

## Supplementary Material

### Survey on geoscience communication practices and perceptions

Indicator		Question
<b>Biographical profile</b>		
<b>Biographical profile</b>	Age	Q1. Age: < 30, 30-40, 40-50, > 50 years old
	Gender	Q2. Gender: Female, Male, Other
	Academic context	Q3. Academic degree
		Q4. Degree area
		Q10. Did you receive any training in communication? Yes, no
	Area of expertise	Q5. Area of expertise
		Q6. How do you describe your scientific area? Pure; applied
	Professional category	Q7. Professional Category: post graduation student; technician; researcher; elementary and secondary education teacher; higher education professor; other
	Professional experience	Q9. Professional experience: < 5, 5-10, 10-20, > 20 years
	Geographical context	Q8. Location of the institution where you work
<b>Experiences / Practices</b>		
<b>Experiences / Practices</b>	Frequency	Q12. How many science communication activities have you carried out in the last year? More than 10; 4-9; 1-3, none
	Type of activities	What kind of science communication activities do you usually promote? (Never; rarely; usually; often)
		Q11.1 Field trips
		Q11.2 Visits to Museums
		Q11.3 Visits to Science Centres
		Q11.4 Visits to research institutions
		Q11.5 Workshops
		Q11.6 Exhibitions
		Q11.7 Public lectures
		Q11.8 Public Debates / Clarification Sessions
		Q11.9 Science Exhibitions (exhibitions, fairs, ...)
		Q11.10 Books
		Q11.11 Scientific papers
		Q11.12 Popular science news articles
		Q11.13 Opinion articles
		Q20. What kind of science communication initiatives in general have you participated in [Portuguese initiatives]? Select: Science Cafes (Ciência Viva); '90 seconds science' (radio show); Tertúlias FNACiência (public talks); Pint of Science; PubHD; Scientific Culture Day; Science and Technology Week; European Researchers' Night; Other
		Q21. What type of geoscience communication initiatives have you participated in [Portuguese initiatives]? Select: Living Science in Summer – Geology in Summer; Geologist's Day; European Geoparks Week; Mine Route Week, Other
	Contexts	In what contexts do you promote communication activities? (Never; rarely; usually; often)
		Q18.1 Formal (schools, universities, ...)
		Q18.2 Informal (museums, geosites, protected areas,...)
		Q18.3 Unconventional (market, shopping centre, street,...)
		Q22. Indicate the four places in Portugal where you carried out more geoscience communication activities
	Audiences	What audience do you usually communicate with? (Never; rarely; usually; often)
		Q13.1 Journalists
		Q13.2 Science journalists

		Q13.3 Students Q13.4 Geosciences teachers Q13.5 Teachers (other fields) Q13.6 Geoscience technical professionals Q13.7 Technical professionals (other fields) Q13.8 Companies Q13.9 Researchers in Geosciences Q13.10 Researchers (other fields) Q13.11 Families Q13.12 Politicians Q13.13 NGOs Q13.14 Local communities Q13.15 'General Public'
	Peer communication	What kind of science communication activities do you do, targeted at peers? (Never; rarely; usually; often) Q14.1 Scientific meetings and congresses Q14.2 Scientific publications Q14.3 Use of Academia platform Q14.4 Use of LinkedIn Platform Q14.5 Use of Researchgate Platform Q14.6 Participation in online forums Q28. Have you participated in scientific meetings/congress sessions dedicated to Science Communication? Yes, no Q29. Have you made scientific publications on science communication? Yes, no
	Institutional communication	How do you participate in the communication of your institution (newsletter, internal newspaper, website, social media, etc.)? (Never; rarely; usually; often) Q15.1 Sending scientific content Q15.2 Sending papers and recent research results Q15.3 Disseminating the participation in scientific events Q15.4 Disseminating of science communication activities
	Communication with policy makers	What kind of science communication activities do you do, targeted at policy makers? (Never; rarely; usually; often) Q16.1 Clarification sessions Q16.2 Meetings Q16.3 Non-technical reports
	Media	What kind of science communication activities do you do, targeted at media? (Never; rarely; usually; often) Q17.1 Give an interview for the media (newspaper, radio or TV) Q17.2 Participation in media debate Q17.3 Sending a scientific press release Q17.4 Text production for popular science magazines Q17.5 Making opinion texts for non-specialist media Q17.6 Support journalists in clarifying scientific questions
	Participatory contexts	Have you performed any of the following science communication activities? (Never; 1 time; 2-3; more than 4 times) Q19.1 Citizen Science Activity Q19.2 Public clarification session Q19.3 Debate with local communities Q19.4 Focus groups
	Geoparks	Q23. Have you already carried out any communication actions in a Geopark in Portugal? Yes, no Q24. If you answered yes to the previous question (Q23), indicate which one(s)?
	Online platforms	Which online platforms do you use to communicate science? (Never; rarely; usually; often) Q25.1 Email Q25.2 Personal blog Q25.3 Institutional blog Q25.4 Personal website Q25.5 Institutional website Q25.6 Facebook (personal account) Q25.7 Facebook (institutional account)

		<p>Q25.8 Twitter (personal account)</p> <p>Q25.9 Twitter (institutional account)</p> <p>Q25.10 YouTube (personal account)</p> <p>Q25.11 YouTube (institutional account)</p> <p>Q25.12 Instagram (personal account)</p> <p>Q25.13 Instagram (institutional account)</p>
		<p>What content related to Geosciences do you share on your social media? (Never; rarely; usually; often)</p> <p>Q26.1 Information related to work at my institution</p> <p>Q26.2 Information related to places where I do fieldwork</p> <p>Q26.3 Events in which I participate</p> <p>Q26.4 Events in my area that I find interesting, even if I don't participate</p> <p>Q26.5 News related to my work</p> <p>Q26.6 News related to colleagues I know</p> <p>Q26.7 Geoscience news that I find interesting</p> <p>Q26.8 Clarifications and opinions in discussion groups</p>
	Geoscientific topics	Q27. Indicate three geosciences topics on which you do communication activities.
<b>Representations / Perceptions</b>		
<b>Representations / Perceptions</b>	Perception of personal preparation	<p>Q30.1 Do you feel with the necessary skills to communicate science?</p> <p>Q30.2 Do you feel prepared to communicate about the social and ethical implications of science? (Not prepared at all; moderately prepared; well prepared; very well prepared; I don't know)</p>
	Position on responsibility	<p>In your opinion, (Strongly disagree; moderately disagree; neither agree nor disagree; moderately agree; strongly agree)</p> <p>Q36.2 do scientists have a moral duty to engage with the non-expert public about the social and ethical implications of their work?</p> <p>Q36.5 would you like to be forced to take a public position on the issues raised by your work?</p>
	Interest in training	Q31. How willing would you be to attend training on communication with journalists and the public? Very willing; moderately willing, not willing at all
	Time	Q32. Regarding your entire professional activity, how important is it for you to find time to engage with non-specialist audiences? Not at all important; not very important; equally important; quite important; very important
	Institution attitude	Q33. To what degree does your institution value communication activities? High; medium; low
	Objectives	<p>What are your goals when you communicate science? (Disagree; moderately agree; strongly agree)</p> <p>Q34.1 to make the importance of geosciences in everyday life known</p> <p>Q34.2 to show that geosciences are interesting</p> <p>Q34.3 to share my passion for geosciences</p> <p>Q34.4 to ensure that the public is better informed about science and technology</p> <p>Q34.5 to enable citizens to make more informed decisions</p> <p>Q34.6 to transmit the values of science</p> <p>Q34.7 to support policy makers</p> <p>Q34.8 to know people's opinion on geoscientific topics</p> <p>Q34.9 to make my work known</p> <p>Q34.10 to contribute to public debates about science</p> <p>Q34.11 to know the implication of geosciences and of my work in citizens' life</p> <p>Q34.12 to attract professionals to my area</p> <p>Q34.13 to promote the public image of my institution</p>
	Motivations	<p>Why do you do science communication? (Disagree; moderately agree; strongly agree)</p> <p>Q35.1 It is part of my professional duties</p> <p>Q35.2 To attract research funding</p> <p>Q35.3 Because funded research projects require</p> <p>Q35.4 To respond the requests of my institution</p> <p>Q35.5 To respond to invitations (colleagues, journalists, teachers, entities)</p> <p>Q35.6 It is scientist's duty</p>
	Perceptions about the scientific field	In your opinion:

	<p>Strongly disagree; moderately disagree; neither agree nor disagree; moderately agree; strongly agree</p> <p>Q36.1 Has your work implications for society and/or policy makers?</p> <p>Q36.3 Is your work interesting to non-specialist audiences?</p> <p>Q36.4 Is your work too specialized to make sense to non-specialist audiences?</p>
Obstacles	<p>What obstacles do you find in the science communication? (Disagree; moderately agree; strongly agree)</p> <p>Q37.1 lack of time</p> <p>Q37.2 lack of financial support</p> <p>Q37.3 discomfort in communicating with lay audiences</p> <p>Q37.4 lack of preparation/training</p> <p>Q37.5 lack of public interest</p> <p>Q37.6 lack of public knowledge</p> <p>Q37.7 negative opinion by peers</p> <p>Q37.8 these activities make science less rigorous</p> <p>Q37.9 the complexity of my scientific field</p> <p>Q37.10 fear of creating misunderstandings and generating controversy</p> <p>Q37.11 misrepresentation of scientific content by journalists</p>
Perception on geoscientific topics	<p>Which geoscience topic do you consider:</p> <p>Q38 most pertinent to communicate?</p> <p>Q39 most difficult to communicate?</p> <p>Q40 easier to communicate?</p> <p>Q41 more attractive to communicate?</p>
Effectiveness of communication channels	<p>Q42 List the most effective communication channels in science communication (List from 1-12)</p> <p>Book, Leaflet/Brochure, Panel, Interactive module, Game, Video, Social media post, News in the media, Scientific paper, Popular science article, Public debate, TV interview</p>
Media	<p>In your opinion: (Strongly disagree; moderately disagree; neither agree nor disagree; moderately agree; strongly agree)</p> <p>Q43.1 The news coverage on geoscience is adequate.</p> <p>Q43.2 The media are more interested in negative stories about geoscience.</p> <p>Q43.3 The media are more interested in sensationalism than scientific truth.</p> <p>Q43.4 Geosciences are too complex to be communicated in the media.</p> <p>Q43.5 Journalists are not scientifically prepared to work on geoscience topics.</p> <p>Q43.6 Journalists do not correctly understand the technical details of science.</p> <p>Q43.7 Most geoscientists fail to adapt their speech for journalists and for the public.</p> <p>Q36.6 In your opinion, engagement with non-specialist audiences is better done by trained professionals and journalists? Strongly disagree; moderately disagree; neither agree nor disagree; moderately agree; strongly agree</p>
Trust in information	<p>Which entities do you trust to do geosciences communication (I don't trust; I trust a little; I trust; I trust a lot)</p> <p>Q44.1 Museums</p> <p>Q44.2 Science Centres</p> <p>Q44.3 Universities</p> <p>Q44.4 Geoparks</p> <p>Q44.5 City councils</p> <p>Q44.6 Governmental institutions</p> <p>Q44.7 Elementary and secondary schools</p> <p>Q44.8 TV</p> <p>Q44.9 Newspapers</p> <p>Q44.10 Popular science magazines</p>
Personal experience and satisfaction	<p>Q36.7 In your opinion, engaging non-specialist audiences in science is personally rewarding. Strongly disagree; moderately disagree; neither agree nor disagree; moderately agree; strongly agree</p> <p>Q45. What do you think about the number of activities you do annually? Reduced; fair; good; very good; excessive</p> <p>Q46. How do you rate your communicator experience? Unsatisfactory; satisfactory; very Satisfactory</p>

## Supplementary Material

### Tables with the model coefficients

Parameter Estimates

Q12_Activities <sup>a</sup>		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
nenhum	Intercept	,195	1,435	,018	1	,892			
	[Q9_Work_Experience=1]	1,629	1,220	1,782	1	,182	5,097	,467	55,686
	[Q9_Work_Experience=2]	4,423	1,704	6,736	1	,009	83,377	2,953	2354,045
	[Q9_Work_Experience=3]	-,122	1,107	,012	1	,912	,885	,101	7,750
	[Q9_Work_Experience=4]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[Q33_Appreciation=1]	-5,395	1,743	9,583	1	,002	,005	,000	,138
	[Q33_Appreciation=2]	-2,006	,987	4,133	1	,042	,135	,019	,930
	[Q33_Appreciation=3]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[Q37_2_Lack_Support=1]	1,760	1,234	2,036	1	,154	5,812	,518	65,223
	[Q37_2_Lack_Support=2]	-,323	,868	,139	1	,710	,724	,132	3,968
	[Q37_2_Lack_Support=3]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[Q46_SciCom_Experience=1]	2,886	1,219	5,604	1	,018	17,919	1,643	195,403
	[Q46_SciCom_Experience=2]	1,037	1,033	1,009	1	,315	2,822	,373	21,367
	[Q46_SciCom_Experience=3]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[Q5_Expertise=1]	-4,429	1,895	5,461	1	,019	,012	,000	,489
	[Q5_Expertise=2]	-1,580	1,191	1,758	1	,185	,206	,020	2,128
	[Q5_Expertise=3]	-21,707	9804,614	,000	1	,998	3,741E-10	,000	<sup>c</sup>
	[Q5_Expertise=4]	-20,609	,000	.	1	.	1,121E-9	1,121E-9	1,121E-9

1-3	Intercept	-2,661	1,143	5,423	1	,020			
	[Q9_Work_Experience=1]	-1,074	,679	2,502	1	,114	,342	,090	1,293
	[Q9_Work_Experience=2]	3,731	1,283	8,457	1	,004	41,716	3,375	515,598
	[Q9_Work_Experience=3]	,069	,565	,015	1	,902	1,072	,354	3,241
	[Q9_Work_Experience=4]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[Q33_Appreciation=1]	-,301	,811	,137	1	,711	,740	,151	3,629
	[Q33_Appreciation=2]	,288	,797	,131	1	,718	1,334	,280	6,368
	[Q33_Appreciation=3]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[Q37_2_Lack_Support=1]	-1,568	,869	3,257	1	,071	,208	,038	1,144
	[Q37_2_Lack_Support=2]	-,417	,463	,812	1	,367	,659	,266	1,633
	[Q37_2_Lack_Support=3]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[Q46_SciCom_Experience=1]	3,826	,791	23,371	1	,000	45,878	9,726	216,398
	[Q46_SciCom_Experience=2]	1,817	,622	8,532	1	,003	6,151	1,818	20,815
	[Q46_SciCom_Experience=3]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[Q5_Expertise=1]	,275	,855	,104	1	,747	1,317	,247	7,036
	[Q5_Expertise=2]	,441	,819	,290	1	,590	1,554	,312	7,735
	[Q5_Expertise=3]	,750	,872	,739	1	,390	2,117	,383	11,696
	[Q5_Expertise=4]	,997	1,045	,910	1	,340	2,711	,349	21,040
	[Q5_Expertise=5]	1,675	,883	3,595	1	,058	5,338	,945	30,149
	[Q5_Expertise=6]	0 <sup>b</sup>	.	.	0	.	.	.	.

a. The reference category is: >4.

b. This parameter is set to zero because it is redundant.