μοντέλα για τη χαρτογράφηση των αλλαγών στην κάλυψη και χρήση γης και την ποσοτικοποίηση του αντίκτυπου σχετικά με τους κινδύνους πλημμυρών και, τέλος, πλατφόρμα τυποποίησης σε κοινά περιβαλλοντικά πρότυπα όπως το OGC, για την ενοποίηση των στοιχείων που θα συλλεγούν και την προσθήκη τους στο GEOSS.

Η έρευνα διεξάγεται σε δύο πιλοτικές περιοχές που αντιμετωπίζουν σοβαρά θέματα από τις πλημμύρες και είναι η λεκάνη του Κηφισού στην Αττική και η περιοχή του Δέλτα του Δούναβη στη Ρουμανία. Πιστεύουμε ακράδαντα ότι η ενεργός συμμετοχή των πολιτών θα βοηθήσει να μειωθούν οι σημαντικές ζημιές και οι κίνδυνοι που προκύπτουν από πλημμυρικά φαινόμενα στην περιοχή σας και να επηρεάσει την πολιτική σε σχέση με το περιβάλλον εν γένει.

Σύνδεσμος έρευνας

Επίσης θα θέλαμε να σας ενημερώσουμε για την διεξαγωγή εστιασμένων ομάδων συζήτησης (focus groups) που θα πραγματοποιηθούν στην περιοχή σας στις 1 και 2/12/2016. Αν επιθυμείτε να λάβετε περισσότερες πληροφορίες για την διοργάνωση αυτή, παρατίθενται λεπτομέρειες στο τέλος της έρευνας.

Για περισσότερες πληροφορίες σχετικά με το έργο παρακαλώ επικοινωνήστε με την κα Δήμητρα Αλεξοπούλου, Περιφέρεια Αττικής, Δ/ση Αναπτυξιακού Προγ/σμου, Τμήμα Εφαρμογής Προγ/των & Έργων, τηλ: 2132065221, email: [dalexopoulou@patt.gov.gr](mailto:dalexopoulou@patt.gov.gr)

## Example of Romanian Filled Questionnaires Level I

### WP1 CHESTIONAR(1)

#### Nivel 1 Chestionar pentru factorii de decizie politica

1. Ce ne puteti spune despre cadrul de monitorizare existent (concept, teorie, legislatie)?

Da, conform HG 107/2002 privind infiintarea ANAR cu modificarile si completarile ulterioare, SGA Tulcea monitorizeaza calitatea si protectia apelor atat calitativ cat si cantitativ, si datele hidrologice pentru exploatarea constructiilor hidrotehnice la parametrii proiectati.

a. Instructiunea dvs. detine vreun sistem de monitorizare? Da, instructiunea detine un sistem de monitorizare.

Exista si o monitorizare a datelor privind inundatiile?

Da, exista o monitorizare a datelor privind inundatiile.

b. Daca raspunsul la intrebarea anterioara este afirmativ, va rugam sa specificati tipul de date care sunt colectate: niveluri de apa, altele (va rugam specificati)

Datele colectate sunt: nivelul apei, debite de apa si cantitati de precipitatii.

c. Cat de des sunt datele colectate: de doua ori pe zi, saptamanal, lunar, altele (specificati)  
Datele sunt colectate de 2 ori pe zi in situatii normale si de 6-8 ori pe zi in situatii exceptionale (inundatii).

d. Pe ce anume se bazeaza reseaua de monitorizare? Senzori, colectare a datelor din teren, combinatie a celor mai sus mentionate (procent...%), altele...

Reseaua de monitorizare se bazeaza pe colectarea datelor de la observatorii din teren cat si de la statiile automate.

e. Sistemul de monitorizare acopera intreg arealul Deltei Dunarii? Da.

f. Daca raspunsul este nu, care este suprafata acoperita de sistemul de monitorizare?

g. Datele sunt preluate de alte institutii? (daca da, va rugam sa ne spuneti institutiile responsabile)

Da, primarii, societati comerciale, institutii de profil (capitania, AFDJ, ARBDD, Garda de

Mediu)

h. In cazul unei inundatii colectati si verificati datele provenite de la populatia locala? (daca da, descrieti in ce fel)

Da, prin Grup de Suport Tehnic al Consiliului Judetean pentru Situatii de Urgenta organizat la nivelul SGA Tulcea)

2. Care sunt obiectivele pe termen scurt, mediu si lung?

Urmărirea, supravegherea și pastrarea calitatii apelor.

a. Care este motivul pentru colectarea datelor? Planificarea pe termen scurt, planificarea pe termen mediu, planificarea pe termen lung (de protectie impotriva inundatiilor)

Pastrarea calitatii apelor cu planificare pe termene scurt, mediu si lung.

Cum sunt utilizate datele colectate? Luarea deciziilor in situatii de urgenta, incorporate in modelare, altele.

Datele colectate sunt stocate si gestionate intr-un sistem informational. In caz de situatii de urgenta se actioneaza conform planurilor de aparare intocmite la nivel judetean, de primarii si societati comerciale

b. Aveti cunostinta de existenta unor decizii luate pe baza datelor furnizate de sistemul de monitorizare (detaliati decizia)

In 2006 in perioada iunie – iulie, in urma datelor furnizate de către sistemul de monitorizare, respectiv evoluția cotelor Dunării și ale Deltei Dunării, la nivelul Comitetului Județean pentru Situații de Urgență s-a luat decizia de a se rupe controlat digul cordon litoral pentru descarcarea surplusurilor de debite ce amenințau inundarea

localitatilor din Delta Dunarii.

3. La ce nivel sunt utilizate datele furnizate de sistemul de monitorizare(local, regional,national)?

La nivelele local, regional si national.

- a. Daca da, modul in care sunt datele utilizate in procesul de luare a deciziilor?Da,prin Grupul de Suport Tehnic al CJSU.

Datele sunt procesate mai intai?Da, de Grupul de Suport Tehnic al CJSU, compartimente din cadrul SGA Tulcea,Laborator SGA Tulcea.

- b. Ati putea sa oferiti unul sau doua cazuri de utilizare a datelor in procesul de luare a deciziilor? Va rugam sa descrieti actorii si actiunile lor.

-Aparare de inundatii-Grup de Suport Tehnic-CJSU-CL

-Poluari accidentale-SGA Tulcea-Garda de Mediu-ARBDD-Capitania Tulcea-Politia de Frontiera

4. Detineti date istorice(biotice,abiotice,componente sociale)?

- a. In afara de date despre inundatii, colectati urmatoarele tipuri de date: biotice, abiotice,componente sociale

Da, la anumite sectiuni.

5. Diseminare(rapoarte,publicatii, etc.)? Raportare locala .

- a. Cum sunt pastrate datele?Rapoarte scrise, rapoarte in format electronic, baze de date, altele(va rugam sa specificati)

Prin rapoarte scrise,rapoarte in format electronic, baze de date.

- b. Datele colectate sunt publice?Da.

- c. Daca raspunsul este afirmativ, va rugam detaliami cum si unde?

Site ABADL, ANAR, SGA Tulcea la cerere.

- d. Daca raspunsul la punctul b, este da, populatia are acces la aceste date?

Da, la cerere.

6. Resurse, factori de decizie implicati?Da.

- a. Dorim sa ne furnizati o lista cu institutiile cu care colaborati in cazul unei inundatii.

Primarii,institutii publice(ARBDD,AFDJ-Capitanie,Ministerul Afacerilor Interne),JJSU, Prefectura, societati comerciale care au diguri

- b. Va rugam sa mentionati si sa descrieti aportul fiecarui factor de decizie care este implicat in procesul de monitorizare.

Conform protocoalelor incheiate.

7. Care este rolul populatiei in procesul de monitoring?Are rol primordial.

- a. Pentru problemele legate de inundatii considerati ca implicarea cetatenilor ar fi de valoare?

Da, foarte mare.

- b. Daca raspunsul este afirmativ, in ce mod poate ajuta populatia? Sa colecteze date de-a lungul anului, sa informeze despre probleme speciale din timpul unei inundatii, altele(va rugam explicati)

Sa participe la interventii si actiuni.

## Example of Greek Filled Questionnaires Level I

### A. Σχετικά με το υπάρχον πλαίσιο παρακολούθησης:

1. Ο Φορέας σας κατέχει κάποιο σύστημα συλλογής δεδομένων σχετικών με τις πλημμύρες; **ΟΧΙ. ΣΕ ΟΡΙΣΜΕΝΕΣ ΠΕΡΙΠΤΩΣΕΙΣ ΜΕΓΑΛΩΝ ΚΑΤΑΣΤΡΟΦΩΝ ΣΥΛΛΕΓΟΥΜΕ ΚΑΙ ΔΙΑΝΕΜΟΥΜΕ ΣΕ ΟΛΟΥΣ ΤΟΥΣ ΕΜΠΛΕΚΟΜΕΝΟΥΣ ΦΟΡΕΙΣ ΔΕΔΟΜΕΝΑ ΤΟΥ ΕΥΡΩΠΑΙΚΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ COPERNICUS EMS ΤΟ ΟΠΟΙΟ ΑΞΙΟΠΟΙΩΝΤΑΣ ΔΟΡΥΦΟΡΙΚΑ ΔΕΔΟΜΕΝΑ ΑΠΟΤΥΠΩΝΕΙ ΤΗΝ ΕΚΤΑΣΗ ΚΑΙ ΤΗΝ ΧΩΡΙΚΗ ΚΑΤΑΝΟΜΗ ΤΩΝ ΠΛΗΜΥΡΙΣΜΕΝΩΝ ΕΚΤΑΣΕΩΝ (ΔΕΙΤΕ ΣΧΕΤΙΚΟ ΕΠΙΣΥΝΑΠΤΟΜΕΝΟ ΑΡΧΕΙΟ)**
  - a) Αν ναι παρακαλώ διευκρινίστε το είδος και τον τύπο των δεδομένων: π.χ. στάθμη νερού, λεκάνες απορροής, άλλο
  - b) Κάθε πότε γίνεται η συλλογή των δεδομένων: δυο φορές τη μέρα, ημερησίως, εβδομαδιαίως, μηνιαίως, άλλο
  - c) Με ποια μέθοδο γίνεται η συλλογή των δεδομένων; Αισθητήρες, συλλογή επί-τόπου από προσωπικό του φορέα, συνδυασμός των ανωτέρω (παρακαλώ αναφέρετε το ποσοστό), άλλο
  - d) Το σύστημα συλλογής δεδομένων καλύπτει ολόκληρη την περιοχή του Κηφισού;
  - e) Αν όχι, ποιες περιοχές καλύπτονται;
  - f) Πέρα από το σύστημα συλλογής δεδομένων του φορέα σας, συνεργάζεστε με κάποιο άλλο οργανισμό για την απόκτηση ανάλογων δεδομένων; (Αν ναι παρακαλώ να αναφέρετε τον οργανισμό-ους)
2. Αν ο φορέας δε διαθέτει κάποιο σύστημα συλλογής δεδομένων, συνεργάζεστε με κάποιο άλλο φορέα για την απόκτηση των δεδομένων; Αν ναι παρακαλώ να αναφέρετε τον οργανισμό-ους)  
**ΣΥΝΕΡΓΑΖΟΜΑΣΤΕ ΜΕ ΤΗΝ ΕΙΔΙΚΗ ΓΡΑΜΜΑΤΕΙΑ ΥΔΑΤΩΝ**
3. Κατά τη διάρκεια ενός πλημμυρικού φαινομένου συλλέγετε και πιστοποιείτε δεδομένα που προέρχονται από τους πολίτες; (αν ναι παρακαλώ περιγράψτε τον τρόπο)  
**ΔΕΝ ΣΥΛΛΕΓΟΥΜΕ ΣΥΣΤΗΜΑΤΙΚΑ ΣΤΟΙΧΕΙΑ ΑΛΛΑ ΠΟΛΛΕΣ ΦΟΡΕΣ ΚΑΤΑΛΗΓΟΥΝ ΣΕ ΕΜΑΣ ΑΝΑΦΟΡΕΣ ΠΟΛΙΤΩΝ ΣΤΙΣ ΟΠΟΙΕΣ ΥΠΑΡΧΟΥΝ ΚΑΙ ΣΤΟΙΧΕΙΑ ΓΙΑ ΤΑ ΧΑΡΑΚΤΗΡΙΣΤΙΚΑ ΤΩΝ ΦΑΙΝΟΜΕΝΩΝ**

### B. Βραχυπρόθεσμοι και Μακροπρόθεσμοι στόχοι

1. Ποιος είναι ο λόγος για τον οποίο συλλέγετε δεδομένα; Βραχυπρόθεσμος, μεσοπρόθεσμος ή μακροπρόθεσμος σχεδιασμός της αντιπλημμυρικής πολιτικής;  
**ΜΕΣΟΠΡΟΘΕΣΜΟΣ ΚΑΙ ΜΑΚΡΟΠΡΟΘΕΣΜΟΣ ΣΧΕΔΙΑΣΜΟΣ ΓΙΑ ΤΗΝ ΑΝΤΙΜΕΤΩΠΙΣΗ ΕΚΤΑΚΤΩΝ ΑΝΑΓΚΩΝ ΚΑΙ ΔΙΑΧΕΙΡΙΣΗ ΣΥΝΕΠΕΙΩΝ ΑΠΟ ΠΛΗΜΥΡΕΣ**
2. Πώς αξιοποιείτε τα δεδομένα που συλλέγονται; Για τη λήψη απόφασης σε περίπτωση εκτάκτου ανάγκης; Για την ενσωμάτωση τους σε ένα μοντέλο αντιμετώπισης των πλημμυρών; άλλο (παρακαλώ διευκρινίστε)

**ΣΧΕΔΙΑΣΜΟΣ ΓΙΑ ΤΗΝ ΑΝΤΙΜΕΤΩΠΙΣΗ ΕΚΤΑΚΤΩΝ ΑΝΑΓΚΩΝ ΚΑΙ ΔΙΑΧΕΙΡΙΣΗ ΣΥΝΕΠΕΙΩΝ ΑΠΟ ΠΛΗΜΥΡΕΣ ΚΑΙ ΣΥΝΤΟΝΙΣΤΙΚΕΣ ΟΔΗΓΙΕΣ ΠΡΟΣ ΟΛΟΥΣ ΤΟΥΣ ΕΜΠΛΕΚΟΜΕΝΟΥΣ ΦΟΡΕΙΣ ΓΙΑ ΠΡΟΕΤΟΙΜΑΣΙΑ ΚΑΙ ΕΤΟΙΜΟΤΗΤΑ**

**Γ. Η συλλογή Δεδομένων στα διάφορα επίπεδα πολιτικής**

1. Τα δεδομένα που συλλέγονται από τα παραπάνω περιγραφόμενα συστήματα συλλογής δεδομένων, χρησιμοποιούνται με οποιοδήποτε τρόπο στη λήψη αποφάσεων σε σχέση με την πρόληψη ή αντιμετώπιση των πλημμυρικών φαινομένων και σε ποιο επίπεδο (τοπικό, περιφερειακό, εθνικό);

**ΤΑ ΔΕΔΟΜΕΝΑ ΠΟΥ ΜΑΣ ΔΙΑΒΙΒΑΖΟΝΤΑΙ ΑΠΟ ΤΗΝ ΕΙΔΙΚΗ ΓΡΑΜΜΑΤΕΙΑ ΥΔΑΤΩΝ ΧΡΗΣΙΜΟΠΟΙΟΥΝΤΑΙ ΓΙΑ ΕΘΝΙΚΟ ΣΧΕΔΙΑΣΜΟ ΓΙΑ ΤΗΝ ΑΝΤΙΜΕΤΩΠΙΣΗ ΕΚΤΑΚΤΩΝ ΑΝΑΓΚΩΝ ΚΑΙ ΔΙΑΧΕΙΡΙΣΗ ΣΥΝΕΠΕΙΩΝ ΑΠΟ ΠΛΗΜΥΡΕΣ**

2. Αν η παραπάνω απάντηση είναι καταφατική, πως χρησιμοποιούνται ακριβώς στη λήψη αποφάσεων; Χρησιμοποιούνται τα ανεπεξέργαστα δεδομένα ή υφίστανται πρώτα κάποια μορφή επεξεργασίας;

**ΤΑ ΔΕΔΟΜΕΝΑ ΥΦΙΣΤΑΝΤΑΙ ΣΤΑΤΙΣΤΙΚΗ ΚΑΙ ΧΩΡΙΚΗ ΑΝΑΛΥΣΗ ΠΡΙΝ ΑΞΙΟΠΟΙΗΘΟΥΝ ΓΙΑ ΤΟΥΣ ΛΟΓΟΥΣ ΠΟΥ ΠΡΟΑΝΑΦΕΡΟΝΤΑΙ**

3. Μπορείτε να αναφέρετε 2 παραδείγματα; Παρακαλώ περιγράψτε τους εμπλεκόμενους φορείς και τις δράσεις τους.

**ΚΑΘΕ ΧΡΟΝΟ ΚΑΙ ΣΥΜΦΩΝΑ ΜΕ ΤΙΣ ΜΕΤΑΒΟΛΕΣ ΠΟΥ ΕΧΟΥΝ ΠΡΟΚΥΨΕΙ ΤΟΣΟ ΣΤΗΝ ΧΩΡΟΧΡΟΝΙΚΗ ΜΕΤΑΒΟΛΗ ΤΩΝ ΦΑΙΝΟΜΕΝΩΝ ΟΣΟ ΚΑΙ ΣΤΗΝ ΔΙΟΙΚΗΤΙΚΗ ΔΟΜΗ ΤΗΣ ΚΕΝΤΡΙΚΗΣ ΚΑΙ ΑΠΟΚΕΝΤΡΩΜΕΝΗΣ ΔΙΟΙΚΗΣΗΣ ΕΚΔΙΔΟΝΤΑΙ ΑΠΟ ΤΗΝ ΥΠΗΡΕΣΙΑ ΜΑΣ ΣΥΝΤΟΝΙΣΤΙΚΕΣ ΟΔΗΓΙΕΣ ΠΡΟΣ ΟΛΟΥΣ ΤΟΥΣ ΕΜΠΛΕΚΟΜΕΝΟΥΣ ΦΟΡΕΙΣ (ΥΠΟΥΡΓΕΙΑ, ΑΠΟΚΕΝΤΡΩΜΕΝΕΣ ΔΙΟΙΚΗΣΕΙΣ, ΠΕΡΙΦΕΡΕΙΕΣ, ΔΗΜΟΥΣ, ΠΥΡΟΣΒΕΣΤΙΚΗ, ΑΣΤΥΝΟΜΙΑ, ΕΚΑΒ, ΕΚΕΠΥ)**

**Δ. Ιστορικά Δεδομένα (Βιοτικά, αβιοτικά, κοινωνικές συνιστώσες)**

1. Εκτός από δεδομένα σχετικά με τις πλημμύρες, συλλέγετε και άλλου είδους δεδομένα; **(Βιοτικά, αβιοτικά, κοινωνικές συνιστώσες;)**

**ΟΧΙ**

**Ε. Δράσεις Διάχυσης (εκδόσεις, δημοσιεύσεις, εκθέσεις, etc.)**

1. Πώς αποθηκεύονται τα δεδομένα που συλλέγονται; Γραπτές εκθέσεις, ηλεκτρονικά αρχεία, βάσεις δεδομένων, άλλο (παρακαλώ διευκρινίστε)

2. Είναι διαθέσιμα δημόσια;

**ΤΑ ΔΕΔΟΜΕΝΑ ΤΟΥ ΕΥΡΩΠΑΪΚΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ COPERNICUS EMS ΕΙΝΑΙ ΔΗΜΟΣΙΑ ΔΙΑΘΕΣΙΜΑ.**

3. Αν ναι, παρακαλώ αναφέρετε που και πώς;

**ΕΙΝΑΙ ΔΙΑΘΕΣΙΜΑ ΑΠΟ ΕΜΑΣ ΚΑΤΟΠΙΝ ΣΧΕΤΙΚΗΣ ΑΙΤΗΣΗΣ ΚΑΙ ΑΝΑΡΤΩΝΤΑΙ ΚΑΙ ΣΤΗΝ ΚΕΝΤΡΙΚΗ ΙΣΤΟΣΕΛΙΔΑ ΤΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ**

4. Αν η απάντηση στην ερώτηση 2 είναι ναι, έχουν οι πολίτες πρόσβαση σε αυτά;

**ΝΑΙ. ΜΕΣΩ ΤΗΣ ΚΕΝΤΡΙΚΗΣ ΙΣΤΟΣΕΛΙΔΑΣ ΤΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ COPERNICUS EMS**

**ΣΤ. Πηγές και εμπλεκόμενοι φορείς**

1. Παρακαλώ απαριθμήστε τους φορείς με τους οποίους συνεργάζεστε σε περίπτωση πλημμύρας.

**ΥΠΟΥΡΓΕΙΑ, ΑΠΟΚΕΝΤΡΩΜΕΝΕΣ ΔΙΟΙΚΗΣΕΙΣ, ΠΕΡΙΦΕΡΕΙΕΣ, ΔΗΜΟΥΣ, ΠΥΡΟΣΒΕΣΤΙΚΗ, ΑΣΤΥΝΟΜΙΑ, ΕΚΑΒ, ΕΚΕΠΥ**

2. Παρακαλώ αναφέρετε και περιγράψτε τον ρόλο του κάθε φορέα  
**Ο ΡΟΛΟΣ ΤΟΥ ΚΑΘΕ ΦΟΡΕΑ ΠΕΡΙΓΡΑΦΕΤΑΙ ΑΝΑΛΥΤΙΚΑ ΣΤΟ ΕΠΙΣΥΝΑΠΤΟΜΕΝΟ ΑΡΧΕΙΟ ΜΕ ΤΙΣ ΣΥΝΤΟΝΙΣΤΙΚΕΣ ΟΔΗΓΙΕΣ ΓΙΑ ΤΗΝ ΑΝΤΙΜΕΤΩΠΙΣΗ ΕΚΤΑΚΤΩΝ ΑΝΑΓΚΩΝ ΚΑΙ ΔΙΑΧΕΙΡΙΣΗ ΣΥΝΕΠΕΙΩΝ ΑΠΟ ΠΛΗΜΥΡΕΣ**

## **Z. Ο ρόλος των πολιτών**

1. Θεωρείτε ότι η εμπλοκή των πολιτών είναι πολύτιμη για την επίλυση προβλημάτων που σχετίζονται με πλημμύρες;  
**Η ΕΜΠΛΟΚΗ ΠΟΛΙΤΩΝ ΜΠΟΡΕΙ ΝΑ ΑΠΟΤΕΛΕΣΕΙ ΜΙΑ ΠΡΟΣΘΕΤΗ ΠΗΓΗ ΠΛΗΡΟΦΟΡΗΣΗΣ ΑΛΛΑ ΔΕΝ ΜΠΟΡΕΙ ΝΑ ΥΠΟΚΑΤΑΣΤΗΣΕΙ ΤΟΥΣ ΘΕΣΜΟΘΕΤΗΜΕΝΟΥΣ ΤΡΟΠΟΥΣ ΕΠΙΚΟΙΝΩΝΙΑΣ ΚΑΙ ΣΥΛΛΟΓΗΣ ΠΛΗΡΟΦΟΡΙΩΝ ΤΩΝ ΕΜΠΛΕΚΟΜΕΝΩΝ ΦΟΡΕΩΝ**
2. Αν ναι, με ποιο τρόπο θα μπορούσαν να συνεισφέρουν; Με τη συλλογή δεδομένων μέσα στο χρόνο; Με την ενημέρωση κατά τη διάρκεια ενός πλημμυρικού φαινομένου; άλλο (παρακαλώ διευκρινίστε)  
**ΟΙ ΑΝΑΦΟΡΕΣ ΤΩΝ ΠΟΛΙΤΩΝ ΣΕ ΠΕΡΙΠΤΩΣΕΙΣ ΠΛΗΜΜΥΡΩΝ ΜΠΟΡΕΙ ΝΑ ΒΟΗΘΗΣΟΥΝ ΤΙΣ ΕΜΠΛΕΚΟΜΕΝΕΣ ΥΠΗΡΕΣΙΕΣ ΚΑΙ ΦΟΡΕΙΣ ΝΑ ΑΠΟΚΤΗΣΟΥΝ ΣΑΦΕΣΤΕΡΗ ΕΙΚΟΝΑ ΓΙΑ ΤΗΝ ΕΚΤΑΣΗ ΚΑΙ ΤΗΝ ΣΦΟΔΡΟΤΗΤΑ ΤΩΝ ΕΠΙΠΤΩΣΕΩΝ ΤΟΥ ΚΑΤΑΣΤΡΟΦΙΚΟΥ ΦΑΙΝΟΜΕΝΟΥ ΑΛΛΑ ΘΑ ΠΡΕΠΕΙ ΣΕ ΚΑΘΕ ΠΕΡΙΠΤΩΣΗ ΝΑ ΣΥΝΑΞΙΟΛΟΓΟΥΝΤΑΙ ΜΕ ΑΛΛΕΣ ΠΛΗΡΟΦΟΡΙΕΣ ΔΕΔΟΜΕΝΟΥ ΟΤΙ ΣΕ ΟΡΙΣΜΕΝΕΣ ΠΕΡΙΠΤΩΣΕΙΣ ΟΙ ΠΟΛΙΤΕΣ ΛΟΓΟ ΕΛΛΕΙΨΗΣ ΝΗΦΑΛΙΟΤΗΤΑΣ ΑΛΛΑ ΚΑΙ ΛΟΓΟ ΙΔΙΟΤΕΛΩΝ ΕΛΑΤΗΡΙΩΝ ΜΠΟΡΕΙ ΝΑ ΔΗΜΙΟΥΡΓΗΣΟΥΝ ΣΤΡΕΒΛΗ ΕΙΚΟΝΑ.**

## Annex 6 Example of Official Address Questionnaires Level II

### Example of Romanian Official Address Questionnaires Level II



**MINISTERUL EDUCAȚIEI NAȚIONALE ȘI CERCETĂRII ȘTIINȚIFICE**  
**AUTORITATEA NAȚIONALĂ PENTRU CERCETARE ȘTIINȚIFICĂ ȘI INOVARE**  
**INSTITUTUL NAȚIONAL DE CERCETARE – DEZVOLTARE**  
**DELTA DUNĂRII – TULCEA**

Tulcea - Str. Babeșlag 165 Cui 820112 tel. [+4 0240] 53 1520 fax (+4 0240) 533547 e-mail office@ddni.ro web http://www.ddni.ro



Gătra, **TEAMNET**

În atenția: **Domnului Bogdan Paclu**

Referitor: **Chestionar pentru Proiect Internațional H2020 *Smart Toolbox for Engaging Citizens into a People-Centric Observation Web – SCENT***

Institutul National de Cercetare Dezvoltare Delta Dunării Tulcea este partener și responsabil pachet de lucru 1, **WP1 SCENT toolbox requirements and architecture** în cadrul proiectului H2020 **Smart Toolbox for Engaging Citizens into a People-Centric Observation Web – SCENT**.

WP 1 presupune colectarea necesităților utilizatorilor (date cu biodiversitate, inundații, utilizarea și acoperirea terenului etc.) pentru o participare activă a cetățenilor în procesul de elaborare a politicilor de mediu prin SCENT. Cerințele vor include aspecte de guvernare a datelor: dacă sunt schimbări dinamice în privința utilizării terenurilor; nevoia de date. În timp real este uneori reflectată în direcțiile naționale, însă adoptarea acestora la nivel al UE nu a fost încă atinsă. SCENT urmărește să se asigure că metodele și abordările vor fi folosite într-un mod complementar pentru a satisface nevoile de politică relevante pentru Integrated Product Policy IPP36. Participarea cetățenilor în elaborarea politicilor de mediu și a datelor de guvernare împreună cu tehnicile participative și construirea de scanări utilizate vor facilita înțelegerea compromisurilor asociate diferitelor politici. Aceasta va asigura că Științe Sociale Umaniste (SSU) sunt încorporate în SCENT ca factor al Cercetării Responsabile Inovative.

În acest sens, în vederea îndeplinirii obiectivelor pachetului de lucru 1 vă rugăm să ne sprijiniți prin completarea chestionarului atașat acestei adrese. Avem rugămintea să distribuiți acest chestionar și colegilor dumneavoastră de la centrul de calcul, baze de date.

Vă rugăm să ne transmiteți **Chestionarul completat** și formularul **Consent form** (semnat și scanat sau fotografiat) până pe data de **21.11.2016** prin fax 0240533547 sau e-mail [iulian.nichersu@ddni.ro](mailto:iulian.nichersu@ddni.ro), [cucuzan.a.marin@ddni.ro](mailto:cucuzan.a.marin@ddni.ro), [liliana.nichersu@ddni.ro](mailto:liliana.nichersu@ddni.ro) sau [florentina.sela@ddni.ro](mailto:florentina.sela@ddni.ro).

În speranța unei colaborări fructuoase, vă mulțumim pentru sprijinul acordat!

Cu stimă,

Responsabil proiect  
Dr. Ing. Iulian NICHERSU



Director General  
Dr. Biolog Marian TUDOR




---

Document întocmit: **Drd. CS III Florentina Sela** Pag. 1



Institutul National de Cercetare-Dezvoltare Delta Dunarii a fost certificat ISO 9001 si ISO 14001 pentru implementarea si mentinerea unui Sistem Integrat de Management al Calitatii si de Mediu de catre URS si UKAS.





The Greek email text inviting experts to fill in Questionnaire Level II is identical to the one used for Level I

### Example of Romanian Filled Questionnaires Level II



**MINISTERUL AGRICULTURII ȘI DEZVOLTĂRII RURALE**  
**AGENȚIA NAȚIONALĂ DE ÎMBUNĂTĂȚIRI FUNCiare**  
**FILIALA TERITORIALĂ DE ÎMBUNĂTĂȚIRI FUNCiare DOBROGEA**  
**UNITATEA DE ADMINISTRARE TULCEA**

Str. Viticulturii nr.10  
 TULCEA 820075 ROMANIA  
 CIF 29275212

Tel: 0240.532001  
 0240.532002  
 Fax: 0240.532004  
 E-mail: [tulcea@anif.ro](mailto:tulcea@anif.ro)



---

Tulcea, 21.11.2016  
Nr. 2476

Stimate domnule Director General ,

**Ref.: chestionar pentru Proiect Internațional H2020-SCENT**

Referitor la solicitările din adresa dumneavoastră nr.6377/14.11.2016 vă transmitem alăturat Chestionarul completat și formularul Consent form semnat și scanat.

Cu stîmă,

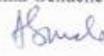
Director Adjunct  
Ing.Marius DAMIAN



Șef Serviciu PEP  
Ing.Flora DAMIAN



Întocmit  
Ing.Alina Genuche



**Domnului Director General Dr.Biolog Marian TUDOR**  
**INSTITUTUL NAȚIONAL DE CERCETARE-DEZVOLTARE DELTA DUNĂRII**  
 Tulcea, Str.Babadag nr.165, Tulcea  
 telefon:0240531520, fax: 0240533547

AGENȚIA NAȚIONALĂ DE ÎMBUNĂTĂȚIRI FUNCiare  
 FILIALA TERITORIALĂ DE ÎMBUNĂTĂȚIRI FUNCiare DOBROGEA  
 UNITATEA DE ADMINISTRARE TULCEA  
 Str. Viticulturii nr. 10, Tulcea, cod 820075  
 Tel: 0240.532001;0240.532002; Fax: 0240.532004;  
 e-mail: [tulcea@anif.ro](mailto:tulcea@anif.ro)

WP1 Chestionare (2)

*Nivel II – ANIF-Filiala Teritorială de Îmbuntățiri Funciare Dobrogea-Unitatea de Administrare Tulcea*

1.Dețineți propriile studii de cercetare exploratorie / un program de monitorizare pentru [Râul Kifissos, Regiunea Attica sau Delta Dunării] în ceea ce privește riscurile la inundații și problemele de mediu ce au legătură cu acestea?

R.NU

Pe această speță , unitatea noastră exploatează amenajări de desecare îndiguite amplasate în județul Tulcea , malul drept al fluviului Dunărea.Nu deținem lucrări în Delta Dunării.În anul 2012, la nivel național s-au predat digurile de la Dunăre către Apele Române.Monitorizarea în ceace privește riscurile la inundații pentru fluviul Dunărea , s-a realizat până în anul 2012.

a.Dacă răspunsul este da, vă rugăm să precizați tipul de cercetare de explorare / monitorizare pe care îl desășurați

b.Vă rugăm descrieți/menționați pe scurt conceptul, strategia, cadrul legal.

c.Obiectivele cercetării de explorare / monitorizare sunt planificate a se direcționa pe termen Scurt, Mediu sau Lung?

d.Datele colectate de la cercetarea exploratorie / monitorizare sunt utilizate în orice mod pentru luarea deciziilor și la ce nivel (local, regional, național)?

e.Urmați orice politică deschisă privind schimbul de date în acest program de cercetare exploratorie / monitorizare? Dacă da, vă rugăm detaliați.

f.Avertizeaza sau / determina nivelul amenințărilor emergente cauzate de evenimentele create de inundații?

2.Ce lipsește din activitățile curente de cercetare exploratorie/monitorizare? Problemele pot fi relevante, dar fără a se limita la costurile de infrastructură, costuri de întreținere, lipsa datelor disponibile pentru monitorizare, implicare redusă a factorilor politici, constrângerile tehnice ale echipamentelor de monitorizare, sau altele.

R.Pe lângă problemele detaliate mai sus consideram necesara o corelare a activității curente de cercetare exploratorie/monitorizare cu informațiile generale provenind de la cetățeni/voluntari

3.Sunt aceste probleme gestionate în prezent? Cum sunt rezolvate/ atenuate aceste probleme în prezent? Pe viitor vor fi dezvoltate aceste activități (proiecte finanțate de Comisia Europeană sau proiecte naționale, inițiative legislative, programe de guvernare)?

R.Este absolut necesar ca problemele gestionate în prezent sa fie dezvoltate prin proiecte finanțate de

Comisia Europeană sau proiecte naționale .inițiative legislative,programe de guvernare.

4.Vă rugăm bifați pe o scară de la 1 la 5 importanța (1 = deloc important, 5 = foarte important ) următoarelor afirmații:

a.Menținerea hărților exacte și actualizate de acoperirea și utilizarea terenurilor este importantă pentru monitorizarea riscurilor la inundații și problemele generate de acestea mediului.

5.foarte important

b.Acuratețea hărților actuale de acoperirea și utilizarea terenurilor (de exemplu, Corine Land Cover) este suficientă pentru monitorizarea riscurilor la inundații și problemele generate de acestea mediului.

5.foarte important

c.Rata actuală a actualizărilor hărților de acoperirea și utilizarea terenurilor (de exemplu, Corine Land Cover) este suficientă pentru monitorizarea riscurilor la inundații și problemele generate de acestea mediului.

5.foarte important

d.Taxonomiile curente în descrierea zonelor rurale (de exemplu, referirile la "pădure de conifere", "pădure mixtă", "zone cu densitate scăzută", " zone cu vegetație incendiată" din Corine Land Cover) sunt suficiente pentru monitorizarea riscurilor la inundații în zonele respective.

5.foarte important

i.Dacă răspunsul este mai puțin de 4, vă rugăm descrieți pe scurt elementele sau caracteristicile care lipsesc

e.Taxonomiile curente în descrierea zonelor urbane (de exemplu, referirile la 'zonele industriale', 'zonele cu depozite', 'zonele construite', 'rețele rutiere și feroviare' în Corine Land Cover) sunt suficiente pentru monitorizarea riscurilor la inundații în zonele respective.

5.foarte important

i.Dacă răspunsul este mai puțin de 4, vă rugăm descrieți pe scurt elementele sau caracteristicile care lipsesc

5.Care sunt parametrii care sunt necesari pentru a determina amploarea și comportamentul inundațiilor din regiunea dumneavoastră (râul Kifisos, Regiunea Attica sau Delta Dunării)? Vă rugăm să selectați una sau mai multe din lista de mai jos: nivelul apei, conductivitatea apei, umiditatea solului, conductivitatea solului, temperatura apei, temperatura aerului, viteza de apei la suprafață, modelul digital al terenului, altele. Sunt monitorizați acești parametri? Există o bază de date care cuprinde toți acești parametri?

R.Nivelul apei,umiditatea solului,temperatura aerului

6.Vă rugăm să menționați dacă sunteți conștienți de existența oricărui program de mediu care să îndeplinească nevoile viitoare bazate pe situațiile actuale?

R.Nu avem cunoștințe de existența unui program de mediu care să îndeplinească nevoile viitoare bazate pe situațiile actuale.

7.Vă rugăm să menționați acordul/dezacordul dumneavoastră (1 = deloc important, 5 = foarte important ) pentru următoarele afirmații:

a.informații provenind de la cetățeni din surse care nu sunt relevante cu programele de monitorizare a inundațiilor actuale ale râului Kifisos, Attica și Delta Dunării.

1.deloc important

b.informații provenind de la cetățeni ar putea fi de ajutor programelor de monitorizare a inundațiilor

actuale ale râului Kifissos, Attica și Delta Dunării, dar acest tip de date nu este durabil.

4. important

c. Informații provenind de la cetățeni ar putea fi de ajutor programelor de monitorizare a inundațiilor actuale ale râului Kifissos, Attica și Delta Dunării, dar acest tip de date este nesigur sau are probleme de confidențialitate.

4. important

8. Care ar trebui să fie caracteristicile unui program pe termen lung de monitorizare pentru a face față monitorizării pentru prevenirea de inundații în [râul Kifissos, Attica și regiunea Delta Dunării]?

R.1. Stabilirea în funcție de condițiile geografice, climatice, etc., a elementelor de monitorizare

2. Stabilirea unui flux informațional care să ducă datele monitorizate pentru prevenirea/reducerea riscului de inundații

3. Stabilirea unor măsuri care stabilesc sarcini/obligații pentru prevenirea/reducerea riscului de inundații

9. Rezultatele cercetării exploratorii/programului de monitorizare sunt utilizate:

a. Pentru viitoarele schimbări și tendințe (schimbări climatice, schimbările la nivel mondial, măsuri de diminuare etc?)

R. Da

b. Pentru analiza societății și a impactului economic

R. Da

c. Cadrul legislativ european relativ (de exemplu, WFD, Directiva de inundații etc.)

R. Da

10. Vă rugăm să precizați pe o scară de la 1 la 5 acordul dumneavoastră privind următoarea declarație (1 = deloc important, 5 = foarte important): 'Eu cred că VGI (Informațiile Geografice de la Voluntari) și informațiile generale provenind de la cetățeni pot reprezenta o contribuție valoroasă pentru monitorizarea schimbărilor survenite în acoperirea și utilizarea terenurilor și pentru monitorizarea fenomenelor critice de mediu, cum ar fi inundațiile'.

5. foarte important

Dacă răspunsul este între 1-3, vă rugăm să selectați din lista următoare, din ce motive ati selectat aceasta sau sa adăugați unul care nu este inclus.

a. Calitatea datelor și modurile de validare a acestora

b. Implicare limitată a cetățenilor

c. Lipsa feedback-ului cetățenilor cu privire la impactul acțiunilor lor

d. Pregătirea insuficientă și / sau expunerea la tehnologii legate de monitorizarea acestor aspecte

e. Factorii de decizie politică nu sunt dispuși să utilizeze aceste informații

f.Aspecte legate de securitatea și protecția datelor

g.Teama ca aportul oferit de cetățeni va fi exploatat în scopuri comerciale de către o societate, fără consimțământul și fără știrea acestora

h.Altele, vă rugăm descrieți.

11.Vă rugăm să precizați pe o scară de la 1 la 5 acordul dumneavoastră privind următoarea declarație (1 =deloc important, 5=foarte important). Observațiile de la cetățeni trebuie să includă următoarele componente:

a.Un comitet consultativ multidisciplinar

b.Cataloge bine definite de resurse informaționale

c.O componentă online, care servește ca un forum pentru schimbul de discuții și informații

d.Cercetare activă, modelare și programe de diagnosticare pentru a ajuta la selectarea celor mai buni indicatori ai condițiilor de mediu (situații de urgență), în prezent și în viitor

e.Programele de asigurare a calității pentru colectarea și gestionarea datelor pentru a asigura comparabilitatea, acuratețea, precizia și utilitatea pe termen lung

f.Raportarea elementului care transmite în mod regulat concluziile Cetățeanului observator atât către comunitatea științifică cât și factorilor de decizie politica

g.Accesul cetățeanului la sursa informațiilor

h.Coordonarea strânsă între programele sau organizațiile afiliate care pot / doresc să fie implicate

R.foarte important

Director adjunct

Ing.Marius DAMIAN



Sef serviciu PEP

ing.Florica Damian



Întocmit

ing.Alina Genuche



### Example of Filled Questionnaires Level II for Greek case

1. Do you own an exploratory research/ a monitoring program for the [Kifisos River, Attica Region or Danube Delta] regarding flood hazards and their environmental related issues?

g. If yes, please mention the type of exploratory research/ monitoring you are carrying out.

Currently not funded research. Previously, participated in applied research program

h. Please describe/mention briefly the concept, strategy, legal framework.

Not funded research exploring risk perception of citizens through surveys. Previous program regarded flood risk mapping of the west part of Athens.

i. Are the objectives of exploratory research/ monitoring targeting Short and/or Medium and/or Long term planning?

Long term

j. Is data collected from the exploratory research/ monitoring used in any decision making and at what level (local, regional, national)?

Local and regional

k. Do you follow any open data sharing policy in this exploratory research/monitoring program? If yes, please detail.

No.

l. Does it provide warnings and/or determine the level of emerging threats related to flood events?

Provides flood risk assessment

2. What is missing from the current activities of exploratory research/ monitoring? Problems can be relevant but not limited to infrastructure costs, maintenance costs, unavailability of data for monitoring, low engagement of the policy makers, technical constraints of monitoring equipment, or other.

Sustainability of applications (both monitoring and maintenance of infrastructure and systems)

3. Are these issues managed currently? How are these problems solved/mitigated currently? Are there any future developments of this activities (EC-funded or national projects, legal initiatives, governance programs)?

No

4. Please provide your agreement/disagreement (1=strongly disagree, 5=strongly agree) with the following statements:



- a. Maintaining accurate and updated land-cover and land-use maps is important for monitoring flood hazards and their environmental related issues. **3**
  - b. The accuracy of current land-cover and land-use maps (eg Corine Land Cover) is sufficient for monitoring flood hazards and their environmental related issues. **2**
  - c. The current rate of updates in land-cover and land-use maps (eg Corine Land Cover) is sufficient for monitoring flood hazards and their environmental related issues. **2**
  - d. Current established taxonomies describing rural areas (eg references to ‘coniferous forest’, ‘mixed forest’, ‘sparsely vegetated areas’, ‘burnt areas’ in Corine Land Cover) are sufficient for monitoring flood hazards in those areas. **3**
    - i. If your answer is less than 4 please shortly describe elements or features missing
 

**Burnt areas should contain information on the date of burning, because characteristics change relatively quickly over time**
  - e. Current taxonomies describing urban areas (eg references to ‘industrial sites’, ‘dump sites’, ‘construction sites’, ‘road and rail networks’ in Corine Land Cover) are sufficient for monitoring flood hazards in those areas. **4**
    - i. If your answer is less than 4 please shortly describe elements or features missing
5. What are the parameters that are necessary to determine the extent and behavior of floods in your region (Kifisos river, Attica Region or Danube Delta)? Please select one or more from the following list: **water level**, water conductivity, soil moisture, soil conductivity, water temperature, air temperature, water surface velocity, **digital elevation**, other. Are these parameters monitored? Is there an open data base comprising all these parameters?
- Water level = not monitored**  
**Digital Elevation = data available but not adequate quality.**  
**No open database comprising paramaters**
6. Please mention if you are aware of the existence of any environmental program that fulfills the future needs based on the current situations?
- No**
7. Please mention your agreement/disagreement (1=strongly disagree, 5 =strongly agree) with the following statements:
- a. Citizen sourced information is not relevant with the current flood monitoring programs of Kifisos River, Attica and Danube Delta **1**

- b. Citizen sourced information could be of assistance to current flood monitoring programs of Kifisos River, Attica and Danube Delta however this kind of data is not sustainable. **3**
  - c. Citizen sourced information could be of assistance to current flood monitoring programs of Kifisos River, Attica and Danube Delta however this kind of data is insecure or has privacy issues. **2**
8. What should be the features of a long term flood monitoring program in the [**Kifisos River, Attica Region and Danube Delta**]?

For Kifisos River Attica Region, there should be discharge monitoring devices with protection against strong flash flood flows and against vandalism. A suitable system for the region should also integrate rainfall measurements, establishment of rainfall thresholds related to flood triggering. Citizen awareness should be increased, especially in higher-risk areas. All these should be integrated into a system that would have the ability to issue alerts regarding imminent floods, connected to local authorities. Sustainability of the system is a very crucial issue.

9. Are the exploratory research/ monitoring program results used:
- d. For the future changes and trends (Climate changes, global changes, mitigation measures etc?)  
**Yes**
  - e. For societal and economic impacts analysis  
**No**
  - f. Relative European legislative framework (e.g. WFD, Flood Directive etc)  
**No**
10. Please state your level of agreement with the following statement (1=strongly disagree, 5=strongly agree): ‘I believe that VGI (Volunteered Geographic Information) and in general citizen-sourced information may provide valuable input for the monitoring of land-cover and land-use changes and for monitoring critical environmental phenomena such as floods’. If your answer is 1-3, please select from the following list reasons for this or add one that is not included: **3**
- a. **Data quality and ways to validate it**
  - b. **Limited engagement of citizens**
  - c. Lack of feedback to citizens on the impact of their actions
  - d. Insufficient training and/or exposure to technologies related to monitoring these issues
  - e. Policy makers are not willing to use this information

- f. Security and data protection issues
- g. Fear that the input provided by citizens will be commercially exploited by a company without their consent and knowledge
- h. Other, please describe.

11. Please state your level of agreement/disagreement with the following statements (1=strongly disagree, 5=strongly agree). A citizen observatory must include the following components

- a. A multidisciplinary advisory panel **5**
- b. Well defined catalogues of information resources **2**
- c. An online component that serves as a discussion and information exchange forum **1**
- d. Active research, modelling and diagnostic programs to assist in the selection of the best indicators of environmental conditions (emergency situations), now and in the future **3**
- e. Quality assurance programs for data collection and management to ensure comparability, accuracy, precision and usefulness over the long term **4**
- f. Reporting element that regularly conveys the Citizen observatory findings to both scientific community and policy decision makers **4**
- g. Open access to citizen sourced information **2**
- h. Close coordination among related programs or organisations that may/want be involved **4**

## Annex 7 Focus groups Program / Agendas



This project has received funding from the EU's Horizon 2020 research & innovation programme under GA no 688930



### Agenda

#### SCENT project Workshop and Focus Group Discussions

*“People at the Centre: The citizens’ observatories and how they can contribute to better management and forecasting of flood events”*

December 1 & 2, 2016 || Athens, Greece

(Venue: Teleteaching room, NTUA Central Library, 9 Iroon Polytechniou Street, Zografou Campus, 15773)

| Thursday, 1 December 2016 |   |
|---------------------------|---|
| 09:00-09:30               | Welcome & Coffee  |
| 09:30-10:00               | Introduction – Logistics– SCENT Overview (30')  |
| 10.00 – 11:15             | <b>Focus Group A (75')</b><br>Existing monitoring systems of environmental events and how they can be extended with the participation of citizens |
| 11:15 – 11:45             | Coffee Break  |
| 11:45 – 13:00             | <b>Focus Group A (75')</b> – continued  |
| 13:00- 14:00              | Lunch   |
| Friday, 2 December 2016   |   |
| 08:30-09:00               | Welcome & Coffee  |
| 09:30-10:00               | Introduction – Logistics– SCENT Overview (30')  |
| 09.30 – 10:45             | <b>Focus Group B (75')</b><br>Existing monitoring systems of environmental events and how they can be extended with the participation of citizens |
| 10:45 – 11:15             | Coffee Break  |
| 11:15 – 12:30             | <b>Focus Group B (75')</b> – continued  |
| 12:30- 13:30              | Lunch   |



This project has received funding from the EU's Horizon 2020 research & innovation programme under GA no 688930



## Agenda

### SCENT project Workshop and Focus Group Discussions

*“People at the Centre: The citizens’ observatories and how they can contribute to better management and forecasting of flood events”*

December 1 & 2, 2016 || Athens, Greece

(Venue: Teleconference room, NTUA Central Library, 9 Iroon Polytechniou Street, Zografou Campus, 15773)

| Thursday, 1 December 2016 |  |
|---------------------------|--|
| 13:00- 14:00              | Welcome & Lunch  |
| 14:00 – 15:30             | <b>Focus Group C</b><br>Introduction to SCENT (5')<br>Citizens’ and volunteers’ attitude and views regarding their role in monitoring environmental events (85') |
| 15:30 - 16:00             | Coffee break   |
| 16:00 – 17:30             | <b>Focus Group D</b><br>Introduction to SCENT (5')<br>Citizens’ and volunteers’ attitude and views regarding their role in monitoring environmental events (85') |
| Friday, 2 December 2016   |  |
| 12:30- 13:30              | Welcome & Lunch  |
| 13:30 – 15:00             | <b>Focus Group E</b><br>Introduction to SCENT (5')<br>Citizens’ and volunteers’ attitude and views regarding their role in monitoring environmental events (85') |