



Enhancing EducAtion, TraininG and Communication Processes for Informed  
Behaviors and Decision-making ReLated to Ionizing Radiation Risks

Grant agreement no: 604521

*Coordination project*

## DELIVERABLE D1.2

# Analyses of ETI material in EU related to Fukushima accident

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# 1. Project Context

<http://eagle.sckcen.be>

In Europe today, institutions, media and the general public exchange information about ionising radiation (IR) and associated risks. The 2011 Fukushima accident has demonstrated the need for further improving this communication. EAGLE is a coordination project under FP7-EURATOM that aims at clarifying information and communication strategies to support informed societal decision-making.

Education, training and information to the public are key factors in the governance of ionising radiation risks, as are opportunities for dialogue and stakeholder involvement in decision making. EAGLE will assess the current dissemination of ionising radiation information to the public and provide practical guidance tools for best practice to support the ideal of a participative, citizen-centred communication. A network of stakeholders will review national and international data, tools and methods as well as institutional work in order to identify education, information and communication needs and coordination possibilities at the European level.

To achieve these objectives, EAGLE will bring together representatives of nuclear actors, users of ionizing radiation, authorities, mass and social media, and informed civil society, from a range of European countries employing nuclear power or not. The following work packages will be carried out in the three-year project:

- WP1 seeks to improve education, training and information (ETI) material employed in communication about ionising radiation by information sources (industry, experts, authorities, medical field) across EU member states. Tools will be assessed through interviews with heads of nuclear institutions along with protocols and questionnaires given through Euratom national contact points. Upgraded ETI material, activities, and communication strategies will be proposed as a coordinated European approach for practical implementation.
- WP2 will engage members of information source institutions and practitioners/representatives of the social and traditional media in a series of national and international virtual dialogues (face-to-face and virtual). These dialogues will consider information transfer and media handling, as well as the context of institutional, media and citizen discussion of ionising radiation and associated risks. The dialogue groups will review existing aids and produce practical guidance tools to improve communication for more informed decision-making.
- WP3 will analyse education, training and information (ETI) from the point of view of the final recipients of information – EU citizens. Existing desk research for all EU Member states will be analysed along with polls, interviews and the outcome of workshops conducted in select countries. The ‘mental model’ approach will be employed to investigate potential differences between professionals and the public regarding social and cognitive representations of ionizing radiation risks, and identify means to better support informed public decision-making related to this topic.
- WP4 Stakeholder participants will have the opportunity to comment and provide feedback on project products through two virtual workshops. Additionally, three pilot actions will be implemented in three countries to test, evaluate and upgrade communications products.

Information and results will be disseminated among stakeholders and the public on an ongoing basis. Sharing of results and communication will be facilitated through the web site, social media tools and the “EAGLE Stakeholder Platform.” EAGLE will electronically publish its recommendations for improving the education, training and communication processes related to ionising radiation. EAGLE will hold a final International Stakeholder Conference with members of academia, operators’ regulators, authorities, medical sector, health organizations, consumers, different associations, traditional media, new media, emergency management and the public to exchange experience, methods, and tools developed throughout the project. The event will publicize project results and gather feedback from stakeholders on employing these tools to better support European citizens’ understanding of ionising radiation.



EAGLE will form a Stakeholder Representatives Group (SRG) and a Stakeholder Advisory Board (SAB). The SRG is a consultation body of representatives from information sources, channels, and receivers from across project countries. The SRG is launched at the first conference “Let’s Communicate about Ionising Radiation” held in Paris, France on 26 November 2013. Subsequently, through virtual workshops and other means the SRG will reflect on the project working documents and results, and provide feedback regarding their relevance and usefulness in practice. The SRG will also comment on the communication approach, on the envisaged project objectives and their impact on all stakeholder groups as well as on the dissemination of results. The EAGLE Stakeholder Advisory Board is formed of a range of stakeholders and will help to ensure that the project’s approach is tailored to the diversity of stakeholders involved in communication processes.

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#### The composition of the EAGLE grant consortium is as follows:

Coordinator: SCK-CEN - Studiecentrum Voor Kernenergie

Partner 2: ARAO - Agencija za Radioaktivne Otpadke

Partner 3 : IRSN - Institut de Radioprotection et de Sûreté Nucleaire

Partner 4: Regia Autonoma pentru Activitati Nucleare Drobeta tr. Severin ra Sucursala Cercetari Nucleare Pitesti - INR

Partner 5: Institut Symlog

Partner 6: Institut Jozef Stefan

Partner 7: Instytut Chemii i Techniki Jadrowej

Partner 8: Universitatea Politehnica din Bucuresti

Partner 9: Regional Environmental Center for Central and Eastern Europe – REC

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#### About deliverable:

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Deliverable D1.2 Analyses of ETI material in EU related Fukushima accident is part of the objective of WP1 which is intended to upgrade education, training and information (ETI) materials employed in communication about ionising radiation.



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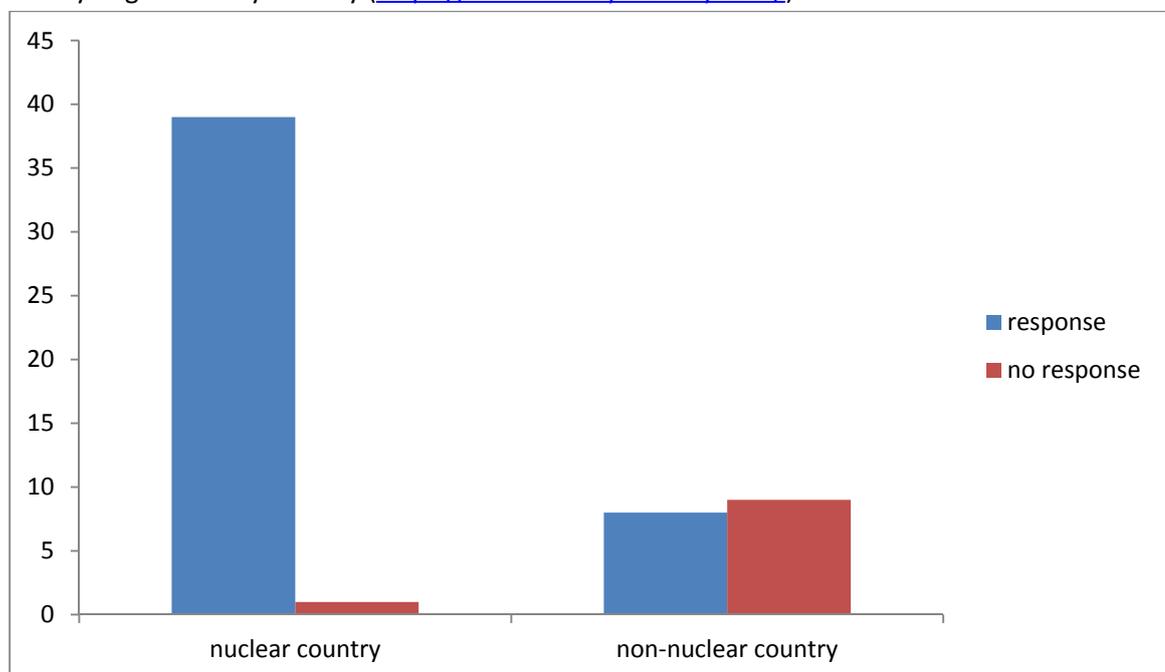
## 1. Introduction

WP1 of the project EAGLE deals with the analysis of education, training and information materials dealing with impacts of ionizing radiation on environment and health. materials are collected from different sources, such as nuclear power plants, medical institutions, regulatory organisations, waste management organisations and technical support organisations. Separate analysis of the materials related to communication about Fukushima accident in 2011 was planned because it is considered that this accident could have a substantial impact on communication practices regarding ionizing radiation.

WP1 is divided in four tasks. Main objective of Task 1.3 is to estimate the communication challenges with regard to the Fukushima accident and to find out whether this accident had any long-lasting effects on subsequent approaches in communication about ionizing radiation.

## 2. Collecting the data

Data were collected with the questionnaire together with the data for Task 1.1 (Appendix 1) A set of questions covering aspects of the Fukushima accident was added at the end of questionnaire which comprises questions on objectives, contents of ETI, types of materials and activities. The survey was created, distributed and automatically analysed by the online survey engine SurveyMonkey (<https://www.surveymonkey.com/>).



The address list was created by web browsing and personal contacts.

Data collected by this questionnaire represent the basis of the analysis presented in deliverable **D1.2**.

### **3. Analysis of the collected data**

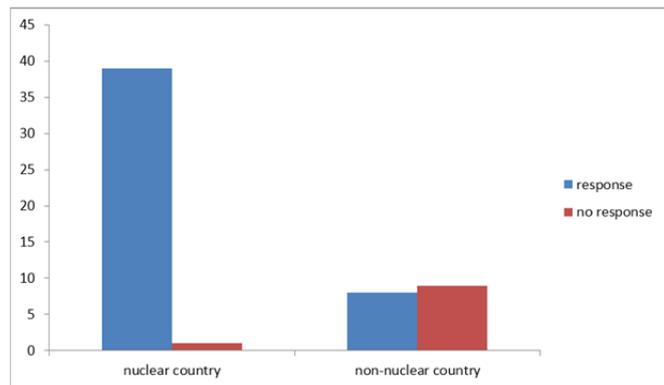
Analysis was performed using data collected by the questions 1, 2 (general information) and questions 19, 20, 21, 22, 23, 24 (questions about impact of the Fukushima accident). It will be presented by commenting the graphs derived from responses to the questionnaire.

### 3.1 Q1 List of countries

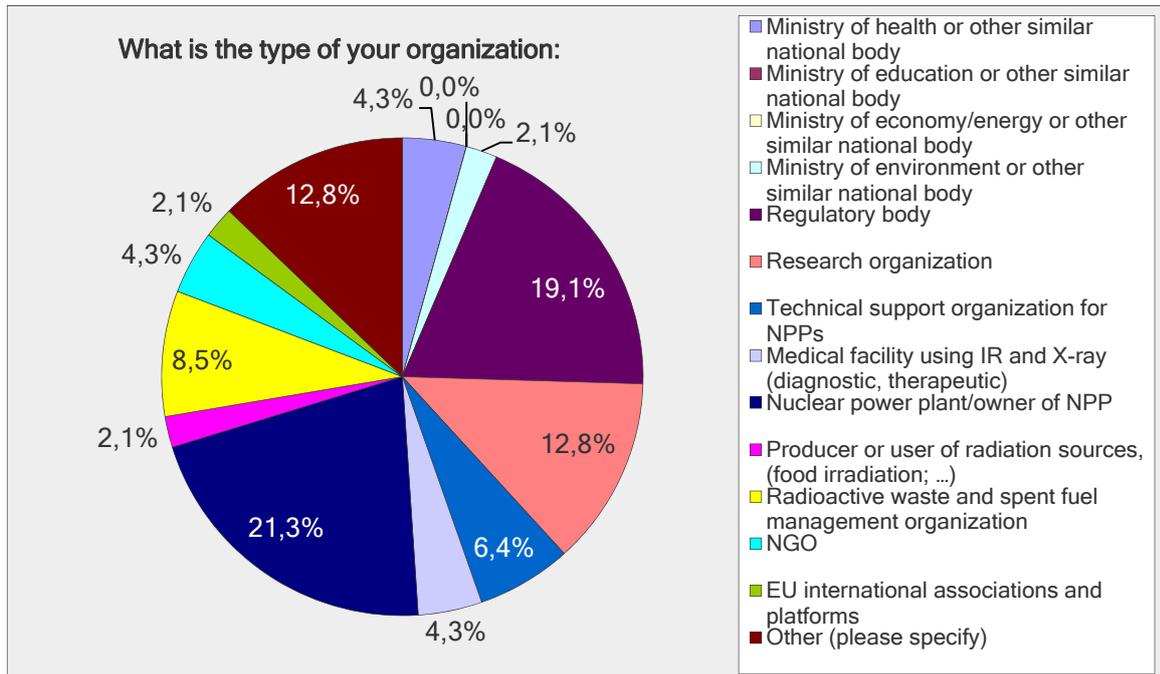
Country	Answers
Austria	1
Belgium	4
Bulgaria	1
Croatia	0
Cyprus	0
Czech Republic	4
Denmark	0
Estonia	0
Finland	1
France	2
Germany	1
Greece	4
Hungary	1
Ireland	0
Italy	0
Latvia	1
Lithuania	3
Luxemburg	0
Malta	0
Netherlands	0
Poland	2
Portugal	0
Romania	3
Slovakia	1
Slovenia	6
Spain	1
Sweden	3
United Kingdom	8
<b>Response Count</b>	<b>47</b>

Altogether we got responses from 47 organisations from 18 EU member states

The number of answers from different countries varies quite substantially regardless if they are “nuclear” or “non-nuclear”, new member states or old member states. This means that from the results of the survey we can hardly draw any conclusions regarding the influence of Fukushima accident on attitudes towards nuclear energy and radiation in “nuclear” and “non-nuclear” countries.



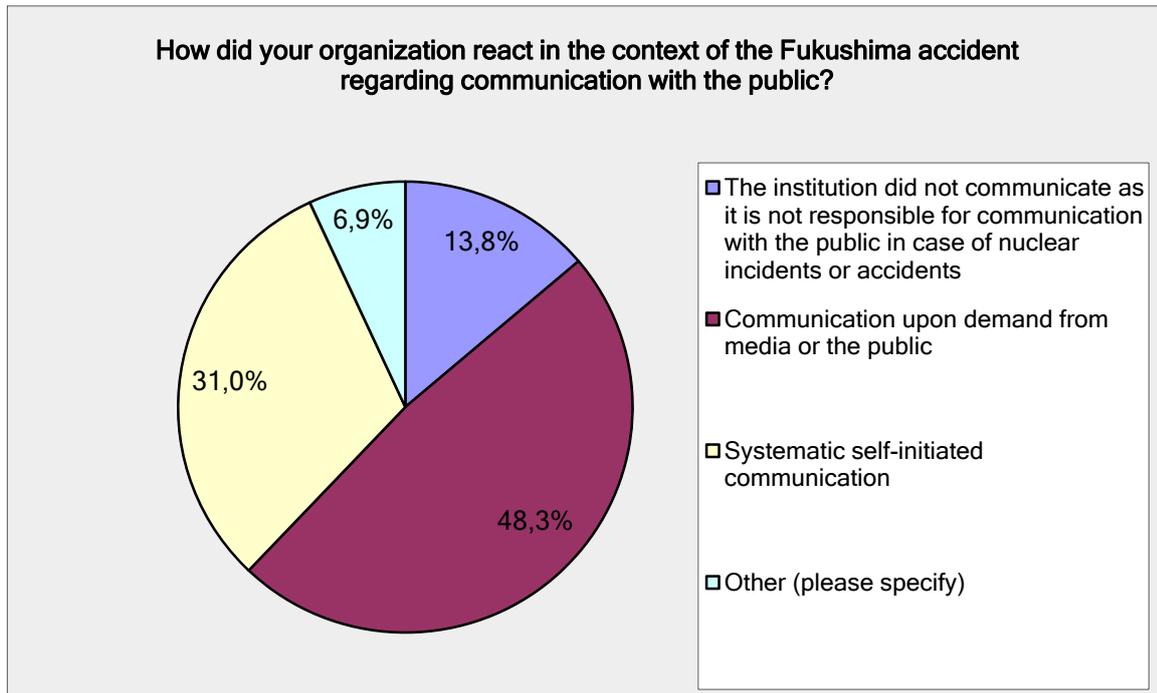
### 3.2 Q2 What is the type of your organization?



About 60 % of the respondents identified themselves as regulatory bodies, research organizations, nuclear power plant owners and radioactive waste organizations. This is understandable as education, training and information as well as communication with public is important for this kind of organizations.

The ministries obviously take less interest in education, training and information activities.

### 3.3 Q19 How did your institution react in the context of the Fukushima accident regarding communication with the public?

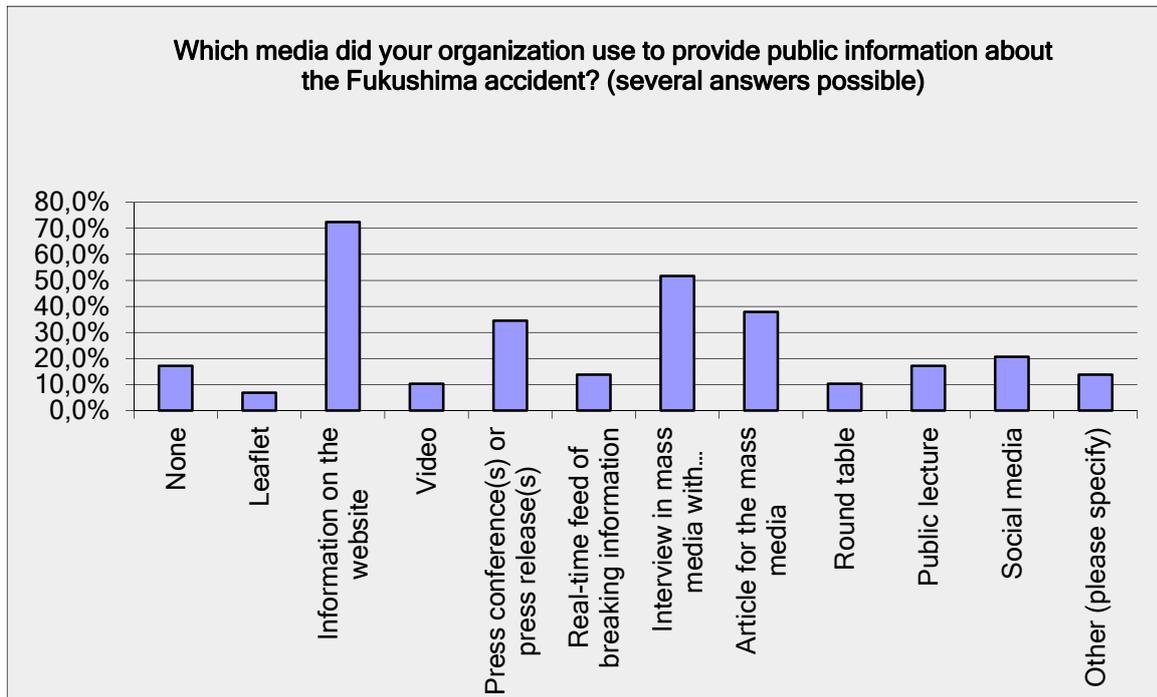


Almost half of the responding institutions reacted on the Fukushima accident upon demand from the media or the public which is somewhat surprising in view of an event of such proportions.

The share of organizations that started self-initiated communication is substantial.

Unfortunately the type of organization can't be identified by the present analysis because the anonymity of organizations was required.

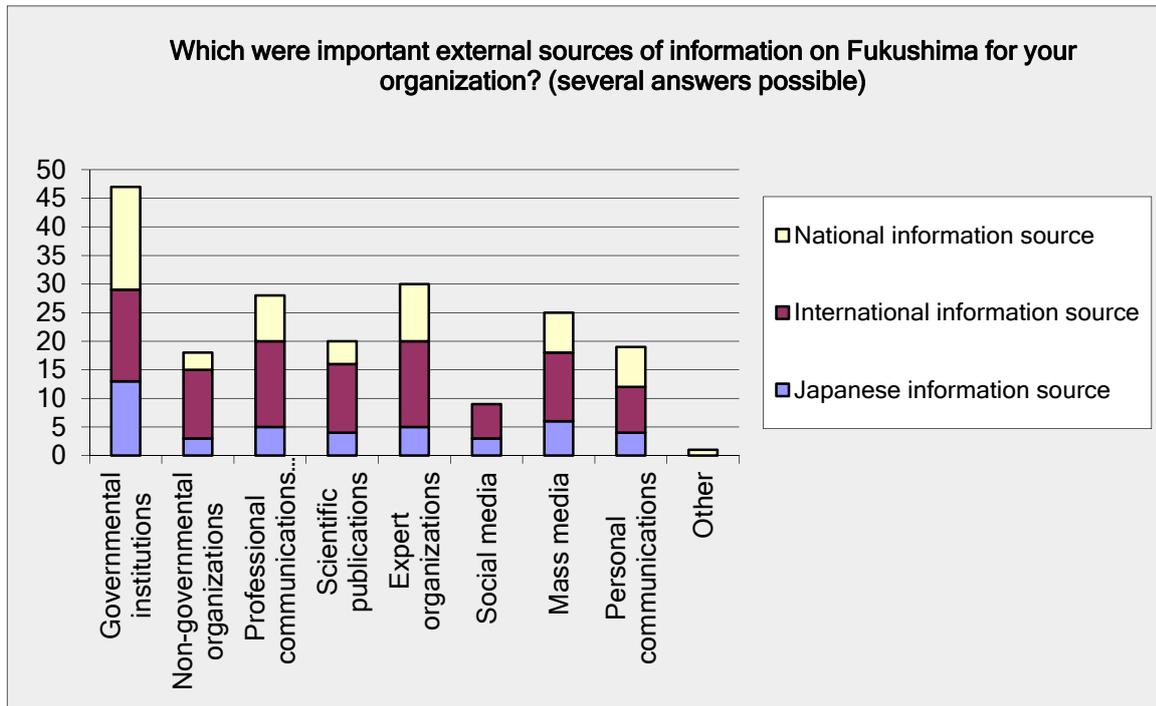
**3.4 Q20 Which media did your institution use to provide public information about the Fukushima accident? (several answers possible)**



Most organizations chose the website as their primary means of communication with public. Fukushima accident was a highly complex event, needed a lot of clarification and it is not surprising that interviews in mass media with a nuclear/radiological specialist was chosen by more than 50% of organizations.

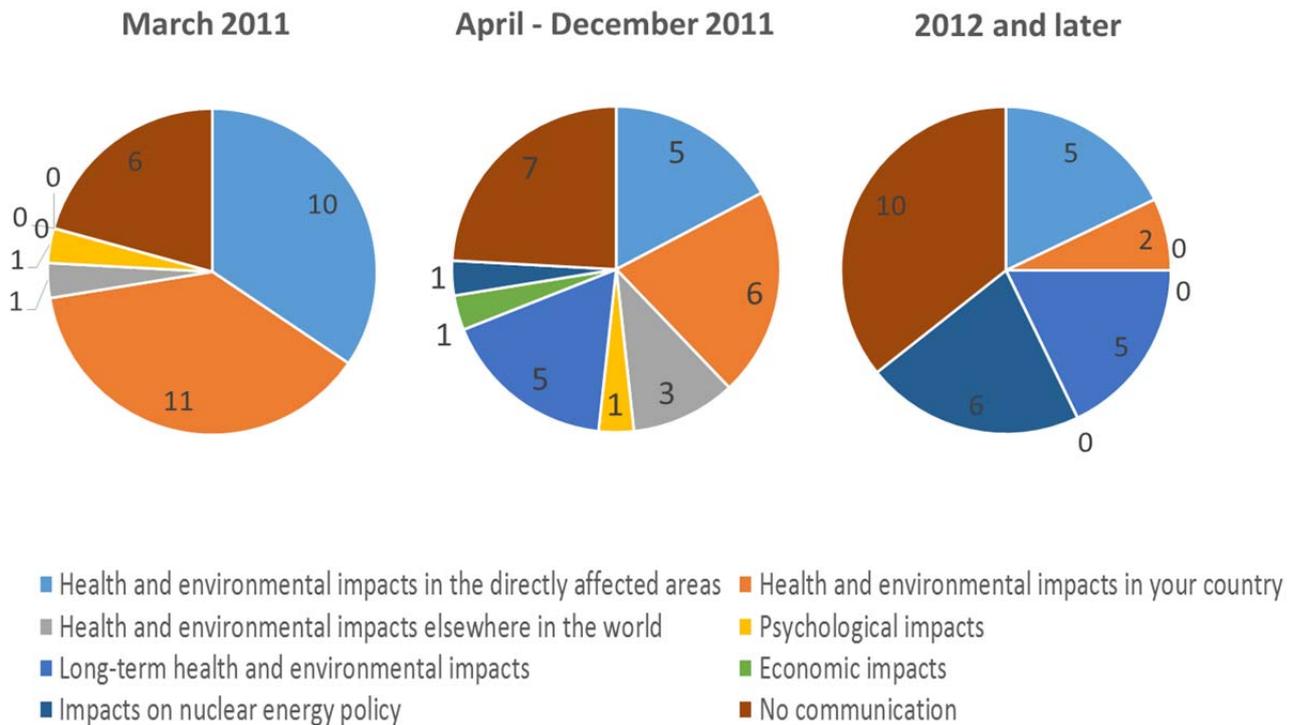
Articles in the newspapers and press conferences also played an important role.

### 3.5 Q21 Which were important external sources of information on Fukushima for your organization? (several answers possible)



The responding organizations relied in the greatest extent on information from governmental institutions, expert organizations and professional communications. Among these the international information sources are represented in about the same extent. National information sources were in general (except at government institutions) considered less from the international sources. The Japanese information sources are substantially less represented with the exception of governmental institutions.

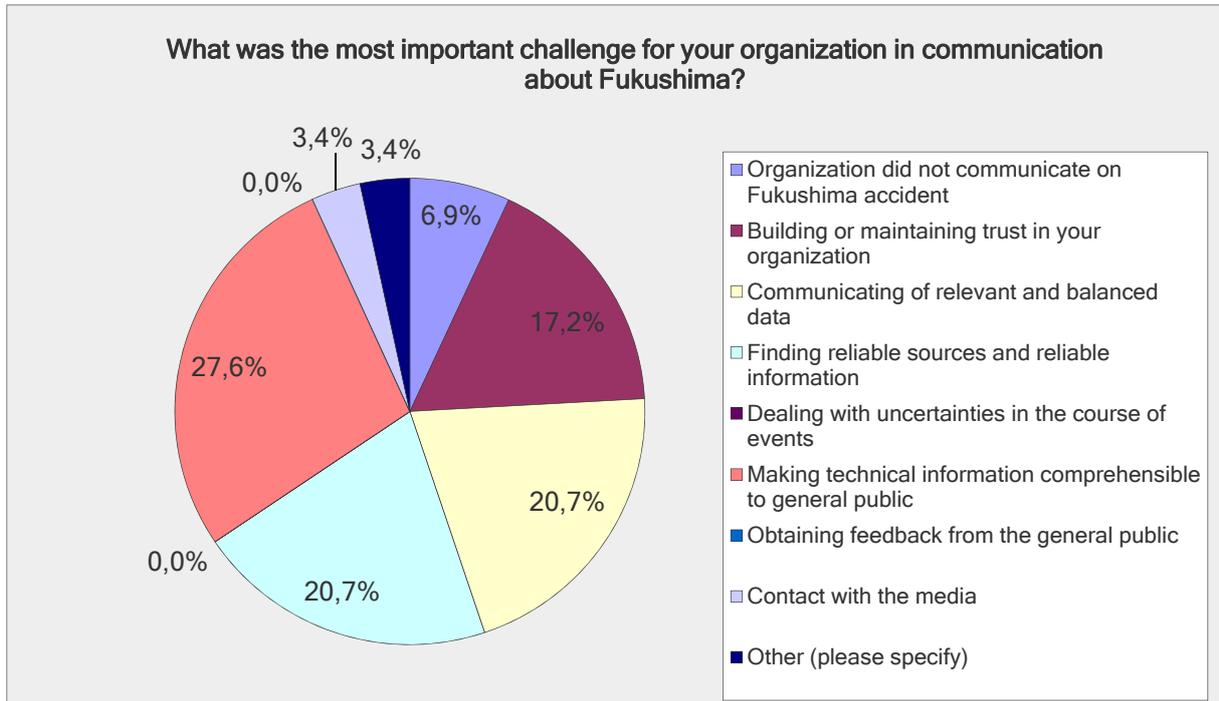
**3.6 Q22 What was the main topic of your communication on Fukushima accident in 2011? (For each period after the accident chose one of the options.)**



The numbers on the graphs indicate the response count.

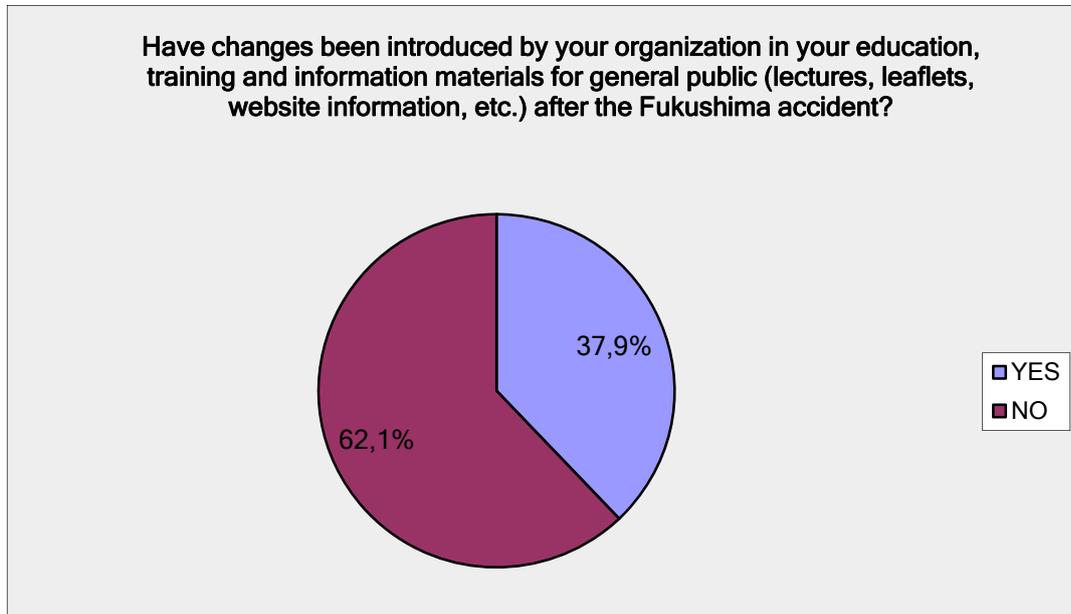
In the first year after the accident the share of institutions that communicated about the Fukushima accident remained rather stable and decreased in the second year after the accident. The topic of communication shifted from the initial worries about the health and environmental impacts in the directly affected areas and in the responding country to the long term health and environmental effects and impacts on nuclear energy policy. Psychological impacts seem to have been less important. After some time the issue of impacts on nuclear energy policy became more important.

### 3.7 Q23 What was the most important challenge for your organization in communication about Fukushima?



From the very beginning the Fukushima accident was a very complex event and it is understandable that making technical information comprehensible to the general public was the most important challenge. Finding reliable information, communicating relevant data and building trust are represented in almost equal shares. It somehow confirms the mantra of communications: trust, relevant information, comprehensibility.

**3.8 Q24 Have changes been introduced by your institution in your ETI materials for general public (lectures, leaflets, website information, etc.) after the Fukushima accident?**



Majority of organizations introduced no changes in the ETI materials which is somehow surprising in view of the most important challenges in communications (building trust, communicating relevant data, reliable information, comprehensible technical information) after the Fukushima accident. It can be concluded that Fukushima accident represented a communication challenge during the time when the situation was very critical. This indicates that the organisations consider that their way of communication is satisfactory for standard situations and that they have problems in managing crisis communication in the case of infrequent and unexpected events.

## 4. Conclusions

There is no doubt that Fukushima accident revealed hidden weaknesses of nuclear power plants and related infrastructure in terms of hardware and human resources. It will leave a lasting legacy in many areas of nuclear technology. Education, training and information about ionising radiation should be one of them. This area is relevant for any country, regardless if it is “nuclear” or “non-nuclear”. In view of this it is surprising that there were no answers to the questionnaire from 10 countries of 28 EU countries. The analysis is therefore not representative and can be considered only as an orientation.

Most respondents to the questionnaire identified themselves as regulatory bodies, research organizations, nuclear power plant owners and radioactive waste organizations. Education, training and information are important for this kind of organizations.

It is surprising that almost half of the responding institutions reacted on the Fukushima accident upon demand from the media or the public though the share of organizations that started self-initiated communication is substantial. Unfortunately the types of organizations can't be identified by the present analysis.

Websites were the primary means of public information. Interviews with nuclear or radiological specialists were chosen by more than 50% of organizations for the clarification of the highly complex Fukushima accident.

Information from governmental institutions, expert organizations and professional communications were the most important sources for the responding organizations. International information sources in general were more considered than the national sources. Japanese information sources were less important.

Initially the main topics of communication were health and environmental impacts in the directly affected areas and in the responding country. A year later it shifted to the long term-health effects and impacts on nuclear energy policy. Psychological impacts were a less important topic even in the year of the accident.

Mantra of communications: trust, relevant information, comprehensibility is visible as the most important challenge which is understandable due to the complexity of the accident.

Great majority of responding organizations introduced no changes in the ETI materials. This is somehow surprising in view of the challenges in communications (building trust, communicating relevant data, reliable information, comprehensible technical information) that arose after the Fukushima accident.

Summarizing these conclusions we suggest following starting points for further discussion:

1. Does it make sense to stress mainly accidents as a motivation to increase the interest in nuclear/radiation issues or it should ETI explain also non-problematic situations? (the results show that the respondents mentioned Fukushima on demand)

2. It is obvious that information from expert organisations were most trusted information sources. Is there enough communication between nuclear experts and experts in information/communication?
3. How to tackle the long-term health effects in communication with general public when the experts don't completely agree about them?

## Appendix 1: Questionnaire on Education, Training and Information process

(Questions Q 19 to Q 24 were used for the analysis of impact of Fukushima accident on communication)

### 1 Country (drop-down menu):

Austria  
Belgium  
Bulgaria  
Croatia  
Cyprus  
Czech Republic  
Denmark  
Estonia  
Finland  
France  
Germany  
Greece  
Hungary  
Ireland  
Italy  
Latvia  
Lithuania  
Luxemburg  
Malta  
Netherlands  
Poland  
Portugal  
Romania  
Slovakia  
Slovenia  
Spain  
Sweden  
United Kingdom

**2 What is the type of your organization:**

- Ministry of health or other similar national body
- Ministry of education or other similar national body
- Ministry of economy/energy or other similar national body
- Ministry of environment or other similar national body
- Regulatory body for health/radiation protection
- Regulatory body for education
- Regulatory body for economy/energy
- Regulatory body for environment
- Nuclear power plant/owner of NPP
- Technical support organization for NPPs
- Research organization in nuclear field
- Research organization in radiation protection
- Medical facility using IR and X-ray (diagnostic, therapeutic)
- Producer or user of radiation sources, (food irradiation; ...)
- Radioactive waste and spent fuel management organization
- NGO
- EU international associations and platforms
- Other .....

**3 Ownership of the organization:**

- private
- public

**4 What is your organisation's main activity?**

- Policy making
- Expertize for policy making
- Regulatory body
- Education and training
- Research and development
- Medical applications with radioactive substances and RTG examination
- Radiation protection
- Nuclear safety
- Operating nuclear facility
- Radioactive waste management and spent fuel management
- Technical support
- Representation of public interest
- Environmental protection
- Other: .....

**5 Does your institution provide information or education/training about IR to the general public? -**

- YES
- NO

**If no, please explain: .....**

**6 What is the level of your communication activities about IR to the general public (several options possible):**

- international,
- national,
- regional,
- local.

**7 What is the share of information on ionizing radiation in your total public communication?**

- Less than 10%
- 10 – 30 %
- 31 – 50 %
- 51 – 70 %
- 71 – 90 %
- more than 90%

**8 What triggers your institution's communication about IR with the general public)? Please assign to each answer a *rough percentage* indicating the annual proportion it represents in your institution's communication about IR with the general public**

<b>A trigger of communication</b>	<b>Less than 10%</b>	<b>10-30%</b>	<b>31-50%</b>	<b>51-70%</b>	<b>71-90%</b>	<b>More than 90%</b>
Legal obligations or reporting requirements						
International recommendations/good practice						
Organization's interest to be pro-active						
Response to incoming questions or requests						
Public opposition to nuclear industry						
Other						

**9 Following is a list of possible purposes driving your institution's communication about IR with the general public. Please choose 3 most relevant purposes for your organization.**

- To respond to legal requirements concerning informing of the public (e.g. in administrative procedures...)
- To inform people to avoid risk for their health
- To assure and/or coordinate crisis information in case of incident or accident involving IR
- To educate people about IR
- To reduce fear of ionizing radiation in the public
- To raise interest of the public for nuclear energy and radiation sources
- To empower people with knowledge on IR to competently participate in decision-making
- To report data from monitoring or concerning planned releases
- To achieve social acceptability for the organisation's activities
- To gain trust of the public in the use of ionizing sources and nuclear energy
- Other : .....

**10 How often does each message arise from your information materials and activities?**

<b>Message from your ETI</b>	<b>always</b>	<b>very frequently</b>	<b>frequently</b>	<b>infrequently</b>	<b>never</b>
Ionizing radiation is a natural phenomenon.					
Use of ionizing radiation is connected with risks.					
Use of ionizing radiation is managed successfully.					
There are efficient protection measures against ionizing radiation					
Ionizing radiation is useful.					
Benefits of using ionizing radiation surpass risks.					
Risks of using ionizing radiation surpass benefits.					
Ionizing radiation is useful but there are uncertainties about the risks.					
There are uncertainties about the risks at using ionizing radiation.					
Other: .....					

**11 What type of ETI materials/activities is used? (several answers possible)**

- Written instructions
- Book, booklet
- Periodical magazine
- Information in mass media
- Flyer, poster
- DVD, CD, video
- Website
- Information centre
- Open door day
- Round table, workshop
- Science fair
- Summer school
- Cooperation with schools
- Cooperation with local community
- Other .....

**12 What type of social media is used? (several answers possible)**

- None
- Facebook
- Twitter
- A blog
- Forum
- Other.....

**13 For what purpose you use social media (several answers possible):**

- To analyse what people talk about, monitoring,
- To disseminate your own content,
- To disseminate content of others,
- To maintain conversation with people on particular topic,
- Emergency broadcasting,
- To receive feedback on your activities from citizens,
- To find relevant and interesting content,
- To network with similar institutions and initiatives,
- Other

**14 In your opinion, what is the general attitude towards the use of social media for communication with the public in your organization?**

	<b>Completely disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Completely agree</b>	<b>Do not know</b>
Use of social media is risky.						
Social media are useful support to other ETI materials and activities.						
Our organization does not have enough resources or skills to use social media.						
The use of social media has a great potential for our organization.						
Management supports the use of social media.						

**15 Do you systematically investigate what information/knowledge on ionizing radiation the public needs or is interested in?**

- YES
- NO

**16 If yes, how do you get this information? (several answers possible)**

- Public opinion poll
- Occasional feedback from the public
- Organized feedback from target groups during communication activities
- Other .....

**17 What is most wanted information/knowledge? (mark 3 most wanted)**

- Origin of ionizing radiation
- Characteristics of ionizing radiation
- Hazard/risk from radiation sources
- Effects on health and environment
- Use of ionizing radiation
- Types of radiation sources
- Ionizing radiation protection
- Benefits of the use of ionizing radiation
- Do not know
- Other .....

**18 What is the feedback received from the public?**

	<b>always</b>	<b>very frequently</b>	<b>frequently</b>	<b>infrequently</b>	<b>never</b>
Information is categorically rejected					
More or additional information/ contents are requested					
New communication tools/opportunities are requested					
Complaints on the credibility of the information					
Communication is praised					
Other:					

**19 How did your institution react in the context of the Fukushima accident regarding communication with the public?**

- The institution is not responsible for communication with the public in case of nuclear incidents or accidents
- Communication upon demand from media or the public
- Systematic self-initiated communication
- Other: ....

**20 Which media did your institution use to provide public information about the Fukushima accident? (several answers possible)**

- None
- Leaflet
- Information on the website
- Video
- Press conference(s) or press release(s)
- Real-time feed of breaking information
- Interview in mass media with nuclear/radiological protection experts
- Article for the mass media
- Round table
- Public lecture
- Social media
- Other: .....

**21 Which were important external sources of information on Fukushima for your organization? (several answers possible)**

	<b>National info-source</b>	<b>International info-source</b>	<b>Japanese info-source</b>
Governmental institutions			
Non-governmental organizations			
Professional communications networks			
Scientific publications			
Expert organizations			
Social media			
Mass media			
Personal communications			
Other			

**22 What was the main topic of your communication on Fukushima accident in 2011?**

	<b>March 2011</b>	<b>April - December 2011</b>	<b>2012 and later</b>
Health and environmental impacts in the directly affected areas			
Health and environmental impacts in your country			
Health and environmental impacts elsewhere in the world			
Psychological impacts			
Long-term health and environmental impacts			
Economic impacts			
Impacts on nuclear energy policy			
Other			

**23 What was the most important challenge for your organization in communication about Fukushima?**

- Building or maintaining trust in your organization
- Communicating of relevant and balanced data
- Finding reliable sources and reliable information
- Dealing with uncertainties in the course of events
- Making technical information comprehensible to general public
- Obtaining feedback from the general public
- Contact with the media
- Other .....

**24 Have changes been introduced by your institution in your ETI materials for general public (lectures, leaflets, website information, etc.) after the Fukushima accident?**

- YES
- NO

**If yes, please specify: .....**