



Mapping Normative Frameworks  
of EThics and Integrity of Research

**D4.3 Online content for the  
EnTIRE platform**



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## Mapping Normative Frameworks of EThics and Integrity of REsearch

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### Online content for the EnTIRE platform D.4.3.

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## 1. About EnTIRE

The areas of Research Ethics and Research Integrity (RE+RI) are rapidly evolving. In the EU and internationally, new legislation, codes of conduct and good practices are constantly being developed. New technologies, complex statistical methods, pressure to publish and obtain grants, and growing emphasis on stakeholder driven science (e.g. public-private partnerships) increase the complexity of conducting science. In this complex and dynamic environment, researchers cannot easily identify the correct professional rules (such as codes and guidelines) and best tools (including teaching, expert advice, and analysis of cases) for responsible conduct of research.

The EnTIRE project aims to create an online platform ([open-ethics.org](http://open-ethics.org)) that makes the normative framework governing RE+RI (including rules as well as tools) easily accessible, supports its application in research and evaluation, and involves all stakeholders in a participatory way. Indeed, participation is essential in order to understand the specific needs of stakeholders from different sectors, research disciplines and countries.

## 2. About WP4 – Resources for RE+RI

This work package is responsible for collecting and synthesizing information about: 1) RE+RI committees in different European countries and for different research domains; 2) RE+RI training courses for researchers; and 3) RE+RI experts' contact details.

The tasks for WP4 include:

1. Constructing the information framework for RE+RI resources (committees, training opportunities and experts).
2. Creating an inventory database of RE+RI committees in EU countries and for different research domains, as well as training opportunities and experts, making use of the definition of the normative framework (WP 2) and building on systematic harvesting of the results from other EU projects on RE+RI.
3. Iteratively assessing the acceptability and usability of the platform developed in WP 6 with stakeholders using the online community forum.

## 3. About the information framework

The discussions of experts at the 4<sup>th</sup> World Conference on Research Integrity in Rio de Janeiro in 2015, and further followed up at the 5<sup>th</sup> World Conference on Research Integrity in Amsterdam in 2017, led to the creation of an information framework about



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RE+RI, in order to provide a consistent and harmonized information about RE+RI elements and resources in different countries. We used the concept of Country Report Cards to identify and present the information on RE+RI resources and structures (committees and experts) in Europe. The information framework is not envisioned as a ranking exercise for the European countries, and also not as a formal tick-off exercise that could alienate countries, groups and individuals in RE+RI from a participatory approach to RE+RI as an important aspect of the research environment, particularly in those environments that have just started to address issues of RE+RI. We see the information framework and the data that will be collected during the life of the EnTIRE projects and beyond as a benchmark for the current situation and a living monitor of progress in the field for individual countries and the Europe. Also, by comparing good practices, groups would empower groups, communities and countries to strengthen their RE+RI environment, to increase awareness about responsible conduct of research and to encourage further research in the field of RE+RI so that the research environment is strengthened.

Country Report Cards include the information (metrics and descriptors) about:

1) **structures** for RE+RI: description of the research community in relation to the country size and investment in research, types of funding for research, existence of research strategies, legal and regulatory structures for RE+RI and the national, regional, and institutional levels;

2) **processes** (functions and ways of operation) for RE+RI: the procedure to disseminate and enforce RE+RI policies, existence and nature of training for RE+RI, evaluation and monitoring of the RE+RI policies and activities, transparency of outcomes of research misconduct allegations, presence and activity of designated RI offices in institutions, procedures for whistle-blowers' protection, funding for RE+RI work and research; registration of clinical trials (for biomedical research) and actions to ensure transparency of research (open access);

3) **outcomes** for RE+RI (defined as the current efforts on achieving maximum research integrity and a conducive research environment): results of research integrity evaluation as a part of institutional quality assessment; research impact assessment and translation of research findings to the community; public's perception of research integrity in their country; rewards for collaborative science and incentives for networks.

Based on this approach, we constructed the initial information framework (**Deliverable 4.1**) for collecting data on the RE+RI in the EU and EFTA countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxemburg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



## 4. About resources collection

The EnTIRE project aims to create an online platform (<https://sourceforge.net/projects/the-embassy-of-good-science/>) that makes the normative frameworks governing RE+RI (including rules as well as tools) easily accessible, supports its application in research and evaluation, and involves all stakeholders in a participatory way. Indeed, participation is essential in order to understand the specific needs of stakeholders from different sectors, research disciplines and countries (Lemke & Harris-Wai, 2015). For that reason, the project aims to include stakeholder opinions when defining boundaries of data collection and mapping the results according to the needs of the stakeholders.

## 5. Information framework for RE+RI resources – objectives

The aim of this WP is to gather different types of materials to identify current resources for RI+RE training in Europe. For that reason, this work package will include a comprehensive and systematic search for materials (literature, courses, training tools), as well as for RE+RI experts and RE+RI bodies.

### 5.1. Training opportunities for RI+RE

The information framework for RE+RI training methods included a wide range of different materials: journal articles, projects, and online courses, which could be potentially used in training of students, researchers and members of RI+RE bodies. The identified material will be incorporated in the project platform as a starting point for building up the resources pool. The codes of conduct and other normative documents, as well exemplary cases were collected by other work packages of the project and will also be available on the project platform, with relevant links among work packages.

### 5.2. RE+RI experts

The second objective of the work package was to collect information on RE+RI experts. We used the working definition of expert as a “person who possesses and displays special skill or knowledge derived from training or experience” (Merriam Webster dictionary). In the context of RE+RI, an expert was defined as a person working and publishing in the field of RE and RI. This means that being only a member of an ethics board would not be a sufficient criterion for a person to be qualified as an “expert”, but would need to have expertise in a field relevant for RE+RI (for example, research and teaching).

### 5.3. RI+RE bodies

The third objective of the work package was to provide contact, structural and functional information on ethics committees and research integrity bodies in EU.

Research ethics committees (RECs) are defined as official committees at institutions that make decisions on research that raises ethical issues, such as research on human





participants and research on animals. RECs are usually composed of professional and lay members and may be overseen by national bodies.

Research integrity bodies were defined as committees or individuals who are responsible for addressing research integrity issues related to research conducted at an institution. The activity of a RI body may range from advisory to investigative, with rulings that may or may not have legal power.

#### 5.4. Tasks

The aim of the information framework construction was to collect resources for RE+RI learning and tools for decision making in everyday research practice. Furthermore, the aims were to identify RE+RI experts in respective research areas and RE+RI organizations in EU countries that could aid in decision-making.

Sub-objectives included the following tasks:

1. Develop a pilot search strategy for literature search and collect the materials
2. Assess of the quality and the importance of the materials in their relation to RE+RI by independent assessors
3. Identify RE+RI experts in different research areas
4. Identify RE+RI bodies in EU

## 6. Development of a pilot search strategy for literature search and collection of the materials

### 6.1. Preparation

Previous EU projects in the RE+RI field (**Appendix A**) used different approaches to develop educational and training tools (online courses, projects, research articles, inspiring cases, policy documents). Our intention was to gather results from the previous projects and make additional content available online in order to gather resources for RE+RI training in an online platform. For that reason, our aim was to search within two main sources to identify training tools: 1) documentation from relevant projects and 2) published research articles to find training materials relevant to both nonprofessional and professional population. The collection of data was not be focused on legal documents and case scenarios centered on RE+RI (as they were collected in the WP3 and WP5, respectively), but collected the data focused on training in RE and RI, or materials which could serve as training tools, support documents and tools for aid in decision making. Moreover, the search included the grey literature databases where we traced materials that are not contained in regular scientific databases and project reports.

### 6.2. Design

The literature searches for RE+RI materials was performed systematically, through online databases, and with defined search strategies. Searches of the projects databases



included identification of RE+RI projects in order to identify potential materials which have been already collected by project members and/or developed by the projects.

### 6.3. Inclusion and exclusion criteria

The results were limited to those published after 1980, around the time when research integrity emerged as a field. We had no language restrictions.

The search strategy for the literature search also did not have geographical restrictions.

For the search of documents from grants, we searched the European project database, CORDIS (<https://cordis.europa.eu/>).

### 6.4. Databases and search strategies

Research articles focusing on training materials were identified through bibliographical databases Scopus and PubMed.

The search strategies are presented in the **Appendix B**. The search strategy was created with a focus on different aspects of research integrity and research ethics to identify the materials which could be potentially be used in practice. After the initial search, which was conducted in October 2017, and after removing duplicates, 32130 articles were left for screening. After screening, 125 articles were left for analysis (**Table 1**).

**Table 1.** List of articles selected for full text analysis

Articles – bibliographical information
Aalborg, A., S. Sullivan, et al. (2016). "Research ethics training of trainers: Developing capacity of Bolivian health science and civil society leaders." <i>Acta Bioethica</i> 22(2): 281-291.
Acharya, M., M. Davis, et al. (1995). "Integrating Ethics Into a Research Experience for Undergraduates." <i>Journal of Engineering Education</i> 84(2): 129-132.
Aggarwal, R., N. Gupte, et al. (2011). "A comparison of online versus on-site training in health research methodology: a randomized study." <i>BMC Medical Education</i> 11: 37.
Akozer, M. and E. Akozer (2017). "Ethics Teaching in Higher Education for Principled Reasoning: A Gateway for Reconciling Scientific Practice with Ethical Deliberation." <i>Science &amp; Engineering Ethics</i> 23(3): 825-860.
Alfredo, K. and H. Hart (2011). "The university and the responsible conduct of research: who is responsible for what?" <i>Science &amp; Engineering Ethics</i> 17(3): 447-457.
Allan, A. (2017). "Applying Research Findings to Enhance Pre-Practicum Ethics Training." <i>Ethics and Behavior</i> : 1-18.
Al-Marzouki, S., S. Evans, et al. (2005). "Are these data real? Statistical methods for the detection of data fabrication in clinical trials." <i>BMJ</i> 331(7511): 267-270.
Almeroth, K. and A. Knight (2011). "Automatic plagiarism detection with PAIRwise 2.0." <i>Journal of Interactive Learning Research</i> 22(3): 379-400.
Amdur, R. J. and C. Biddle (1997). "Institutional review board approval and publication of human research results." <i>JAMA</i> 277(11): 909-914.
Antes, A. L. (2014). "A systematic approach to instruction in research ethics." <i>Accountability in Research</i> 21(1): 50-67.
Antes, A. L., X. Wang, et al. (2010). "Evaluating the effects that existing instruction on responsible conduct of research has on ethical decision making." <i>Academic Medicine</i> 85(3): 519-526.



Arnaud, C. (2009). "Instilling scholarly integrity." *Chemical and Engineering News* 87(9).

Aston, J. and P. Black (2006). "Does participation in formal postgraduate studies have a positive impact on pharmacists' professional activities?" *Pharmaceutical Journal* 276(7387): 175-179.

Atchley, R. (2002). "Teaching students how to do research on a shoestring budget." *Gerontology and Geriatrics Education* 22(3): 3-9.

Austad, K. E. and A. S. Kesselheim (2011). "Conflict of interest disclosure in early education of medical students." *JAMA* 306(9): 991-992.

Bagdasarov, Z., C. E. Thiel, et al. (2013). "Case-based ethics instruction: the influence of contextual and individual factors in case content on ethical decision-making." *Science & Engineering Ethics* 19(3): 1305-1322.

Beever, J. and A. O. Brightman (2016). "Reflexive Principlism as an Effective Approach for Developing Ethical Reasoning in Engineering." *Science & Engineering Ethics* 22(1): 275-291.

Benatar, J. R., P. McKibbin, et al. (2012). "Improving the informed consent process-a booklet on participants' rights in medical research." *New Zealand Medical Journal* 125(1362): 36-46.

Bergman, E. J. and A. Fiester (2015). "Teaching and Learning the Techniques of Conflict Resolution for Challenging Ethics Consultations." *Journal of Clinical Ethics* 26(4): 312-314.

Berry, R. M., J. Borenstein, et al. (2013). "Contentious problems in bioscience and biotechnology: a pilot study of an approach to ethics education." *Science & Engineering Ethics* 19(2): 653-668.

Bezuidenhout, L. (2013). "Data sharing and dual-use issues." *Science & Engineering Ethics* 19(1): 83-92.

Bonde, S., C. Briant, et al. (2016). "Making Choices: Ethical Decisions in a Global Context." *Science & Engineering Ethics* 22(2): 343-366.

Bonito, A. J., S. L. Titus, et al. (2012). "Preparing whistleblowers for reporting research misconduct." *Accountability in Research* 19(5): 308-328.

Boulay, R., A. Parisky, et al. (2013). "Designing Online Resources in Preparation for Authentic Laboratory Experiences." *The International Journal of Design Education* 6(2): 57-66.

Breen, L. and M. Maassen (2005). "Reducing the incidence of plagiarism in an undergraduate course: The role of education." *Issues in Educational Research* 15(1): 1-16.

Briggle, A., J. B. Holbrook, et al. (2016). "Research Ethics Education in the STEM Disciplines: The Promises and Challenges of a Gaming Approach." *Science & Engineering Ethics* 22(1): 237-250.

Bruckman, A. (2006). "Teaching students to study online communities ethically." *Journal of Information Ethics* 15(2): 82-98.

Brummel, B. J., C. K. Gunsalus, et al. (2010). "Development of role-play scenarios for teaching responsible conduct of research." *Science & Engineering Ethics* 16(3): 573-589.

Buff, C. L. and V. Yonkers (2005). "Using student generated codes of conduct in the classroom to reinforce business ethics education." *Journal of Business Ethics* 61(2): 101-110.

Cañete, R., A. Prior, et al. (2013). "Development of an institutional curriculum in ethics and public health." *Acta Bioethica* 19(2): 251-257.

Cohen, J. J. and E. K. Siegel (2005). "Academic medical centers and medical research: the challenges ahead." *JAMA* 294(11): 1367-1372.

Coughlin, S. S. (2008). "Using cases with contrary facts to illustrate and facilitate ethical analysis." *Science & Engineering Ethics* 14(1): 103-110.

Cromey, D. W. (2010). "Avoiding twisted pixels: ethical guidelines for the appropriate use and manipulation of scientific digital images." *Science & Engineering Ethics* 16(4): 639-667.



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### 6.5. Grey literature search

Grey literature search was performed through specialized databases:

- 1) <http://base-search.net>,
- 2) <http://opengrey.org>, and
- 3) <http://science.gov>.

The search of the grey literature databases focused on materials that have not been available in scientific databases. We used wide, sensitive terms “research AND ethics”, “research AND integrity”. While did not have not geographical restrictions, we restricted the search on materials written in English because of the expected large number of retrieved materials. The search also included non-research materials, such as books, reports, and programmes. Only 10 documents were suitable for inclusion (**Table 2**).

**Table 2.** Grey literature materials

Materials - information	URL
Communicating Qualitative Research Study Designs to Research Ethics Review Boards	<a href="https://files.eric.ed.gov/fulltext/EJ926344.pdf">https://files.eric.ed.gov/fulltext/EJ926344.pdf</a>
Straw Godzilla: Engaging the Academy and Research Ethics in Artistic Research Projects	<a href="https://www.tandfonline.com/doi/abs/10.1080/00131857.2015.1044929">https://www.tandfonline.com/doi/abs/10.1080/00131857.2015.1044929</a>





Web-Based Research Ethics Training for Gerontologists	<a href="https://www.tandfonline.com/doi/abs/10.1080/03601270701836104">https://www.tandfonline.com/doi/abs/10.1080/03601270701836104</a>
Teaching and learning ethical research competence in qualitative research	<a href="http://journals.sagepub.com/doi/abs/10.1177/1747016116677636">http://journals.sagepub.com/doi/abs/10.1177/1747016116677636</a>
Kara H. Research Ethics - Ethical Principles. NCRM; 2017.	<a href="https://www.ncrm.ac.uk/resources/online/research_ethics_theory_and_practice/">https://www.ncrm.ac.uk/resources/online/research_ethics_theory_and_practice/</a>
Kara H. Research Ethics - Ethical Practice. NCRM; 2017.	<a href="https://www.ncrm.ac.uk/resources/online/research_ethics_theory_and_practice/">https://www.ncrm.ac.uk/resources/online/research_ethics_theory_and_practice/</a>
Khan I. Plagiarism: Detection and Prevention. 2014.	<a href="https://www.researchgate.net/publication/232257566_Plagiarism_An_academic_theft">https://www.researchgate.net/publication/232257566_Plagiarism_An_academic_theft</a>
Maguire MH. What if You Talked to Me? I Could Be Interesting! Ethical Research Considerations in Engaging with Bilingual / Multilingual Child Participants in Human Inquiry. 2012.	<a href="http://www.qualitative-research.net/index.php/fqs/article/view/530">http://www.qualitative-research.net/index.php/fqs/article/view/530</a>
Nebeker C, López-Arenas A. Building Research Integrity and Capacity (BRIC): An Educational Initiative to Increase Research Literacy among Community Health Workers and Promotores. 2015.	<a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4798813/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4798813/</a>
Wiles R. Video: What are qualitative research ethics? : NCRM; 2012.	<a href="https://www.ncrm.ac.uk/resources/video/RMF2012/whatis.php?id=3732e09">https://www.ncrm.ac.uk/resources/video/RMF2012/whatis.php?id=3732e09</a>

### 6.6. Project database and RE+RI sites search

European projects on RE+RI was searched in an official EU project database ([http://cordis.europa.eu/projects/home\\_en.html](http://cordis.europa.eu/projects/home_en.html)). The search strategy was sensitive rather than specific, using the terms “research AND ethics” and “research AND integrity”. We have also searched through specialized databases: RRI Tools (<https://www.rri-tools.eu>), Office for Research Integrity ( <https://ori.hhs.gov/>) and Netherlands Research Integrity Network (<https://www.nrin.nl/>). As a results, 9 sources of online courses (**Table 3**) and 23 tools (e.g. card games, movies, checklists) (**Table 4**), were included.

**Table 3.** List of extracted online courses

Course	Source
HEIRRI courses	<a href="https://www.rri-tools.eu/heirri-training-programmes">https://www.rri-tools.eu/heirri-training-programmes</a>
ORI Introduction to the Responsible Conduct of Research	<a href="https://ori.hhs.gov/ori-introduction-responsible-conduct-research">https://ori.hhs.gov/ori-introduction-responsible-conduct-research</a>
University of Montana online research ethics course	<a href="https://ori.hhs.gov/education/products/montana_round1/research_ethics.html">https://ori.hhs.gov/education/products/montana_round1/research_ethics.html</a>
Online course: Teaching the Responsible Conduct of Research in Humans	<a href="https://ori.hhs.gov/education/products/ucla/default.htm">https://ori.hhs.gov/education/products/ucla/default.htm</a>



Online Module: Responsible research and Peer Review	<a href="http://ccnmtl.columbia.edu/projects/rcr/rcr_authorship/">http://ccnmtl.columbia.edu/projects/rcr/rcr_authorship/</a>
Online Module: Research Misconduct	<a href="http://ccnmtl.columbia.edu/projects/rcr/rcr_misconduct/">http://ccnmtl.columbia.edu/projects/rcr/rcr_misconduct/</a>
Tutorial: PHS Policy on Humane Care and Use of Laboratory Animals	<a href="https://olaw.nih.gov/resources/tutorial">https://olaw.nih.gov/resources/tutorial</a>
Online course: Reviewing and Managing Researchers' Conflicts of Interest	<a href="https://ori.hhs.gov/education/products/u_minn/html/managers/index.shtml">https://ori.hhs.gov/education/products/u_minn/html/managers/index.shtml</a>
Research Mentoring: An online module	<a href="https://ori.hhs.gov/education/products/niu_mentorship/">https://ori.hhs.gov/education/products/niu_mentorship/</a>

**Table 4.** List of extracted tools

Tool	Source
Transparify: A tool for transparent reporting of funding sources	<a href="http://www.transparify.org/get-five">http://www.transparify.org/get-five</a>
IMAGINE RRI   A card-based method for reflecting on responsibility in life science research	<a href="https://www.tandfonline.com/doi/full/10.1080/23299460.2018.1457402">https://www.tandfonline.com/doi/full/10.1080/23299460.2018.1457402</a>
Academic integrity checklist	<a href="http://students.uu.nl/en/files/uu-academicintegritypdf">http://students.uu.nl/en/files/uu-academicintegritypdf</a>
EnRRIch project- tool for educators	<a href="http://www.livingknowledge.org/fileadmin/Dat eien-Living-Knowledge/Dokumente_Dateien/EnRRICH/D3.1_Resources_for_enhancing_RRI_understanding_and_prompting_debate_on_societal_issues_in_the_curriculum_for_early_stage_students.pdf">http://www.livingknowledge.org/fileadmin/Dat eien-Living-Knowledge/Dokumente_Dateien/EnRRICH/D3.1_Resources_for_enhancing_RRI_understanding_and_prompting_debate_on_societal_issues_in_the_curriculum_for_early_stage_students.pdf</a>
FOSTER project workshop	<a href="http://www.ugent.be/doctoralschools/en/doct oraltraining/courses/transferableskills/all/foste ringrcr.htm">http://www.ugent.be/doctoralschools/en/doct oraltraining/courses/transferableskills/all/foste ringrcr.htm</a>
Fiction Movie Analysis Tool	<a href="https://www.nrin.nl/fiction-movies-for-rcr-education/">https://www.nrin.nl/fiction-movies-for-rcr-education/</a>
The lab movie	<a href="https://ori.hhs.gov/the-lab">https://ori.hhs.gov/the-lab</a>
The research Clinic movie	<a href="https://ori.hhs.gov/research-clinic">https://ori.hhs.gov/research-clinic</a>
Infographics on research integrity	<a href="https://ori.hhs.gov/infographics">https://ori.hhs.gov/infographics</a>
Administrators and the Responsible Conduct of Research	<a href="https://ori.hhs.gov/education/products/rcradm in/">https://ori.hhs.gov/education/products/rcradm in/</a>
Interactive Guide: Basic research Concepts	<a href="https://ori.hhs.gov/content/basic-research-concepts-brc">https://ori.hhs.gov/content/basic-research-concepts-brc</a>
Lab Management instructions	<a href="https://ori.hhs.gov/education/products/wsu/in dex.html">https://ori.hhs.gov/education/products/wsu/in dex.html</a>
Research Integrity: A Novel Approach	<a href="https://ori.hhs.gov/education/products/NovelA pproach/">https://ori.hhs.gov/education/products/NovelA pproach/</a>



Office for Human Research Protections; Short videos about human research protections	<a href="https://www.hhs.gov/ohrp/education-and-outreach/online-education/mini-tutorials/index.html">https://www.hhs.gov/ohrp/education-and-outreach/online-education/mini-tutorials/index.html</a>
Responsible authorship quick guide	<a href="https://ori.hhs.gov/education/products/niu_authorship/index.htm">https://ori.hhs.gov/education/products/niu_authorship/index.htm</a>
Avoiding Plagiarism, Self-plagiarism, and Other Questionable Writing Practices: A Guide to Ethical Writing	<a href="https://ori.hhs.gov/avoiding-plagiarism-self-plagiarism-and-other-questionable-writing-practices-guide-ethical-writing">https://ori.hhs.gov/avoiding-plagiarism-self-plagiarism-and-other-questionable-writing-practices-guide-ethical-writing</a>
Online Learning Tool for Research Integrity and Image Processing	<a href="https://ori.hhs.gov/education/products/RlandImages/default.html">https://ori.hhs.gov/education/products/RlandImages/default.html</a>
Animal research: IACUC Inspection Virtual Walkthrough	<a href="https://ori.hhs.gov/education/products/IACUC/home.html">https://ori.hhs.gov/education/products/IACUC/home.html</a>
Contemporary Science, Values and Animal Subjects in Research	<a href="https://ori.hhs.gov/education/products/ncstate/index.htm">https://ori.hhs.gov/education/products/ncstate/index.htm</a>
A Guidebook for Teaching Selected RCR Topics to Culturally Diverse Trainee Groups	<a href="https://ori.hhs.gov/images/ddblock/Alexander.RCR%20Guidebook.BW_.pdf">https://ori.hhs.gov/images/ddblock/Alexander.RCR%20Guidebook.BW_.pdf</a>
Mentoring: An online Module	<a href="https://ori.hhs.gov/education/products/columbia_wbt/rcr_mentoring/index.html">https://ori.hhs.gov/education/products/columbia_wbt/rcr_mentoring/index.html</a>
Mentoring International Post Docs	<a href="https://ori.hhs.gov/mentoring-international-post-docs">https://ori.hhs.gov/mentoring-international-post-docs</a>
Guidelines for Responsible Data Management in Scientific Research	<a href="https://ori.hhs.gov/sites/default/files/data.pdf">https://ori.hhs.gov/sites/default/files/data.pdf</a>

### 6.7. Mapping the documents

Summarizing of basic information about the documents will be made for documents that are obtained after assessment of materials for their quality and overall importance (see section: *Quality assurance*).

### 6.8. Availability of search strategy and results

The search strategy and the search results will be available online, on the EnTIRE platform, <http://entireconsortium.eu/>, so it can be cross-validated and updated in future. Searches will be regularly updated so that new materials are available in future. Moreover, the available search strategy may be modified, if there is need for adaptation due to the needs of potential users.

### 6.9. Collaboration with other WPs

We collaborated with WP1 and WP2 in order to include topics and issues that emerged from the stakeholder consultations, especially on tagging issues. The first search for data in this WP will be used as pilots for final data collection and optimization of the search and its update. The first search also defined the boundaries of literature search for materials that will be uploaded to the EnTIRE web platform in collaboration with WPs 6 and 7. The materials identified in the search will be the basis for establishing a RE+RI document library, which will be continually updated during the life of the project. This library can serve



as a resource for RE+RI projects or other interested parties to identify relevant materials. The library will be constructed so that it can be easily searched.

## 7. Quality assurance

### 7.1. Preparation

Considering that RE+RI are very broad concepts that exist in every scientific field, our search for materials resulted in large amount of different types of data. Most of this information would not benefit everyday users. Therefore, the collection of materials in WP4 depended on the results from the stakeholder consultations to define the stakeholders needs and proposals. In the focus groups with diverse stakeholder groups, the participants gave information on what resources they would consider necessary for RE+RI education, concept clarification or decision-making.

### 7.2. Design

All materials were assessed by two independent assessors (RT, IB) who examined the potential relevance of the material and its quality. The assessors are a PhD student (IB) and a medical doctor/PhD student (RT) who are experienced in research on research integrity and both members of the EnTIRE research group. Both assessors needed to agree in order for the item to be included in the library. In case of disagreement between the assessors, a third party was involved in the assessment to make the final decision (AM, the leader of WP 4).

### 7.3. Inclusion and exclusion criteria

Materials that are explicitly related to RE+RI teaching methods, contents and guidelines and materials which could serve as a tool for decision-making were included. The documents that are only partially related to RE+RI teaching methods, as well as legal documents and case descriptions were not included in the analysis because they will be collected in WP3 and WP5, respectively.

### 7.4. Setting

We used Endnote tool for data collection, primarily because it enables a more systematic approach to data collection and deduplication.

### 7.5. Mapping the documents

The documents will be mapped and posted online using Semantic WikiMedia software. Initially proposed categories for tagging were:

1. Title of the document,
2. Author(s),
3. Type (original journal article, review article, project document, etc),
4. Date of publication,



5. Publisher,
6. Journal (in cases of articles),
7. Discipline:
  - a. Natural sciences: e.g. physics, chemistry, biology, ecology, geology
  - b. Social sciences: e.g. economics, psychology, sociology, political theory
  - c. Formal sciences: e.g. logic, statistics, systems theory, theoretical computer science
  - d. Applied sciences: engineering, applied mathematics, applied physics, medicine, computer science,
8. Whether the content is more related to RI or RE, or equally to both categories,
9. Specificity of materials according to the following categories (which may overlap):
  - a. Informative/descriptive (which also includes literature reviews and cross-sectional studies)
  - b. Interventions (RE+RI interventions and their efficacy)
  - c. Interactive materials (e.g. videos on RI)
  - d. Research materials (e.g. surveys, questionnaires, databases)
10. Applicability to human or animal testing or both

However, in cooperation with other Consortium partners, additional categories were developed (**Table 5**), and are still under development.

**Table 5.** Proposed categories for resource tagging

	Experts	Training materials	RE/RI committees	Type	Flexibility	Default	User perspective - Use
<b>Title/ name</b>	X	X	X	Tag			
<b>Discipline</b>	X	X	X	Category	1. Users can add their own category, e.g. for (new) subfields 2. More categories should be possible 3. it will be possible to add "generic"	Universal	Focus on your field
<b>Membership/signatories (documents)</b>	X		X	WIKI-Link	e.g. EC of ENERI		
<b>Geographical setting</b>	X		X		1. Multiple countries should be possible 2. Cities/Europe should also be possible 3. Institutions responsible for different areas can be added		
<b>Affiliation</b>	X			ORCID			
<b>Source</b>		X		Journals and publishers			
<b>Description of content</b>		X		Tag	Type (original journal article, review article, Project document, MOOC, etc), Some presets for documents: Principles of		



					Integrity   Data Practises   Training   Collaboration   Conflicts of Interest   Authorship   Publication practices   Peer Review   Misconduct		
<b>Virtues and values</b>				Tag	1. Pre-set for virtues and values 2. Users can add to it		
<b>Legal status (type of document)</b>				Category	Some presets: Code of Conduct   Regulatory Guideline   Law  Users can add their own categories		
<b>Year/Date</b>		X	X	Year	Type date/time and allow multiple entries (also specific year, date and time)		
<b>Related to which RE+RI project (If any, and there could be more)</b>	X	X	X	Name of the project /tag	There can be more projects, and the users may add new projects as they appear		
<b>Function</b>		X	X	Tag	Materials: Specificity of materials according to the following categories (which may overlap): 1. Informative/descriptive (which also includes literature reviews and cross-sectional studies) 2. Interventions (RE+RI interventions and their efficacy) 3. Interactive materials (e.g. videos on RI) 4. Research materials (e.g. surveys, questionnaires, databases); Committees: Function/Type of authority (advisory or with decision making)		If users disagree with the function of the certain material/committee they are allowed to change it
<b>Authors/members/ issuing body (in the cases of committees)</b>		X	X	Tag	Author(s) of the article/coordinator in the case of projects, members of the committees		
<b>URL</b>	X	X	X	URL			
<b>Scope</b>			X	Tag	Operating field (international, national, regional, institutional)		
<b>RI officer (yes/no)</b>	X			Tag			
<b>Target audience</b>		X		Tag	Beginners and general public, junior researchers, postdocs, senior researchers		Although initially defined by us, it can be changed afterwards according to user perspective
<b>Usability/Use</b>		X		Tag	Self-study, length of document, informative		Users may change the tag if they desire
<b>Insights</b>	X	X	X	Wiki-text			

Further mapping of the results will depend on the results of WP2 (stakeholder consultations), in order to make the documents easily available to the user's needs.

## 7.6. Collaboration with other WPs

Our search differed from searches in WP3, which were focused on legal and policy documents, and WP5, which were focused on collection and tagging of RE+RI cases. Also, our materials will have to be tested for validity by stakeholders using the qualitative approach (interviews and focus groups), to assure that the collected data is the right type of material for end users.

## 8. Identification of RE+RI experts

### 8.1. Preparation

Currently, there are several web directories/web pages with the lists of experts and their personal contacts. For example:

- 1) BEKIS – the Bioethics Communication and Information System, <http://bekis.eu> (open source)
- 2) UNESCO's Global Ethics Observatory, <http://www.unesco.org/new/en/social-and-human-sciences/themes/global-ethics-observatory/access-geobs/> (open source)
- 3) SINAPSE, <https://europa.eu/sinapse/sinapse/index.cfm?fuseaction=sinapse.home> (restricted access, some free search functionality)

The identification of experts in the RE+RI fields is the aim that overlaps with the ENERI project ([www.eneri.eu](http://www.eneri.eu)).

However, there is no major platform that provides comprehensive information on both research ethics and integrity experts from different countries and different fields. The identification of experts will enable the communication with the relevant people in the field, as well as the better connection of experts from different domains. The users will be able to get experts' contact details and ask them for advice.

### 8.2. Design

The search for RE+RI experts was performed through several different web resources (see *Setting* below), as well as through personal contacts using the “snowballing” sample technique.

### 8.3. Inclusion and exclusion criteria

For the purpose of the initial collection of data, RE+RI experts were defined as individuals who have:

- a) Previous experience in RE+RI domain in respective field and/or
- b) Have published papers or participated in projects centered around RE+RI in their respective field.



c) They may also have experience in teaching RE+RI and/or work in RE+RI bodies.

We are aware that these definitions may evolve, particularly in relation to the results of the H2020 project ENERI, so that our definition will be updated depending on the community consensus.

We did not include PhD students, because although some of them may have already published research in RE+RI, they are still not experts in RE+RI field but are mentored by experts.

The identified experts were assessed for inclusion by three independent assessors (IB, RT, VT), who excluded those members who do not satisfy the inclusion criteria. In cases of disagreement, the fourth member (AM) mediated the final resolution and agreement.

Only experts with publicly available information on their expertise in RE+RI were included. We will not post any material that is not already available on the Internet. Pilot searches are presented in **Table 6**.

When the EnTIRE platform is live, we will invite members of these lists to contribute to the platform by sharing information on their expertise.

**Table 6.** List of experts found in pilot searches

Title/ name	Discipline	Membership /signatories (documents)	Geographical setting	Affiliation	Related to which RE+RI project (If any, and there could be more)	URL	RI officer (yes/no)
Lex Bouter	medical biology, epidemiology	Member of the Guidance Committee for the 3rd Evaluation of the Law on Medical Research (WMO) of the Netherlands Organisation for Health Research and Development (ZonMw); Member of the Council for Medical and Life Sciences of the Royal Netherlands Academy of Arts and Sciences (KNAW); Chairman of the World Conferences on Research	Netherlands	Vrije Universiteit Amsterdam; ORCID: 0000-0002-2659-5482	ENERI, EnTIRE, VIRT2UE	<a href="https://sites.google.com/site/lexbouter/home">https://sites.google.com/site/lexbouter/home</a>	no





		Integrity Foundation					
Maura Hiney	microbiology, biochemistry, molecular diagnostics and epizootology	ALLEA Permanent Working Group on Science and Ethics (PWGSE), National RI Forum, ENRIO	Ireland	Health Research Board (HRB)	PRINTEGER, VIRT2UE, EnTIRE,	<a href="https://ie.linkedin.com/in/maurahiney">https://ie.linkedin.com/in/maurahiney</a>	no
Nils Axelsen	biomedicine, research integrity	Danish Committee on Scientific Dishonesty (DCSD), Lundbeckfonden	Denmark	Office of Research Integrity, Statens Serum Institut, Copenhagen, Denmark			yes
Ana Marušić	research in biomedicine and health, research integrity	president of the European Association of Science Editors, Steering Group of the EQUATOR Network, founder of the Cochrane Croatia	Croatia	University of Split School of Medicine; ORCID: 0000-0001-6272-0917	Heirri, EnTIRE, VIRT2UE	<a href="http://www.mefst.unist.hr/research/laboratories-and-research-groups/research-group-science-and-society/ana-marusic/1718">http://www.mefst.unist.hr/research/laboratories-and-research-groups/research-group-science-and-society/ana-marusic/1718</a>	no
Nicole Foeger	biochemistry	Chair of the European Network of Research Integrity Offices (ENRIO), Member of WG and Task Group Leader on Training Research Integrity at Science Europe Working Group on	Austria	Austrian Agency for Research Integrity (OeAWI)	PRINTEGER, HEIRRI, ENERI	<a href="https://www.linkedin.com/in/nicole-foeger-ba17478a">https://www.linkedin.com/in/nicole-foeger-ba17478a</a>	yes



		Research Integrity					
Debora Weber-Wulff	ethics, media informatics, software engineering	Founding member of Wikimedia Deutschland, vice chair of the Gesellschaft für Informatik working group "Computing and Ethics", VroniPlag Wiki	Germany	Hochschule für Technik und Wirtschaft Berlin; ORCID: 0000-0002-7335-6548		<a href="https://people.f4.htw-berlin.de/~weberwu/">https://people.f4.htw-berlin.de/~weberwu/</a>	no
Kris Dierickx	biomedical ethics	Member of the Flemish Screening Commission, the Deontological Commission of the Superior Health Council, the Committee on Scientific Integrity, the Ethics Committee for experiments with animals	Belgium	KU Leuven	PRINTEGER, VIRT2UE	<a href="https://gbiomed.kuleuven.be/english/research/50000687/50000697/pcbmer/0014957">https://gbiomed.kuleuven.be/english/research/50000687/50000697/pcbmer/0014957</a>	no
Erika Löfström	education	Finnish Advisory Board on Research Integrity, Review Board on Ethics in Research on Human Participants, LERU Expert Group on Research Integrity	Finland	University of Helsinki; ORCID: 0000-0002-0838-9626	WeQ Pedagogy goes lukio & gymnasium, ENERI, VIRT2UE	<a href="https://tuhat.helsinki.fi/portal/en/persons/erika-loefstroem(e335ce38-d39c-46b5-b32d-e3cd40e3d10c0).html">https://tuhat.helsinki.fi/portal/en/persons/erika-loefstroem(e335ce38-d39c-46b5-b32d-e3cd40e3d10c0).html</a>	no



Itziar de Lecuona	bioethic, research integrity	UNESCO Chair in Bioethics at the University of Barcelona, Consolidated Research Group "Bioethics, Law and Society" of the Catalanian Government, Consolidated Research Group "Bioethics, Law and Society" of the Catalanian Government, Expert Group on Research Integrity, Ethical, Legal and Social Board of the European Institute of Innovation and Technology	Spain	University of Barcelona; ORCID: 0000-0002-5081-5756	DNABIOLAW, BODYBIOLAW, NANOBIO LAW, Human Assisted Reproduction : ethical, legal and social implications	<a href="http://www.bioeticayderecho.ub.edu/en/itziar-de-lecuona">http://www.bioeticayderecho.ub.edu/en/itziar-de-lecuona</a>	no
Pieter Drenth	psychology	KNAW, ALLEA, Hollandsche Maatschappij der Wetenschappen, Academia Europaea, Academie Européenne des sciences, des arts et des lettres	Netherlands	Vrije Universiteit Amsterdam		<a href="https://pieterdrenth.wordpress.com/">https://pieterdrenth.wordpress.com/</a>	no
Sabine Kleinert	medicine	Committee on Publication Ethics, Steering committee for the World Health Summits	United Kingdom	The Lancet; ORCID: 0000-0001-7826-1188		<a href="https://www.bir.org.uk/about-us/council-and-trustees/dr-sabine-kleinert/">https://www.bir.org.uk/about-us/council-and-trustees/dr-sabine-kleinert/</a>	no
Bjørn Hofmann	philosophy of medicine	National Board for Preimplantation Genetic Diagnosis, Council for The Norwegian University for Science and	Norway	University of Oslo	VIRT2UE	<a href="https://www.ntnu.edu/employees/bjoern.hofmann">https://www.ntnu.edu/employees/bjoern.hofmann</a>	no



		Technology's strategic program for medical technology, Directorate for Health and Social Affairs, EUNETHTA					
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#### 8.4. Setting

Identification of experts in Europe was done through the following sources:

- 1) ENRIO; European Network of Research Integrity Offices website (<http://www.enrio.eu/>); ENRIO brings together experts who are dealing with questions of research integrity. Currently, it has 28 member states, 22 of which are from EU. ENRIO focuses on increase of international collaboration on RE+RI problems. Identification of experts will be done for member states (**Appendix C**), which also may provide additional information about the other experts.
- 2) ENERI project is a cooperation of already established cooperation networks of experts in RE+RI field (<http://eneri.eu/>). ENERI was founded to promote and monitor science and research processes in a responsible way. The data collection will be done using the *Inter-connected European information and documentation system for ethics and science: European Ethics Documentation Centre* (<http://ethicsweb.eu>), which provides wide range of resources for literature search, expert databases and legal documents.
- 3) European Network of Research Ethics Committees – EURECNET (<http://www.eurecnet.org/index.html>) EURECNET is a network that brings together already existing national Research Ethics Committees associations aiming to establish international network of research ethics committees, which would develop common solutions to existing ethical issues. We will search for experts in member countries (**Appendix C**) and through personal contacts and official sites in individual countries.
- 4) EFGCP (European Forum for Good Clinical Practice, <http://www.efgcp.eu/>): a non-profit organization that gathers members who are involved in biomedical research and strives to promote responsible research with high quality standards across Europe.
- 5) Members of the EU projects on RE+RI will be searched though official EU website (<http://cordis.europa.eu/>).
- 6) Office for Research Integrity (ORI) (<https://ori.hhs.gov/>) databases. ORI is composed of numerous offices and agencies with global impact. ORI's efforts are placed in development of guidelines for good research practice and research integrity education to diverse audience.



### 8.5. Mapping the data

The mapping of the data will be done according to the proposed categories (**Table 5**), which contain greater number from those which are initially proposed:

1. Field/discipline of expertise,
2. Country/countries of work,
3. Current affiliation,
4. Membership of a RE committee and/or RI body,
5. Previous and current involvement in FP7 or H2020 projects with RE+RI topics,
6. Publications concerning RE+RI.

These categories were developed in cooperation with WPs 1, 2,3,5 and 6, and are still under refinement and further development.

### 8.6. Collaboration with other WPs

In this section, we provide the working definition of expert, which may change in coordination with other project members. Furthermore, our aim is to collaborate with ENERI project for expert identification, so that there is no duplication of efforts in searching. However, based on the results on WP2, we can expand our categories for tagging, and also, stakeholder information may help to modify or improve the definition of expert based on their responses.

In collaboration with WP6 and WP7 we will look for the best ways of presenting information and methods to engage the community without endangering their privacy and personal information. The best solution would be engaging individual experts to become a part of the web platform. Possible ways include the use of ORCID profiles or other methods of sharing data and increasing transparency of the process of research and its evaluation, like peer review.

## 9. Identification of RE bodies in Europe

### 9.1. Preparation

RE committees in Europe are gathered around the European Network of Research Ethics Committees (EUREC), which gives the opportunity for ethics committees to be easily identified, contacted and compared across different countries.

However, because not all European countries are members of EUREC, this presents an issue in the search for RE committees in those countries. Also, the regulating bodies are not always easy to identify and contact, which hardens the communication and comparability of their policies and structure across different domains, institutions and countries.

### 9.2. Design

The search for RE committees and RE bodies was performed through official EUREC website and through personal contacts and publications concerning RE+RI themes in Europe.



### 9.3. Inclusion and exclusion criteria

We included RE committees responsible for providing ethical assessment and opinion on research in Europe. RE bodies operating outside of Europe will not be included.

### 9.4. Setting

The search for RE committees was performed through EUREC website for member states.

For countries that are not EUREC member countries, we started with publications which are centered around RE surveillance (e.g. Druml et al, 2009) and websites centered around European RE practices (e.g. European Forum for Good Clinical Practice: EFGCP). Also, we used the “snowballing” sampling technique to contact members of EUREC who could provide additional information where to find more RE bodies.

### 9.5. Mapping the data

The initial proposal was that the tagging is made according to the following categories:

1. Geographical setting (country)
2. Membership type (which type of RE experts the committee gathers)
3. Operating field (national, regional, institutional)
4. Discipline:
  - a. Natural sciences: e.g. physics, chemistry, biology, ecology, geology
  - b. Social sciences: e.g. economics, psychology, sociology, political theory
  - c. Formal sciences: e.g. logic, statistics, systems theory, theoretical computer science
  - d. Applied sciences: engineering, applied mathematics, applied physics, medicine, computer science
5. Function/Type of authority (advisory or with decision making power)
6. Does the RE committee have any other oversight body
7. Whether the RE committee has any international members
8. Number of members

However, during the process, other additional categories were developed (Table 5) and are still under development.

### 9.6. Collaboration with other WPs

We will use the results of stakeholder consultations from WP2 to add any new category they find relevant, in addition to our initially proposed. Those new categories will be used as guidelines for content tagging, in collaboration with WP6 and WP7. However, we will neither use categories which are subjective (e.g. the quality of RE committee), nor categories which are not publicly available.



## 10. Identification of RI bodies in Europe

### 10.1. Preparation

Most of the RI committees in EU are gathered around ENRIO; European Network of Research Integrity Offices website (<http://www.enrio.eu/>); which presented a baseline for search and identification of RI committees. Due to the expansion of research on research integrity, there is a necessity for standardization in work and procedures concerning RI in practice. Therefore, our aim is to describe the characteristics of RI bodies which operate in different countries and on different levels of organizations (Godecharle et al, 2014; Aubert Bonn et al, 2017).

### 10.2. Design

The search for RI committees and RI bodies was performed through ENRIO and through personal contacts available within the EnTIRE consortium and wider academic community.

### 10.3. Inclusion and exclusion criteria

We included RI committees responsible for oversight, promotion and decision making on research integrity in different countries.

### 10.4. Setting

RI bodies were traced through ENRIO for member states, while for non-member states we relied through personal contacts.

### 10.5. Mapping the data

The tagging of results for each RI committee will be made according to the following categories:

1. Geographical setting (Country)
2. Membership type (which type of RI experts the committee gathers)
3. Operating field (national, regional, institutional)
4. Discipline:
  - a. Natural sciences: e.g. physics, chemistry, biology, ecology, geology
  - b. Social sciences: e.g. economics, psychology, sociology, political theory
  - c. Formal sciences: e.g. logic, statistics, systems theory, theoretical computer science
  - d. Applied sciences: engineering, applied mathematics, applied physics, medicine, computer science
5. Function/Type of authority (advisory or with decision making power)
6. Whether the RI committee have any other oversight body
7. Whether the RI committee has any international members
8. Number of members

However, during the process, other additional categories were developed (Table 5).



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## 10.6. Collaboration with other WPs

We will use the results of stakeholder consultations from WP2 to add any new category they find relevant, above our initially proposed. Those new categories will be used as guidelines for content tagging in collaboration with WP6 and WP7. However, we will not use categories which are subjective (e.g. the quality of RI committee), nor categories which are not publicly available.

## 11. Country report cards

The resources collected on RE+RI training, experts and bodies were fed into Country Report Cards that were developed as a part of the information network. We also collected other types of information to complement the information about the structure, processes and outcomes for research ethics and integrity in Europe. The information was collected by one researcher and verified by another. The information collected through contacts in the countries was verified by checking the consistency of replies from different contacts in the country. We tried to have at least two independent sources for each country where information could not be found through regular web search or when it is not available in English translation. We performed the data collection and created the Country Report Cards for three countries: Netherland, Spain and Croatia (**Tables 7-9**).

**Table 7.** RI/RE report card for Croatia

Framework element	Information collected (and date for most recent source of information)	Notes / Source
<b>STRUCTURES</b>		
<b>Total population of the country</b>	4,284,889	<a href="http://www.dzs.hr/Hrv/censuses/census2011/results/html/H01_01_01/H01_01_01.html">http://www.dzs.hr/Hrv/censuses/census2011/results/html/H01_01_01/H01_01_01.html</a>
<b>GDP (World Bank)</b>	US\$50.715 billion (2016)	<a href="http://data.worldbank.org/country/croatia">http://data.worldbank.org/country/croatia</a>
<b>GDP/Capita</b>	US\$12,149.19 (2016)	<a href="http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=HR">http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=HR</a>
<b>Number of researchers</b>	9,604 researchers (those having MS/MA or/and PhD degrees) in 2015; fully employed; 660 part-time; 825 on contract	<a href="https://www.dzs.hr/Hrv_Eng/lijetopis/2017/sljh2017.pdf">https://www.dzs.hr/Hrv_Eng/lijetopis/2017/sljh2017.pdf</a> (table 27-1)
<b>Number of research institutions</b>	Higher education: 119 higher education institutions in Croatia, namely: 8 public universities, 2 private universities, 68 faculties and art academies, 1 university centre at public university; 4 private polytechnics, 11 public polytechnics, 22 private colleges, 3 public colleges.  Research: 182 legal entities with a registered scientific activity in Croatia: 25 public scientific institutes; 87 higher education institutions (HEI), namely 10 universities (8 public and 2 private), 72 constituent units of public universities (faculties, academies and university departments), 4 colleges (2 public and 2 private) and 4 public polytechnics; 70 legal entities outside the system of higher education and public scientific institutes that registered scientific activity, namely 3 institutions of special importance (National and University Library, Croatian Academy of Sciences and Arts, the Lexicographic Institute "Miroslav Krleža"), hospitals and healthcare institutions with research units, national institutes (4), archives, museums etc.	<a href="https://www.azvo.hr/en/higher-education/higher-education-institutions-in-the-republic-of-croatia">https://www.azvo.hr/en/higher-education/higher-education-institutions-in-the-republic-of-croatia</a>  <a href="https://www.azvo.hr/en/science/scientific-organisations">https://www.azvo.hr/en/science/scientific-organisations</a>





<b>Gross expenditures on research and development (as a part of GDP)</b>	HRK 574,368,048 (2018)	<a href="http://www.mfin.hr/adminmax/docs/Posebni%20dio%20Dr%C5%Bavog%20prora%C4%8Duna%20Republike%20Hrvatske%20za%202018.%20godinu%20i%20projekcije%20za%202019.%20i%202020.%20godinu.pdf">http://www.mfin.hr/adminmax/docs/Posebni%20dio%20Dr%C5%Bavog%20prora%C4%8Duna%20Republike%20Hrvatske%20za%202018.%20godinu%20i%20projekcije%20za%202019.%20i%202020.%20godinu.pdf</a>
<b>Amount of spending on research (as a fraction of GDP)</b>	0.85% GDP (2015)	<a href="https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?locations=HR">https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?locations=HR</a>
<b>Distribution (%) of private, public and charity funding</b>	Business sector: 51% Government and private non-profit sector: 25% Higher education: 24%	<a href="https://www.dzs.hr/Hrv_Eng/lijetopis/2017/slijh2017.pdf">https://www.dzs.hr/Hrv_Eng/lijetopis/2017/slijh2017.pdf</a> (table 27-2)
<b>Participation in Horizon 2020 projects</b>	301 participants receiving €48.26 m in H2020	<a href="http://ec.europa.eu/research/horizon2020/pdf/country-profiles/hr_country_profile_and_featured_projects.pdf#zoom=125&amp;pagemode=none">http://ec.europa.eu/research/horizon2020/pdf/country-profiles/hr_country_profile_and_featured_projects.pdf#zoom=125&amp;pagemode=none</a>
<b>Number of ERC Principal Investigators</b>	1 ERC grantee receiving €2.15 m in H2020	<a href="http://ec.europa.eu/research/horizon2020/pdf/country-profiles/hr_country_profile_and_featured_projects.pdf#zoom=125&amp;pagemode=none">http://ec.europa.eu/research/horizon2020/pdf/country-profiles/hr_country_profile_and_featured_projects.pdf#zoom=125&amp;pagemode=none</a>
<b>PROCESSES</b>		
<b>Whether a country has scientific strategy</b>	Strategy for Education, Science and Technology of the Parliament of the Republic of Croatia	<a href="https://mzo.hr/sites/default/files/dokumenti/Strategija_OZT/Strategy_eng/strategy_for_education_science_and_technology.pdf">https://mzo.hr/sites/default/files/dokumenti/Strategija_OZT/Strategy_eng/strategy_for_education_science_and_technology.pdf</a>
<b>National bodies for RE+RI</b>	National Committee for Ethics in Research and Higher Education – national body appointed by the Parliament of the Republic of Croatia	<a href="https://www.azvo.hr/en/ethics-committee-in-science-and-higher-education">https://www.azvo.hr/en/ethics-committee-in-science-and-higher-education</a>
<b>Laws with implications for RE+RI</b>	Law on Research and Higher Education	<a href="http://www.propisi.hr/print.php?id=5767">http://www.propisi.hr/print.php?id=5767</a>
<b>International influence</b>	Croatia cited as one of the rare European countries that introduced RI into law	<a href="http://www.nature.com/nature/journal/v454/n7204/full/454574a.html">http://www.nature.com/nature/journal/v454/n7204/full/454574a.html</a>
<b>Organizational structures for RE+RI</b>	National  Research and higher education institutions  Professional bodies (such as Chamber of Physicians)	Committee for Ethics in Research and Higher Education creates the ethics code ( <a href="https://www.azvo.hr/images/stories/tijela_agencije/Eticki_kodeks_OEZVO_pro%C4%8Di%C5%A1%C4%87eni_tekst_nakon_izmjena_i_dopuna_s_8_sjednice_15.6.15.doc">https://www.azvo.hr/images/stories/tijela_agencije/Eticki_kodeks_OEZVO_pro%C4%8Di%C5%A1%C4%87eni_tekst_nakon_izmjena_i_dopuna_s_8_sjednice_15.6.15.doc</a> ), which all higher education and research education institutions have to implement into their ethics codes. It can initiate the procedure of revoking a doctoral degree.  Have their ethics codes and ethics committees that take on research integrity issues; there is rarely a separate body specific for research integrity.  Some associations and professional bodies have courts of honour that deal with ethics issues, including research integrity.
<b>Number of researchers and others involved in research integrity</b>	Unknown	This role is usually taken by ethics committees that must exist in research and higher education institutions.
<b>Percentage of postdoctoral students who get paid positions</b>	Not available.	All postdoctoral students have paid positions (of limited duration); they can also be on tenure track if they are also involved in teaching.
<b>Percentage of grant success for applications to national funders</b>	29.18% (2016)	Croatia has a single major funder for research: Croatian Science Foundation ( <a href="http://www.hrzz.hr/UserDocsImages/HRZZ_godisnje%20izvjesce%20za%202016.pdf">http://www.hrzz.hr/UserDocsImages/HRZZ_godisnje%20izvjesce%20za%202016.pdf</a> ).
<b>Budget of research funding agencies (bodies)</b>	CSF: HRK 152,902,587 (2016)	<a href="http://www.hrzz.hr/UserDocsImages/HRZZ_godisnje%20izvjesce%20za%202016.pdf">http://www.hrzz.hr/UserDocsImages/HRZZ_godisnje%20izvjesce%20za%202016.pdf</a>
<b>National code of research conduct and how it is disseminated and enforced</b>	Ethics code of the Committee for Ethics in Research and Higher Education	This ethics code is created at the national level, and all research and higher education institutions are obliged to incorporate it in their ethics codes.



		The national Committee for ethics has oversight on research integrity procedures.
<b>Whether there is training and education in research integrity, whether it is mandatory and for whom, and by whom it is requested if so, and whether such training is evaluated and monitored</b>	No training required.	There is no mandate for RI training but some elements of RI are a part of higher education programmes, especially on doctoral programmes and on some research-oriented studies such as psychology or sociology (e.g. there are subjects in curriculum such as “Ethics in psychological research and practice” or “Ethical issues in sociological research”). Also, there are initiatives to introduce RI into undergraduate education, in the form of elective courses (example: <a href="http://www.mefst.unist.hr/education/courses/research-in-biomedicine-and-health/why-scientists-cheat/2450">http://www.mefst.unist.hr/education/courses/research-in-biomedicine-and-health/why-scientists-cheat/2450</a> ).
<b>How and by whom investigations of alleged misconduct and undesirable conduct are done, and whether outcomes of proven misconduct are publicly available</b>	Committee for Ethics in Research and Higher Education  Institutions	The Committee has oversight over the procedures and receives appeals to the decision of institutions. However, cannot actually enforce their opinion to the institutions They can initiate the procedure for revoking a doctoral degree, but this procedure has to be performed by the institutions. The decisions of the Committee have been published in the past, but the current law and the bylaws of the Committee are not clear on this issue. There are no recent publicly available decisions of the Committee.  Institutions have ethics committees that deal with research misconduct allegations. They are not public, except there is a media release (in some cases).
<b>Degree of cooperation between institutions in RE+RI</b>	Not known.	This issue is not addressed in regulations on RI. There is a practice of recognizing REC approvals among institutions, but is not formally regulated.
<b>Protection of whistleblowers</b>	Not addressed in regulations related to RI	General protection of whistle-blowers is defined in the Labour Law.
<b>Designated research integrity officers in institutions, whether they are mandatory, and who educates them</b>	Only in civil services’ institutions	Code of ethics for civil servants determines that in each governmental body, its chief official shall appoint an ethics commissioner from among civil servants. Each ethics commissioner shall complete a training programme, conducted by the central governmental administrative body responsible for civil service relations. ( <a href="http://www.sabor.hr/fgs.axd?id=17898">http://www.sabor.hr/fgs.axd?id=17898</a> ). Some agencies and research institutes also have similar rules in their Codes of ethics, e.g. Agency for Science and Higher Education ( <a href="https://www.azvo.hr/en/ot-nama/propisi/povierenik-za-etiku">https://www.azvo.hr/en/ot-nama/propisi/povierenik-za-etiku</a> ).
<b>Whether there is research into research integrity and how much funding is there for it and who funds</b>	Yes	In 2013 the University of Rijeka started a project “Investigations of corruption, discrimination, plagiarism and harassment”. Also, University of Rijeka School of Medicine investigates plagiarism for more than 15 years. There is no information about funding.
<b>Annual meetings on research integrity</b>	None	
<b>Whether registration of clinical trials and other research and their result mandatory</b>	Yes, but only for medicines, as defined by the Ordinance on Clinical Trials of Medicines and Good Clinical Practice	This Ordinance ( <a href="http://narodne-novine.nn.hr/clanci/sluzbeni/2015_03_25_534.html">http://narodne-novine.nn.hr/clanci/sluzbeni/2015_03_25_534.html</a> ) request registration of trials in the EU trials database. The Ministry of Health is obliged to keep a register of approved trials, but this is not functional.
<b>Whether research and research data are open and accessible</b>	Partially	Croatian National Science Foundation allocates funds for open access publications.
<b>Member of EUREC (European Network of Research Ethics Committees)</b>	No	There is no national network, RECs are locally organized, a single national REC for clinical trials of drugs.
<b>Member of ENRIO (European Network of</b>	Yes	The Croatian Committee on Ethics and Higher Education (CESHE) is member from 2008. The members



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Research Integrity Offices)		are university professors and researchers from public institutes, across different fields of expertise ( <a href="http://www.enrio.eu/news-activities/members/croatia/">http://www.enrio.eu/news-activities/members/croatia/</a> ).
<b>OUTCOMES</b>		
Incentives for institutions or individuals or both based on research outputs, including research assessment frameworks and exercises	None	
Whether research integrity is a part of institutional quality assessment	Yes?	Not clear (not much information on individual institutions' websites). However, the accreditation procedure, performed by the national Agency for Research and Higher Institutions, includes a question on ethics in research ( <a href="https://www.azvo.hr/images/stories/vrednovanja/reakreditacija_vu/Upute%20za%20sastavljanje%20samoanalize-visoke%20%C5%A1kole-veleu%C4%8Dili%C5%A1ta%202013.doc">https://www.azvo.hr/images/stories/vrednovanja/reakreditacija_vu/Upute%20za%20sastavljanje%20samoanalize-visoke%20%C5%A1kole-veleu%C4%8Dili%C5%A1ta%202013.doc</a> ).
Whether there is research impact assessment and translation of research findings to the community	Yes?	Not clear at the institutional level, but a part of accreditation process for research and higher education institutions ( <a href="https://www.azvo.hr/images/stories/vrednovanja/reakreditacija_vu/Upute%20za%20sastavljanje%20samoanalize-visoke%20%C5%A1kole-veleu%C4%8Dili%C5%A1ta%202013.doc">https://www.azvo.hr/images/stories/vrednovanja/reakreditacija_vu/Upute%20za%20sastavljanje%20samoanalize-visoke%20%C5%A1kole-veleu%C4%8Dili%C5%A1ta%202013.doc</a> ).
Public perception of research integrity in their country, and their trust in science	Low perception – system is perceived as corrupted.	
Whether research integrity is discussed in the lay press	Occasionally	Usually related to cases of research fraud and academic corruption.
Whether there are rewards for collaborative science and incentives for networks	Not known	
Efforts to increase the value of research to society and reduce wasteful research.	Yes	The Science Festival is a manifestation that has been continuously organized in Croatia since 2003 with the aim of bringing science closer to the public through information on activities and results in science, improving public perception of scientists and motivating young people to research and acquire new knowledge ( <a href="http://www.festivalznanosti.hr">http://www.festivalznanosti.hr</a> ).  Croatian Scientific Portal is an attempt to consolidate information on Croatian scientists, their work and scientific projects with the goal to promote and popularize science in Croatia ( <a href="http://www.znanstvenici.hr/index_en.php">http://www.znanstvenici.hr/index_en.php</a> ).
Are there any disincentives?	Corruption in academia	Academic corruption is relatively high, and there have been several cases publicized, with police arrests and prison sentences.
Resources for RE+RI training/implementation	None official or systematic	RI is addressed in the textbook for medical students: Principles of Research in Biomedicine and Health ( <a href="http://medicinskanaklada.hr/product.aspx?c=0&amp;p=5319">http://medicinskanaklada.hr/product.aspx?c=0&amp;p=5319</a> ). However, this textbook is used only at three medical schools.  In absence of specialized handbooks for RE+RI, scientific articles are often part of literature prescribed by the curricula (e.g. Lončar, M; Šuljug Vučica, Z.; Dadić, M. (2012) Ethical aspects in social research. Godišnjak



		Titius. 5 (5): 149-164 or Adamović-Topolčić, M. (1990) Ethical Aspects of Field Research. Revija za sociologiju. 21(2):403-414, <a href="http://www.ffst.unist.hr/download/repository/Studijски_program_SOC_diplomski_2016-17.pdf">http://www.ffst.unist.hr/download/repository/Studijски_program_SOC_diplomski_2016-17.pdf</a> .
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**Table 8. RI/RE report card for the Netherlands**

Framework element	Information collected (and date for most recent source of information)	Notes / Source
<b>STRUCTURES</b>		
<b>Total population of the country</b>	17,081,507	<a href="https://opendata.cbs.nl/statline/#/CBS/en/dataset/37296eng/table?ts=1522135153265">https://opendata.cbs.nl/statline/#/CBS/en/dataset/37296eng/table?ts=1522135153265</a>
<b>GDP (World Bank)</b>	US\$777.228 billion (2016)	<a href="https://data.worldbank.org/country/netherlands">https://data.worldbank.org/country/netherlands</a>
<b>GDP/Capita</b>	US\$46,610 (2016)	<a href="https://data.worldbank.org/country/netherlands">https://data.worldbank.org/country/netherlands</a>
<b>Number of researchers</b>	112,946 researchers (head count in all sectors) in 2015; 79,155 researchers in full time equivalent	<a href="http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&amp;plugin=1&amp;pcode=tsc00004&amp;language=en">http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&amp;plugin=1&amp;pcode=tsc00004&amp;language=en</a>
<b>Number of research institutions</b>	Higher education: 18 research universities, 40 universities of applied sciences, 4 institutes for international education, 10 university Colleges, 12 other institutions  Research institutes: 8 NWO institutes, 10 KNAW institutes, 5 GTI institutes  29 public knowledge organisations  21,000 companies with investments in R&D	<a href="https://www.studyinholland.nl/education-system/dutch-institutions">https://www.studyinholland.nl/education-system/dutch-institutions</a>  <a href="https://www.netherlandsandyou.nl/binaries/netherlandsandyou/documents/publications/2016/06/13/research-institutes-in-the-netherlands/research-institutes-in-the-netherlands.pdf">https://www.netherlandsandyou.nl/binaries/netherlandsandyou/documents/publications/2016/06/13/research-institutes-in-the-netherlands/research-institutes-in-the-netherlands.pdf</a>  <a href="https://www.rathenau.nl/en/file/2905">https://www.rathenau.nl/en/file/2905</a>  <a href="https://www.rathenau.nl/en/page/dutch-knowledge-infrastructure">https://www.rathenau.nl/en/page/dutch-knowledge-infrastructure</a>
<b>Gross expenditures on research and development (as a part of GDP)</b>	€14.28 billion (2016)	<a href="https://www.cbs.nl/en-gb/news/2017/43/increased-r-d-spending-in-2016">https://www.cbs.nl/en-gb/news/2017/43/increased-r-d-spending-in-2016</a>
<b>Amount of spending on research (as a fraction of GDP)</b>	2.03 % GDP (2016)	<a href="https://www.cbs.nl/en-gb/news/2017/43/increased-r-d-spending-in-2016">https://www.cbs.nl/en-gb/news/2017/43/increased-r-d-spending-in-2016</a>
<b>Distribution (%) of private, public and charity funding</b>	Private companies: 49.32%;  Central government: 32.34%;  Foreign companies and European Union research programmes: 15.57%;  Other domestic sources: 2.77%	Companies fund around half of all academic research and development work (R&D) in the Netherlands (49.32%), followed by central government with about a third of R&D in the Netherlands (32.34%). Research in the Netherlands also receives funding from foreign companies and from European Union research programmes (15.57%) and also from other domestic sources (2.77%)  ( <a href="https://www.rathenau.nl/en/page/funding-and-performance-rd-netherlands">https://www.rathenau.nl/en/page/funding-and-performance-rd-netherlands</a> )
<b>Participation in Horizon 2020 projects</b>	4,458 participants receiving €2,227.16 m in H2020	<a href="http://ec.europa.eu/research/horizon2020/pdf/country-profiles/nl_country_profile_and_featured_projects.pdf">http://ec.europa.eu/research/horizon2020/pdf/country-profiles/nl_country_profile_and_featured_projects.pdf</a>
<b>Number of ERC Principal Investigators</b>	348 ERC grantees receiving €492.60 m in H2020	<a href="http://ec.europa.eu/research/horizon2020/pdf/country-profiles/nl_country_profile_and_featured_projects.pdf">http://ec.europa.eu/research/horizon2020/pdf/country-profiles/nl_country_profile_and_featured_projects.pdf</a>
<b>PROCESSES</b>		
<b>Whether a country has scientific strategy</b>	Science Strategy of Ministry of Education, Culture and Science: 2025 – Vision for Science choices for the future	<a href="https://www.government.nl/binaries/government/documents/reports/2014/12/08/2025-vision-for-science-choices-for-the-future/visie-wetenschap-eng-web.pdf">https://www.government.nl/binaries/government/documents/reports/2014/12/08/2025-vision-for-science-choices-for-the-future/visie-wetenschap-eng-web.pdf</a>
<b>National bodies for RE+RI</b>	Netherlands Board on Research Integrity (LOWI)  The Netherlands Centre for Ethics and Health	<a href="https://www.lowi.nl/en">https://www.lowi.nl/en</a>  <a href="https://www.ceg.nl/en">https://www.ceg.nl/en</a>



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	<p>The Central Committee on Research Involving Human Subjects <a href="http://www.ccmo.nl/en/ccmo">http://www.ccmo.nl/en/ccmo</a></p> <p>The Central Committee on Animal Experimentation <a href="https://www.centralecommissiedierproeven.nl/">https://www.centralecommissiedierproeven.nl/</a></p> <p>The Netherlands Commission on Genetic Modification <a href="https://www.cogem.net/index.cfm/en/">https://www.cogem.net/index.cfm/en/</a></p> <p>The Netherlands Advice Committee on Animal Experimentation Policy <a href="https://english.ncadierproevenbeleid.nl/">https://english.ncadierproevenbeleid.nl/</a></p>	
<b>Laws with implications for RE+RI (any international influence)</b>	<p>Higher education and Research Act (WHW) <a href="http://wetten.overheid.nl/BWBR0005682/2018-02-01">http://wetten.overheid.nl/BWBR0005682/2018-02-01</a></p> <p>Medical Research Involving Human Subjects Act (WMO) <a href="http://wetten.overheid.nl/BWBR0009408">http://wetten.overheid.nl/BWBR0009408</a></p> <p>The Data Protection Act (WBP), <a href="http://wetten.overheid.nl/BWBR0011468">http://wetten.overheid.nl/BWBR0011468</a></p> <p>The population screening act (WBO), <a href="http://wetten.overheid.nl/BWBR0005699">http://wetten.overheid.nl/BWBR0005699</a></p> <p>The animal experimentation act (WOD) <a href="http://wetten.overheid.nl/BWBR0003081">http://wetten.overheid.nl/BWBR0003081</a></p> <p>The environmental management act <a href="http://wetten.overheid.nl/BWBR0003245">http://wetten.overheid.nl/BWBR0003245</a></p> <p>Law on medication (Geneesmiddelenwet)</p> <p>Law on Embryos (Embryowet)</p> <p>Law on Quality of care and Healthcare</p>	
<b>Organizational structures for RE+RI</b>	<p>Ethics assessment is regulated by statutory organisations which are authorised to formulate policies for all public research institutes. An overarching body of legislation consists of the four codes that have been established by the Association of Universities in the Netherlands (VSNU), which are the codes on personal data, scientific integrity, animal experiments, and good governance. In addition to the policies developed by the VSNU, the statutory research funding organisation Netherlands Organisation for Scientific Research (NWO) formulates policies for the regulation of its funding activities for public research and Dutch Corporate Governance unions governs several ethical aspects of research by private industry. Finally, research institutes formulate their own policies on the conduct of their individual Researchers and general instances of such policy are university codes of ethics. All research institutes who perform research with human subjects have to have their research approved by a RE committee, which has to be acknowledged by the Central Committee for Research with Human Subjects (CCMO).</p>	<p><a href="http://satoriproject.eu/media/4.f-Country-report-the-Netherlands.pdf">http://satoriproject.eu/media/4.f-Country-report-the-Netherlands.pdf</a></p>
<b>Number of researchers and others involved in research integrity</b>	Unknown	<p>Research on RI is growing, funded by a national program and EU Horizon 2020 Swafs projects, in which Dutch universities are involved as partners or coordinators; an estimated number of researchers involved in the Netherlands is around 50 (about half of them in Amsterdam).</p> <p>The Netherlands Board on Research Integrity (LOWI) has six members, including its Chairperson and Deputy Chairperson.</p> <p>Universities and publicly funded research institutions have research integrity counsellors and boards (in total over 50 persons).</p> <p>Large corporations usually have a program and office for corporate social responsibility.</p>
<b>Percentage of postdoctoral students who get paid positions</b>	(almost) 100%.	All postdoctoral students have paid positions; they work on temporary contracts.
<b>Percentage of grant success for</b>	Veni awards 2017 grant rate: 13.7%	A number of different grants are available for the purposes of doing research in the Netherlands. There



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<b>applications to national funders</b>	<p>Vidi awards 2016 grant rate: 15%</p> <p>Vici awards 2017 grant rate: 15%</p>	<p>are three main forms of grant by funding organisation NWO directed at researchers in various stages of their careers: Veni for researchers who have recently obtained their doctorates, Vidi for experienced researchers and Vici for researchers of professorial quality. These are personal grants; percentages of success are lower for programmatic calls, around 8% (<a href="https://www.nwo.nl/en/research-and-results">https://www.nwo.nl/en/research-and-results</a>).</p>
<b>Budget of research funding agencies (bodies)</b>	<p>NWO: €914 million</p> <p>KNAW: €88 million</p> <p>ZonMW: €13.2 million</p>	<p><a href="https://www.nwo.nl/binaries/content/documents/nwo-en/common/about-nwo/publications/items/nwo/annual-report-2016/Annual+report+2016-pdf.pdf">https://www.nwo.nl/binaries/content/documents/nwo-en/common/about-nwo/publications/items/nwo/annual-report-2016/Annual+report+2016-pdf.pdf</a></p> <p>Brink, M.C.L. van den (2009) Behind the scenes of science. Gender in the recruitment and selection of professors in the Netherlands. Nijmegen : RU Radboud Universiteit Nijmegen. <a href="http://www.inahta.org/members/zonmw/">http://www.inahta.org/members/zonmw/</a></p>
<b>National code of research conduct and how it is disseminated and enforced</b>	<p>The Netherlands Code of Conduct for Scientific Practice</p>	<p>All universities apply the Netherlands Code of Conduct for Scientific Practice, with principles for good teaching and research. Researchers, lecturers and students must respect this Code and call each other to account on any questionable behaviour. When a violation of integrity is suspected, a complaint can be submitted to the scientific integrity committee of the relevant university. Universities also have at least one confidential adviser for scientific integrity. This code is issued by the VSNU (Society of Dutch Universities) in 2004 and is currently under revision with a new name: Netherlands Code of Conduct for Research Integrity (expected to be approved by the end of 2018). <a href="http://www.vsnu.nl/files/documenten/Domeinen/Onderzoek/The_Netherlands_Code_of_Conduct_for_Scientific_Practice_2012.pdf">http://www.vsnu.nl/files/documenten/Domeinen/Onderzoek/The_Netherlands_Code_of_Conduct_for_Scientific_Practice_2012.pdf</a></p>
<b>Whether there is training and education in research integrity, whether it is mandatory and for whom, and by whom it is requested if so, and whether such training is evaluated and monitored</b>	<p>Some elements of RI are a part of university educational programmes. There are some mandatory training courses for PhD students evaluated and monitored by universities.</p>	<p><a href="https://www.amsterdamresearch.org/web/public-health/events-1/public-health-events/course-on-research-integrity-dutch-version-.htm">https://www.amsterdamresearch.org/web/public-health/events-1/public-health-events/course-on-research-integrity-dutch-version-.htm</a></p>
<b>How and by whom investigations of alleged misconduct and undesirable conduct are done, and whether outcomes of proven misconduct are publicly available</b>	<p>Institutions</p> <p>Netherlands Board on Research Integrity (LOWI)</p>	<p>Institutions have Boards that deal with research misconduct allegations. Institutions are affiliated with the Netherlands Board on Research Integrity (LOWI) and any legal entity or natural person can submit a claim to the LOWI regarding a Board's decision on an alleged violation of the principles of research integrity.</p> <p>The LOWI is an independent advisory body, established by the Royal Netherlands Academy of Arts and Sciences (KNAW), the Netherlands Organisation for Scientific Research (NWO), and the Association of Universities in the Netherlands (VSNU). The LOWI advises the Boards of its affiliated institutions, such as universities and research institutes, regarding possible violations of principles of research integrity. The LOWI's task is to advise the Board on complaints concerning a (provisional) decision regarding the alleged violation of the principles of research integrity by one or more Defendants. The LOWI meetings are not open to the public but their opinions/conclusions are published on the LOWI website, in anonymised form.</p>



<b>Degree of cooperation between institutions in RE+RI</b>	The Netherlands Research Integrity Network (NRIN) is a network of people interested in and working on RI. It was founded in 2014 with aims to improve contact between the actors in the field, facilitate collaboration, exchange and mutual learning between the actors in the field of research integrity. Activities of NRIN include information supply, training and education for different audiences, development and exchange of teaching materials and best practices, enabling of consultation and intervention, and providing solicited and unsolicited advice to decision makers.	<a href="https://www.nrin.nl/about/">https://www.nrin.nl/about/</a>
<b>Protection of whistleblowers</b>	General protection of whistle-blowers is defined in the Dutch House for whistleblowers Act. Also, scientific integrity counsellors have been appointed at universities and KNAW and NWO institutes to provide assistance to whistleblowers and those accused of scientific misconduct.	<a href="http://satoriproject.eu/media/4.f-Country-report-the-Netherlands.pdf">http://satoriproject.eu/media/4.f-Country-report-the-Netherlands.pdf</a> <a href="http://wetten.overheid.nl/BWBR0037852/2016-07-01">http://wetten.overheid.nl/BWBR0037852/2016-07-01</a>
<b>Designated research integrity officers in institutions, whether they are mandatory, and who educates them</b>	The universities have at least one confidential adviser for academic/scientific integrity who serve as a point of contact for questions about the academic integrity of students and staff. They also have academic integrity committees which investigate complaints and subsequently issues a recommendation to the Executive Board.	<a href="http://www.uva.nl/en/research/research-at-the-uva/academic-integrity/academic-integrity.html">http://www.uva.nl/en/research/research-at-the-uva/academic-integrity/academic-integrity.html</a> <a href="https://www.organisatiegids.universiteitleiden.nl/en/university-committees-and-confidential-counsellors/academic-integrity-committee">https://www.organisatiegids.universiteitleiden.nl/en/university-committees-and-confidential-counsellors/academic-integrity-committee</a> <a href="https://www.tudelft.nl/en/about-tu-delft/strategy/strategy-documents-tu-delft/integrity-policy/scientific-integrity/">https://www.tudelft.nl/en/about-tu-delft/strategy/strategy-documents-tu-delft/integrity-policy/scientific-integrity/</a>
<b>Whether there is research into research integrity and how much funding is there for it and who funds</b>	The Fostering Responsible Research Practices (FRRP) programme funds research on research, addressing the need for greater quality, integrity and efficiency in academic research. Programme budget is €3,825,000. There is also participation in EU Horizon2020 Swafs projects (in total over five years more than €3,000,000 for Dutch participants).	<a href="https://www.zonmw.nl/en/research-and-results/fundamental-research/programmas/programme-detail/fostering-responsible-research-practices/">https://www.zonmw.nl/en/research-and-results/fundamental-research/programmas/programme-detail/fostering-responsible-research-practices/</a>
<b>Annual meetings on research integrity</b>	The Netherlands Research Integrity Network (NRIN) organizes one-day Research Conference which aims to display scientific research on Research Integrity, Research Ethics, and Meta-research in the Netherlands and Flanders, and to encourage and facilitate exchange, mutual learning, and collaboration between the researchers in this field. The first NRIN Research Conference was held in 2016 and second one in 2018.	<a href="https://www.nrin.nl/agenda/nrin-research-conference-2018/">https://www.nrin.nl/agenda/nrin-research-conference-2018/</a>
<b>Whether registration of clinical trials and other research and of their result mandatory</b>	It is mandatory to register all clinical trials in an acknowledged trial registry. Registration is not mandatory for Observational studies.	<a href="http://www.trialregister.nl/trialreg/index.asp">http://www.trialregister.nl/trialreg/index.asp</a>
<b>Whether research and research data are open and accessible</b>	The open access ideas are adopted well among both the government and academic institutions in the Netherlands. All universities, the Netherlands Association of Universities of Applied Sciences, the Royal Netherlands Academy of Arts and Sciences (KNAW), the National Library of the Netherlands and SURF have signed the Berlin Declaration, calling for free access to scholarly knowledge. There are more than 8,000 journals in which corresponding authors of Dutch universities and academic hospitals can publish in open access for free or with a substantial discount.	<a href="http://www.openaccess.nl/en/in-the-netherlands/publisher-deals">http://www.openaccess.nl/en/in-the-netherlands/publisher-deals</a>
<b>Member of EUREC (European Network of Research Ethics Committees)</b>	Yes	There are 24 accredited MREC's in the Netherlands that review medical/scientific research proposals. These are crucial committees, as they assess and approve all research in human subjects.
<b>Member of ENRIO (European Network of Research Integrity Offices)</b>	Yes	The Netherlands Board on Research Integrity (LOWI) is member from 2008. The structure of the LOWI is a foundation and not part of any ministry. Affiliation is voluntary.  Netherlands Research Integrity Network (NRIN) is member from 2016. The network was founded in 2014, after the working group received funding from the Netherlands Organisation for Health Research and Development (ZonMw)



		<a href="http://www.enrio.eu/news-activities/members/netherlands/">(http://www.enrio.eu/news-activities/members/netherlands/)</a> .
OUTCOMES		
<b>Incentives for institutions or individuals or both based on research outputs, including research assessment frameworks and exercises</b>	None/not clear	Not much information on individual institutions' websites.
<b>Whether research integrity is a part of institutional quality assessment</b>	Yes?	Not clear (not much information on individual institutions' websites). However, there is a \$3.8 million programme Fostering Responsible Research Practices which include a national survey of researchers on nature and causes of questionable research practices in academic research. The results will be used to introduce evidence-based improvements. Also, many universities and other research organisations now have Data Management Officers and require Data Management Plans <a href="https://www.zonmw.nl/en/research-and-results/fundamental-research/programmas/programme-detail/fostering-responsible-research-practices/t/goal-of-pillar-4-national-survey/">(https://www.zonmw.nl/en/research-and-results/fundamental-research/programmas/programme-detail/fostering-responsible-research-practices/t/goal-of-pillar-4-national-survey/)</a> .
<b>Whether there is research impact assessment and translation of research findings to the community</b>	The Association of Universities in the Netherlands (VSNU), the Netherlands Organisation for Scientific Research (NWO), and the Royal Netherlands Academy of Arts and Sciences (KNAW) have undertaken to assess all research conducted within their organisations every six years in accordance with methods set by The Standard Evaluation Protocol (SEP). Public funding organisations (NWO and ZonMW) require implementation and often also patient participation as explicit elements of proposals.	<a href="https://www.knaw.nl/nl/actueel/publicaties/standard-evaluation-protocol-2015-2021/@@download/pdf_file/SEP%202015-2021%20amended%20version%20sept%202016.pdf">https://www.knaw.nl/nl/actueel/publicaties/standard-evaluation-protocol-2015-2021/@@download/pdf_file/SEP%202015-2021%20amended%20version%20sept%202016.pdf</a>
<b>Public perception of research integrity in their country, and their trust in science</b>	According to results of 2012 and 2015 surveys on Dutch institutions, the public has the most trust in the scientific community and the large majority (70-92%) associate science with researchers at universities.	<a href="https://www.rathenau.nl/en/files/ff15trust-scienceinthenetherlandspdf">https://www.rathenau.nl/en/files/ff15trust-scienceinthenetherlandspdf</a>
<b>Whether research integrity is discussed in the lay press</b>	Occasionally	Usually related to cases of research fraud and academic corruption.
<b>Whether there are rewards for collaborative science and incentives for networks</b>	Yes	The Netherlands Research Integrity Network (NRIN) is launched in 2014.  Netherlands Organisation for Scientific Research (NWO) participates in a range of bilateral, European and international initiatives: New Opportunities for Research Funding Agency Co-operation in Europe (NORFACE), Open Research Area (ORA), International Neuroinformatics Coordinating Facility (INCF), Initiative with the South African Research Foundation and Technology Foundation STW (ZENRICH), Agriculture beyond Food, CoCooN, East Kalimantan, ERAfrica, Population, Reproductive Health and Economic Development (PopDev), South African Netherlands Partnership in Research for Development (SANPAD)...
<b>Efforts to increase the value of research to society and reduce wasteful research.</b>	The Netherlands Research Integrity Network (NRIN) is partner of the Lancet's Reduce Waste and Reward Diligence campaign.	
<b>Are there any disincentives?</b>	Not clear	
<b>Resources for RE+RI training/implementation</b>	European Code of Conduct for Research Integrity translated into Dutch	<a href="http://www.allea.org/wp-content/uploads/2018/01/DU_ALLEA_Europese_gedragsgcode_voor_wetenschappelijke_integriteit.pdf">http://www.allea.org/wp-content/uploads/2018/01/DU_ALLEA_Europese_gedragsgcode_voor_wetenschappelijke_integriteit.pdf</a>



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	Royal Netherlands Academy of Arts and Sciences (2013) Responsible research data management and the prevention of scientific misconduct. Amsterdam	<a href="https://www.knaw.nl/en/news/publications/responsible-research-data-management-and-the-prevention-of-scientific-misconduct/@@download/pdf_file/20131009.pdf">https://www.knaw.nl/en/news/publications/responsible-research-data-management-and-the-prevention-of-scientific-misconduct/@@download/pdf_file/20131009.pdf</a>
	The Netherlands Code of Conduct for Scientific Practice	<a href="http://www.vsnu.nl/files/documenten/Domeinen/Onderzoek/The_Netherlands_Code_of_Conduct_for_Scientific_Practice_2012.pdf">http://www.vsnu.nl/files/documenten/Domeinen/Onderzoek/The_Netherlands_Code_of_Conduct_for_Scientific_Practice_2012.pdf</a>

**Table 9. RI/RE report card for Spain**

Framework element	Information collected (and date for most recent source of information)	Notes / Source
<b>STRUCTURES</b>		
Total population of the country	46,445,828	<a href="http://www.ine.es/prodyser/pubweb/anuario17/anu17_02demog.pdf">http://www.ine.es/prodyser/pubweb/anuario17/anu17_02demog.pdf</a>
GDP (World Bank)	US\$1.237 trillion (2016)	<a href="https://data.worldbank.org/country/spain">https://data.worldbank.org/country/spain</a>
GDP/Capita	US\$27,580 (2016)	<a href="https://data.worldbank.org/country/spain">https://data.worldbank.org/country/spain</a>
Number of researchers	214,227 researchers (head count in all sectors) in 2015; 122,437 researchers in full time equivalent	<a href="http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&amp;plugin=1&amp;pcode=tsc00004&amp;language=en">http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&amp;plugin=1&amp;pcode=tsc00004&amp;language=en</a>
Number of research institutions	Public research organisations: 8  Research centres/institutes/units: 131  Universities: 76	<a href="http://www.csic.es/centros-de-investigacion1">http://www.csic.es/centros-de-investigacion1</a>
Gross expenditures on research and development (as a part of GDP)	US\$18,113 million (2016)	<a href="https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm">https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm</a>
Amount of spending on research (as a fraction of GDP)	1.19% GDP (2016)	<a href="https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm">https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm</a>
Distribution (%) of private, public and charity funding	Public administration and higher education: 48.5%  Business: 44.3%  IPSFL (Private non-profit institutions): 0.6%  Foreign: 6.7%	( <a href="http://www.idi.mineco.gob.es/stfls/MICINN/Investigacion/FICHEROS/Spanish_Strategy_Science_Technology.pdf">http://www.idi.mineco.gob.es/stfls/MICINN/Investigacion/FICHEROS/Spanish_Strategy_Science_Technology.pdf</a> )
Participation in Horizon 2020 projects	7,275 participants receiving €2,643.69 million in H2020	<a href="http://ec.europa.eu/research/horizon2020/pdf/country-profiles/es_country_profile_and_featured_projects.pdf#zoom=125&amp;pagemode=none">http://ec.europa.eu/research/horizon2020/pdf/country-profiles/es_country_profile_and_featured_projects.pdf#zoom=125&amp;pagemode=none</a>
Number of ERC Principal Investigators	244 ERC grantees receiving €309.57 million in H2020	<a href="http://ec.europa.eu/research/horizon2020/pdf/country-profiles/es_country_profile_and_featured_projects.pdf#zoom=125&amp;pagemode=none">http://ec.europa.eu/research/horizon2020/pdf/country-profiles/es_country_profile_and_featured_projects.pdf#zoom=125&amp;pagemode=none</a>
<b>PROCESSES</b>		
Whether a country has scientific strategy	Spanish Strategy of Science, Technology and Innovation	<a href="http://www.idi.mineco.gob.es/stfls/MICINN/Investigacion/FICHEROS/Spanish_Strategy_Science_Technology.pdf">http://www.idi.mineco.gob.es/stfls/MICINN/Investigacion/FICHEROS/Spanish_Strategy_Science_Technology.pdf</a>
National bodies for RE+RI	Ethics Committee of the Spanish National Research Council (CSIC)  The Spanish Research Ethics Committee (Comité de Ética de la Investigación (CEI))  The Spanish Bioethics Committee	<a href="http://www.csic.es/web/guest/contacto4">http://www.csic.es/web/guest/contacto4</a>  <a href="http://www.isciii.es/ISCIII/es/contenidos/fd-investigacion/fd-evaluacion/Comite-etica-Investigacion.shtml">http://www.isciii.es/ISCIII/es/contenidos/fd-investigacion/fd-evaluacion/Comite-etica-Investigacion.shtml</a>  <a href="http://www.comitedebioetica.es/">http://www.comitedebioetica.es/</a>



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	<p>The National Commission on Assisted Human Reproduction</p> <p>The Commission for the Donation and Use of Human Cells and Tissues</p>	<p><a href="http://www.cnrha.msssi.gob.es/">http://www.cnrha.msssi.gob.es/</a></p> <p><a href="https://www.boe.es/diario_boe/txt.php?id=BOE-A-2010-18654">https://www.boe.es/diario_boe/txt.php?id=BOE-A-2010-18654</a></p>
<p><b>Laws with implications for RE+RI (any international influence)</b></p>	<p>Act on Universities (La Ley Orgánica 6/2001 de Universidades)</p> <p>Law for Science, Technology and Innovation (Ley 14/2011, de 1 de junio, de la Ciencia, la Tecnología y la Innovación)</p> <p>The Law on Biomedical Research (Ley 14/2007, de 3 de julio, de Investigación biomédica)</p> <p>Royal Decree 2132/2004, which establishes the requirements and procedures of research projects with stem cells obtained from leftover pre-embryos</p> <p>Order SCO/393/2006, establishing the organization and operation of the National Bank of Cellular Lines</p> <p>Organic Law 15/1999 on the Protection of Personal Data</p> <p>Royal Decree 1527/2010, which regulates use of human cells and tissues and the registry of research projects</p> <p>Royal Decree 1716/2011, which establishes the basic requirements for authorization and operation of biobanks for biomedical research</p> <p>Royal Decree 53/2013, which establishes the basic rules applicable for the protection of animals used in experimentation and other scientific purposes, including teaching</p> <p>Law 6/2013, for the care of animals in their exploitation, transportation and experimentation</p>	<p><a href="https://www.boe.es/boe/dias/2007/04/13/pdfs/A16241-16260.pdf">https://www.boe.es/boe/dias/2007/04/13/pdfs/A16241-16260.pdf</a></p> <p><a href="http://www.boe.es/buscar/doc.php?id=BOE-A-2011-9617">http://www.boe.es/buscar/doc.php?id=BOE-A-2011-9617</a></p> <p><a href="http://www.isciii.es/ISCIII/es/contenidos/fd-investigacion/SpanishLawonBiomedicalResearchEnglish.pdf">http://www.isciii.es/ISCIII/es/contenidos/fd-investigacion/SpanishLawonBiomedicalResearchEnglish.pdf</a></p> <p><a href="http://www.isciii.es/ISCIII/es/contenidos/fd-investigacion/Terapia_RD_2132_2004.pdf">http://www.isciii.es/ISCIII/es/contenidos/fd-investigacion/Terapia_RD_2132_2004.pdf</a></p> <p><a href="http://www.isciii.es/ISCIII/es/contenidos/fd-investigacion/SCO6637_06641.pdf">http://www.isciii.es/ISCIII/es/contenidos/fd-investigacion/SCO6637_06641.pdf</a></p> <p><a href="https://www.boe.es/buscar/doc.php?id=BOE-A-1999-23750">https://www.boe.es/buscar/doc.php?id=BOE-A-1999-23750</a></p> <p><a href="https://www.boe.es/diario_boe/txt.php?id=BOE-A-2010-18654">https://www.boe.es/diario_boe/txt.php?id=BOE-A-2010-18654</a></p> <p><a href="http://www.boe.es/buscar/doc.php?id=BOE-A-2011-18919">http://www.boe.es/buscar/doc.php?id=BOE-A-2011-18919</a></p> <p><a href="https://www.boe.es/diario_boe/txt.php?id=BOE-A-2013-1337">https://www.boe.es/diario_boe/txt.php?id=BOE-A-2013-1337</a></p> <p><a href="https://www.boe.es/diario_boe/txt.php?id=BOE-A-2013-6271">https://www.boe.es/diario_boe/txt.php?id=BOE-A-2013-6271</a></p>
<p><b>Organizational structures for RE+RI</b></p>	<p>National</p> <p>Regional institutions</p>	<p>Aside from Ethics Committee of the Spanish National Research Council, there are a number of Spanish national associations for ethics assessment of research, centred mainly in bioethics and biomedical research. They include the National Association of Research Ethics Committees (Asociación Nacional de Comités de Ética de la Investigación, ANCEI), the Network of Ethics Committees in Universities and Public Research Centres in Spain (Red de Comités de Ética de Universidades y Organismos Públicos de Investigación de España, RCE), and the Spanish Association of Bioethics and Medical Ethics (Asociación Española de Bioética y Ética Médica, AEBI), Asociación de Bioética Fundamental y Clínica (ABFyC), Sociedad internacional de Bioética (SIBI).</p> <p>All the autonomous communities have Research Ethics Committees (Comité ético de investigación, CEI) and Research Ethics Committees for drugs (Comités éticos de investigación con medicamento, CEIm) who perform the ethical assessment of research projects performed in the region. These committees have a special accreditation regulated by the Royal Decree 1090/2015 and performed by Regional Public Health Authority.</p>



	Private	Spanish policies and initiatives to support ethics practices in the private industry mostly concern corporate social responsibility. Any industry can create an independent REC or ascribe to any existent REC but each REC must be authorized by the regional autonomies through an accreditation process strictly controlled by the health authorities. Large companies may have their own good practices codes, especially in the pharmaceutical sector.
<b>Number of researchers and others involved in research integrity</b>	Unknown	This role is usually taken by research ethics committees.
<b>Percentage of postdoctoral students who get paid positions</b>	Not available.	Usually all postdoctoral students have paid positions.
<b>Percentage of grant success for applications to national funders</b>	Ramón y Cajal success rate: 14% (2009) Juan de la Cierva success rate: 23% (2009) ICREA success rate: 10% (2009) Beatriu de Pinos success rate: 12.5% (2009) IKERBASQUE success rate: 7% (2009) IEF success rate: 25% (2009) StG success rate: 3 (12)% (2009)	<a href="https://www.eui.eu/Documents/MWP/AcademicCareers/Workshop/Spain.pdf">https://www.eui.eu/Documents/MWP/AcademicCareers/Workshop/Spain.pdf</a>
<b>Budget of research funding agencies (bodies)</b>	Secretary of State for Research, Development and Innovation: €1.380.021,63 million  Instituto de Salud Carlos III: €269,957,380	<a href="http://www.sepg.pap.minhfp.gob.es/Presup/PGE2017/Proyecto/MaestroDocumentos/PGE-ROM/doc/1/3/21/2/1/N_17_A_R_31_127_1_1_1_T_1.PDF">http://www.sepg.pap.minhfp.gob.es/Presup/PGE2017/Proyecto/MaestroDocumentos/PGE-ROM/doc/1/3/21/2/1/N_17_A_R_31_127_1_1_1_T_1.PDF</a> <a href="http://www.cosce.org/pdf/InformeCOSCEPGE2017Aprobados.pdf">http://www.cosce.org/pdf/InformeCOSCEPGE2017Aprobados.pdf</a>
<b>National code of research conduct and how it is disseminated and enforced</b>	Comité de Ética. Consejo Superior de Investigaciones Científicas (2010) Code of Good Scientific Practices  National Statement on Scientific Integrity (2015)	The Code of Good Scientific Practices is based on the information collected by the European Science Foundation (2008) and ALLEA (2010) as well as on similar regulations existing in countries such as Germany or Finland. An annex of The Code contains a list of the main legislation existing in Spain related to scientific activity ( <a href="http://documenta.wi.csic.es/alfresco/downloadpublic/direct/workspace/SpacesStore/864dff28-01a5-490b-bcaf-b1cdf90b21ce/C%25c3%2593DIGO%2520DE%2520BUENAS%2520PR%25c3%2581CTICAS%2520COMPLETO.pdf">http://documenta.wi.csic.es/alfresco/downloadpublic/direct/workspace/SpacesStore/864dff28-01a5-490b-bcaf-b1cdf90b21ce/C%25c3%2593DIGO%2520DE%2520BUENAS%2520PR%25c3%2581CTICAS%2520COMPLETO.pdf</a> ).  The National Statement establishes ethical principles and professional responsibilities relating to research activity. Each institution or entity that subscribes to this Statement is responsible for its development and implementation, for facilitating and promoting awareness of ethical matters in general, and for ensuring that research activities are carried out in a responsible manner based on good scientific practice in particular ( <a href="http://www.enrio.eu/wp-content/uploads/2017/03/csic-national-statement-on-scientific-integrity.pdf">http://www.enrio.eu/wp-content/uploads/2017/03/csic-national-statement-on-scientific-integrity.pdf</a> ).
<b>Whether there is training and education in research integrity, whether it is</b>	No training required.	There is no mandate for RI training but the most important universities and institutions integrated a module about research integrity in their existing program about research ethics (Universidad Autónoma



<b>mandatory and for whom, and by whom it is requested if so, and whether such training is evaluated and monitored</b>		de Madrid, Universidad de Barcelona, Universidad de Oviedo, UNED). Several members of the CSIC Ethics Committee give lectures regarding research integrity and responsible conduct of research. Research Ethics and Research Integrity have been included as topics in the CSIC Management Training Course aimed to CSIC's Directors and Managers.
<b>How and by whom investigations of alleged misconduct and undesirable conduct are done, and whether outcomes of proven misconduct are publicly available</b>	<p>Ethics Committee of the Spanish National Research Council (CSIC)</p> <p>The Research Ethics Committees</p> <p>Professional Organization</p> <p>Justice System</p>	<p>The CSIC Ethics Committee is responsible for dealing with ethical conflicts. Any individual or institution can bring a case to the attention of the Committee, whose field of competence is limited to CSIC and its employees.</p> <p>The Research Ethics Committees (Comités de Ética en Investigación, CEI) and ad hoc commissions are in charge of settling scientific integrity problems. These committees are independent and their decisions can be binding, although there is a right of appeal. The official list of proven misconduct regulated by authorities is not publicly available at the moment.</p> <p>Deontological commissions related to the professional organizations act independently to sanction the professionals involved in research misconducting.</p> <p>If misconduct affects human beings, Justice system (Fiscalia General del Estado) starts a process of investigation.</p>
<b>Degree of cooperation between institutions in RE+RI</b>	Low	According to the National Statement of Scientific Integrity, the cooperation of researchers within research groups and collaboration with other entities are required but in actual fact, several RI institutions and generally RECs are controlling all the domains of research.
<b>Protection of whistleblowers</b>	Not addressed in regulations related to RI	There is no specific law on whistleblower protection for employees in Spain so citizens must personally come forward in order for their claim to be investigated. The only legislative regulation loosely related to whistleblowing is a provision allowing citizens to anonymously report conflicts of interest of high-ranking officials and members of Parliament and a whistleblower e-mail hotline that allows anonymous reporting of anticompetitive behaviour. There are also some services available for whistleblowers provided by Ministry of Work or Ministry of Finance depending on the misconducts.
<b>Designated research integrity officers in institutions, whether they are mandatory, and who educates them</b>	Not defined	No such position designated.
<b>Whether there is research into research integrity and how much funding is there for it and who funds</b>	No	There is no official research into research integrity. The level of discussions is only related to Declaration and Guideline.
<b>Annual meetings on research integrity</b>	Yes	The Network of Ethics Committees in Universities and Public Research Centres in Spain hold regular meetings since 2002.
<b>Whether registration of clinical trials and other research and of their result mandatory</b>	Yes, but only for research involving animals or human beings and human materials or data	According to the law, any biomedical research involving animals or human beings and human materials or data has to be subjected to the evaluation of an ethics committee (CEIm) which opinion is binding. In clinical drug trials, it is necessary to include the authorisation of the Spanish Agency for Medicines and Health



		Products (AGEMED), Ministry of Health, Social Services and Equality. This function is delegated to the regional authorities even when competences in a matter of pharmaceutical products are related to the Ministry of Health.
<b>Whether research and research data are open and accessible</b>	Partially	Law for Science, Technology and Innovation includes an open access mandate for publicly funded research, and the Ministry of Education has established a mandate to deposit theses and to make them publicly available in the institutional repositories. Many funding agencies and institutions currently involved in research have policies guaranteeing open access to publicly-funded scientific publications.
<b>Member of EUREC (European Network of Research Ethics Committees)</b>	Yes	The Clinical Research Ethics Committees (Comités de Ética en Investigación Clínica, CEIC) are the oversight bodies of methodological adequacy, ethical goodness and regulatory compliance regarding research on human subjects. Currently, in Spain there are over 140 accredited CEIC, with many different scopes, and also highly variable levels of activity.
<b>Member of ENRIO (European Network of Research Integrity Offices)</b>	Yes	Ethics Committee of the Spanish National Research Council (CSIC) is member from 2011 ( <a href="http://www.enrio.eu/news-activities/members/spain/">http://www.enrio.eu/news-activities/members/spain/</a> ).
<b>OUTCOMES</b>		
<b>Incentives for institutions or individuals or both based on research outputs, including research assessment frameworks and exercises</b>	None	
<b>Whether research integrity is a part of institutional quality assessment</b>	Not clear	Not much information on individual institutions' websites.
<b>Whether there is research impact assessment and translation of research findings to the community</b>	Not clear	In a Knowledge Transfer study 2010-2012, Spain positioning is about average (56%). Spain is part of countries with a low level of innovation and weak KT policies. ( <a href="https://ec.europa.eu/research/innovation-union/pdf/knowledge_transfer_2010-2012_report.pdf">https://ec.europa.eu/research/innovation-union/pdf/knowledge_transfer_2010-2012_report.pdf</a> ). There is an OTRI (Oficina para la transferencia de los resultados de la investigación) in each university. The OTRI can be defined as the knowledge transfer units of Spanish universities and public research bodies, whose mission is to support and promote the production of knowledge and its transfer to companies and other socioeconomic agents but their functions are fundamentally reduced to the project management activities.
<b>Public perception of research integrity in their country, and their trust in science</b>	Low perception – system is perceived as corrupted.	Academic corruption survey of 5,725 people who studied in 11 European countries shows the highest levels of perceived corruption in Ukraine and Spain ( <a href="http://milata-kg.de/wp-content/uploads/2015/11/2016-10-17.PressRelease-EN.pdf">http://milata-kg.de/wp-content/uploads/2015/11/2016-10-17.PressRelease-EN.pdf</a> ). Since 2002, the percentage of the population understanding science and technology as bringing more benefits than harms keeps growing every year ( <a href="https://cdn2.euraxess.org/sites/default/files/recruitm_entopportunities_vf4.pdf">https://cdn2.euraxess.org/sites/default/files/recruitm_entopportunities_vf4.pdf</a> ).
<b>Whether research integrity is discussed in the lay press</b>	Occasionally	The most relevant newspapers at the national level (EL Pais and El Mundo) published several articles about cases of scientific misconduct in Spain.



<b>Whether there are rewards for collaborative science and incentives for networks</b>	Yes	The Research Ethics Committees of the Universities gather around a network called “Network of Ethics Committees in Universities and Public Research Centres in Spain” ( <a href="http://www.eurecnet.org/information/spain.html">http://www.eurecnet.org/information/spain.html</a> ). At the moment, Spain collaborates in a number of international infrastructures: the European Laboratory for Particle Physics (CERN), the European Synchrotron Radiation Facility (ESRF), the European Organization for Astronomical Research in the Southern Hemisphere (ESO), the Partnership for Advanced Computing in Europe (PRACE), the European Molecular Biology Organization, Laboratory and Conference (EMBO-EMBL-EMBC), etc.
<b>Efforts to increase the value of research to society and reduce wasteful research.</b>	Not known	
<b>Are there any disincentives?</b>	Corruption in academia	Perception of academic corruption is relatively high.
<b>Resources for RE+RI training/implementation</b>	CSIC Manual of conflicts of interest (2015)  Código Europeo de Conducta para la Integridad en la Investigación (2018)	<a href="https://www.cnb.csic.es/documents/ConflictosInteresCSIC.pdf">https://www.cnb.csic.es/documents/ConflictosInteresCSIC.pdf</a>  <a href="http://www.allea.org/wp-content/uploads/2018/01/SP_ALLEA_Codigo_Europeo_de_Conducta_para_la_Integridad_en_la_Investigacion.pdf">http://www.allea.org/wp-content/uploads/2018/01/SP_ALLEA_Codigo_Europeo_de_Conducta_para_la_Integridad_en_la_Investigacion.pdf</a>



## Appendix A. Overview of RE+RI EU project data collection

Project	Overall aim	Literature focus	Literature type
ENERI	ENERI is the GARRI 10 funded European Network of Research Ethics and Research Integrity. ENERI aims to bring together key players in RE+RI.	The aim is to give users information about guidelines, ethics codes and European regulations that regulate and place ethical demands on the research process.	Wide range of literature databases Guidelines Codes of conduct List of research projects on RE List of training programmes Ethics centres
PRINTEGER	PRINTEGER is the GARRI 5 funded project 'Ethics in Research: Promoting Integrity'. It aims to improve governance of integrity and responsible research by improving the fit of governance to practice, improve integrity policies of national and international research organisations, and provide tools and resources for research leaders and managers.	Overview of various policies and organizational structures addressing misconduct in different types of organization and how research integrity can be promoted.	Project reports Books Research articles
SATORI	SATORI is an FP7 funded programme which aims to develop a common European framework for ethical assessment of research and innovation. It will develop a common framework of ethical principles and practical approaches to strengthen shared understanding among stakeholders involved in the design and implementation of research ethics.	Database compiles wide range of web links to pages concerning ethics policies, training materials and information resources	Wikipedia entries about different aspects of RI and RE Policy documents Guidebooks Research articles Codes of conduct Project reports



HEIRRI	HEIRRI is the H2020 research and innovation programme funded 'Higher Education Institutions and Responsible Research and Innovation' project. It aims to start the integration of Responsible Research and Innovation (RRI) within the formal and informal education of future scientists, engineers and other professionals involved in the research, design and innovation process.	HEIRRI's State of the art review and HEIRRI database compile the materials which could serve as literature in RRI teaching and learning.	EU projects Policy documents Academic papers Exemplary cases
RRI-TOOLS	RRI-TOOLS is the FP7 funded Responsible Research and Innovation Toolkit project. It aims to develop tools for five key stakeholder groups to encourage and support them in taking up the concepts and practices associated with RRI.	The aim of the RRI tools materials is to provide materials for RRI learning and use in practice through exemplary cases and videos.	Project reports PowerPoint presentations
EnRRICH	EnRRICH is the H2020 research and innovation programme funded 'Enhancing Responsible Research and Innovation through Curricula in Higher Education' project. It aims to improve the capacity of students and staff in higher education to develop knowledge, skills and attitudes to support the embedding of RRI in curricula by responding to the	The aim is to provide materials which could enable users to understand RRI in a more standardized way and to give them tools for RRI promotion.	Project reports Case studies







## Online content for the EnTIRE platform

	research needs of society as expressed by CSOs.		
DEFORM	DEFORM is a H2020 project which aims to analyse the sociological, economical and structural consequences of research misconduct.	The aim is to produce the documents that would define the actual consequences of research misconduct on society.	Presentations Project reports Videos



## Appendix B. Search strategies

### A. Medline

Database: Ovid MEDLINE(R) Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) <1980 to Present>

Search Strategy:

- 
- 1 Scientific Misconduct/ (5081)
  - 2 Fraud/ (7063)
  - 3 exp Ethics, Research/ (7481)
  - 4 (research adj3 (integrity or ethics or conduct or misconduct or malpractice or manipulation or misleading or mispresent\$ or bias\$ or fraud\$ or honest\$ or reliab?I\$ or fair\$ or impartial\$ or selective\$)).tw. (15155)
  - 5 ((scientific or academic) adj3 (fraud or ethics or integrity or misconduct or malpractice or manipulation or honesty or dishonesty)).tw. (2333)
  - 6 ((researcher\$ or scientist\$) adj3 (integrity or honest\$)).tw. (83)
  - 7 Plagiarism/ (1213)
  - 8 (plagiari\$ or falsif\$).tw. (2957)
  - 9 Publication Bias/ (4657)
  - 10 Duplicate Publication as Topic/ (810)
  - 11 Retraction of Publication as Topic/ (599)
  - 12 Peer Review, Research/ (6347)
  - 13 (data adj3 (interpretat\$ or inaccura\$ or inadequa\$ or deceptive or deceit or bias\$ or impartial or manipulats\$ or misus\$ or misleading or mispresent\$ or mistreat\$ or selective or suppress\$ or fabricat\$ or fraud\$ or falsif\$ or false)).tw. (26801)
  - 14 Research Report/ (2652)
  - 15 (report\$ adj3 (selective or deceptive or deceit or misleading or inadequate or independent)).tw. (6815)
  - 16 (research adj3 (underreport\$ or under-report\$)).tw. (41)
  - 17 ((publication\$ or publishing) adj3 ethics).tw. (463)
  - 18 (bias adj3 (publication\$ or publishing or analys#s or design)).tw. (11996)
  - 19 (publication\$ adj3 (redundant or duplicate or multiple or salami or undeserving)).tw. (861)
  - 20 (inaccura\$ adj3 citation\$).tw. (16)
  - 21 Authorship/ (5462)
  - 22 ((author\$ or contribut\$) adj3 (undeserv\$ or ghost or guest or gift\$)).tw. (252)
  - 23 Conflict of Interest/ (9358)
  - 24 (interest adj3 (conflict or competing)).tw. (3739)
  - 25 or/1-24 (105800)
  - 26 exp Education, Professional/ (281877)
  - 27 exp Teaching/ (80636)





- 28 exp Curriculum/ (78653)
- 29 Mentors/ (9808)
- 30 (educat\$ or teach\$ or train\$ or motivat\$ or instruct\$ or interven\$ or promot\$ or supervis\$ or mentor\$).tw. (2646247)
- 31 (course\$ or seminar\$ or workshop\$).tw. (619145)
- 32 exp Policy Making/ (23916)
- 33 Program Development/ (27622)
- 34 ((program\$ or plan\$ or policy or rule\$ or procedure\$ or standard\$ or code\$) adj3 (formulat\$ or develop\$ or improve\$ or expand\$)).tw. (175360)
- 35 or/26-34 (3428999)
- 36 25 and 35 (22426)

## B. Scopus

(TITLE-ABS-KEY(research W/3 (integrity OR ethics OR conduct OR misconduct OR malpractice OR manipulation OR fraud\* OR honest\*))) OR (TITLE-ABS-KEY((scientific OR academic) W/3 (fraud OR ethics OR integrity OR misconduct OR honesty OR dishonesty))) OR (TITLE-ABS-KEY((researcher\* OR scientist\*) W/3 (integrity OR honest\*))) OR (TITLE-ABS-KEY((publication\* OR publishing) W/3 (ethics OR plagiari\* OR falsif\*))) OR (TITLE-ABS-KEY((author\* OR contribut\*) W/3 (undeserv\* OR ghost OR guest OR gift\*))) AND ((TITLE-ABS-KEY(educat\* OR teach\* OR train\* OR motivat\* OR instruct\* OR interven\* OR promot\* OR supervis\* OR mentor\*)) OR (TITLE-ABS-KEY(course\* OR seminar\* OR workshop\*)) OR (TITLE-ABS-KEY((program\* OR plan\* OR policy OR rule\* OR procedure\* OR standard\* OR code\*) W/3 (formulat\* OR develop\* OR improve\* OR expand\*))))



## Appendix C. Lists of member countries of EUREC and ENRIO

### EUREC

Member state	Responsible person	E-mail	Website
Austria	Univ. Prof. Dr. Josef Haas	<a href="mailto:josef.haas@medunigraz.at">josef.haas@medunigraz.at</a>	<a href="http://www.meduni-graz.at/">http://www.meduni-graz.at/</a>
Belgium	Prof. Dr. André Herchuelz	<a href="mailto:herchu@ulb.ac.be">herchu@ulb.ac.be</a>	<a href="http://www.ulb.ac.be/">http://www.ulb.ac.be/</a>
Czech Republic	Dr. Jiri Simek	<a href="mailto:etikom@fnhk.cz">etikom@fnhk.cz</a>	
Denmark	Cand. jur. Maj Vigh	<a href="mailto:mvi@dketik.dk">mvi@dketik.dk</a>	<a href="http://www.dnvk.dk/">http://www.dnvk.dk/</a>
Estonia	Kristi Louk	<a href="mailto:eetikakomitee@ut.ee">eetikakomitee@ut.ee</a>	<a href="http://www.ut.ee/et">http://www.ut.ee/et</a>
Finland	Outi Konttinen	<a href="mailto:outi.konttinen@valvira.fi">outi.konttinen@valvira.fi</a>	<a href="http://www.tukija.fi/en">http://www.tukija.fi/en</a>
France	Prof. Dr. Sylvie Hansel-Esteller	<a href="mailto:sylvie.hansel.esteller@gmail.com">sylvie.hansel.esteller@gmail.com</a>	<a href="http://www.cpp-sudmed4.fr/">http://www.cpp-sudmed4.fr/</a>
Germany	Prof. Dr. med. Joerg Hasford	<a href="mailto:med.ethik.komm@netcologne.de">med.ethik.komm@netcologne.de</a>	<a href="http://www.ak-med-ethik-komm.de/">http://www.ak-med-ethik-komm.de/</a>
Greece	Prof. Costas A. Charitidis	<a href="mailto:charitidis@chemeng.ntua.gr">charitidis@chemeng.ntua.gr</a>	
Hungary	Prof. Dr. Ernő Bácsy	<a href="mailto:erno.bacsy@emmi.gov.hu">erno.bacsy@emmi.gov.hu</a>	
Ireland	Prof. Dr. David Smith	<a href="mailto:davsmith@rcsi.ie">davsmith@rcsi.ie</a>	
Latvia	Ass. Prof. Dr. Vents Silis	<a href="mailto:Vents.Silis@rsu.lv">Vents.Silis@rsu.lv</a>	<a href="http://www.rsu.lv/">http://www.rsu.lv/</a>
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## ENRIO

Country/Region	Number of RIOs Listed by ENRIO	Key RIOs Listed by ENRIO	Links
Austria	1	Austrian Agency for Research Integrity	<a href="http://www.oeawi.at/">http://www.oeawi.at/</a>
Belgium	1	Flemish Commission for Research Integrity (VCWI)	<a href="http://www.kvab.be/vcwi/">http://www.kvab.be/vcwi/</a>
Croatia	1	Croatian Committee on Ethics in Science and Higher Education (CESHE)	<a href="mailto:vilibic@izor.hr">vilibic@izor.hr</a>
Czech Republic	1	Commission for the Scientific Integrity of the Czech Academy of Sciences (CAS)	<a href="http://www.avcr.cz/en/about-us/cas-structure/academy-council/advisory-committees/">http://www.avcr.cz/en/about-us/cas-structure/academy-council/advisory-committees/</a>
Denmark	1	Danish Committees on Scientific Dishonesty (DCSD)	<a href="http://ufm.dk/en/research-and-innovation/councils-and-commissions/the-danish-committees-on-">http://ufm.dk/en/research-and-innovation/councils-and-commissions/the-danish-committees-on-</a>



			<a href="#">scientific-dishonesty?set_language=en&amp;cl=en</a>
Estonia	1	Estonian Research Council (ETAg)	<a href="http://www.etag.ee/en/">http://www.etag.ee/en/</a>
Finland	1	Finnish Advisory Board on Research Integrity (TENK)	<a href="http://www.tenk.fi/en">http://www.tenk.fi/en</a>
France	2	French Agricultural Research Centre for International Development (CIRAD)	<a href="http://www.cirad.fr/">http://www.cirad.fr/</a>
		Internal Office of the French National Institute of Health and Medical Research (INSERM)	<a href="http://www.inserm.fr/quest-ce-que-l-inserm/organigramme/comites/dis">http://www.inserm.fr/quest-ce-que-l-inserm/organigramme/comites/dis</a>
Germany	3	German Research Ombudsman (Ombudsman für die Wissenschaft)	<a href="http://www.ombudsman-fuer-die-wissenschaft.de/">http://www.ombudsman-fuer-die-wissenschaft.de/</a>
		Geschäftsstelle für Ombudsangelegenheiten der Universität Hamburg	<a href="https://www.uni-hamburg.de/en/forschung/service/gute-wissenschaftliche-praxis.html">https://www.uni-hamburg.de/en/forschung/service/gute-wissenschaftliche-praxis.html</a>
		Team Scientific Integrity (Team SciInt)	<a href="http://www.scientificintegrity.de/en-index.html">http://www.scientificintegrity.de/en-index.html</a>
Greece	2	Ethical Aspects in Research and Technology for Human (EARTHnet)	<a href="http://earthnet.ntua.gr/?lang=en">http://earthnet.ntua.gr/?lang=en</a>
		Network of Responsible Conduct of Research in Greece (RCR-Greece)	<a href="http://www.rcr.gr/index.php/en/">http://www.rcr.gr/index.php/en/</a>
Ireland	2	Health Research Board (HRB)	<a href="http://www.hrb.ie/home/">http://www.hrb.ie/home/</a>
		Royal Irish Academy (RIA)	<a href="https://www.ria.ie/">https://www.ria.ie/</a>
Italy	1	National Research Council (CNR)	<a href="https://www.cnr.it/it/ethics">https://www.cnr.it/it/ethics</a>
Luxembourg	1	Luxembourg National Research Fund (FNR)	<a href="https://www.fnr.lu/">https://www.fnr.lu/</a>
Netherlands	2	Netherlands Board on Research Integrity (LOWI)	<a href="http://www.lowi.nl/en/netherlands-board-on-research-integrity-lowi?set_language=en">http://www.lowi.nl/en/netherlands-board-on-research-integrity-lowi?set_language=en</a>
		Netherlands Research Integrity Network (NRIN)	<a href="https://www.nrin.nl/">https://www.nrin.nl/</a>
Norway	1	National Research Ethics Committees (Etikkom)	<a href="https://www.etikkom.no/en/">https://www.etikkom.no/en/</a>





## Online content for the EnTIRE platform

Poland	1	Commission for Ethics in Science	<a href="https://institution.pan.pl/index.php/institution/science-ethics-committee">https://institution.pan.pl/index.php/institution/science-ethics-committee</a>
Portugal	1	Foundation for Science and Technology	<a href="http://www.fct.pt/index.html.en">http://www.fct.pt/index.html.en</a>
Slovenia	1	Commission for Women in Science (CWS)	<a href="mailto:ursa.ok@gmail.com">ursa.ok@gmail.com</a>
Spain	1	Ethics Committee of the Spanish National Research Council (CSIC)	<a href="http://www.csic.es/etica-en-la-investigacion">http://www.csic.es/etica-en-la-investigacion</a>
Sweden	1	Central Ethical Review Board (CEPN)	<a href="http://www.epn.se/en/start/">http://www.epn.se/en/start/</a>
Switzerland	1	Swiss Academies of Arts and Sciences (SAMW)	<a href="http://www.akademien-schweiz.ch/en/index/Portrait/Kommissionen-AG/Wissenschaftliche-Integritaet.html">http://www.akademien-schweiz.ch/en/index/Portrait/Kommissionen-AG/Wissenschaftliche-Integritaet.html</a>
United Kingdom	1	UK Research Integrity Office (UKRIO)	<a href="http://ukrio.org/">http://ukrio.org/</a>

