



Gradual integration of REnewable non-fossil ENergy sources  
and modular HEATIng technologies in EAF for progressive CO2 decrease

# Ethical and legal project guidelines

Deliverable D6.4

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# 1. Introduction

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## 1.1 Purpose of the present document

The GreenHeatEAF consortium places a strong emphasis on investigating and designing procedures and protocols necessary for handling legal and ethical issues which might arise during the whole project lifetime as well as in monitoring the proper implementation.

GreenHeatEAF aims at developing a research activity in full compliance with and targeting some of the Sustainable Development Goals (SDG) of the United Nations (UN) and of the associated targets. In particular, the most relevant SDG is SDG9 “industry, innovation and infrastructure” and *Target 9.4: Upgrade all industries and infrastructures for sustainability*, as the solutions and technologies that are investigated in the project can contribute to upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes. However, the project is also relevant for other SDGs. For instance, among the communication and dissemination actions (see Deliverable D5.1), it includes pilot training sessions related to the outcomes of the project and some of the developed tools for the workers of the involved companies and communications and seminars dedicated to gender equality aimed at emphasizing the contribution of all genders in the project and their importance, the career opportunities that can be available for women thanks to the solutions developed in the project. Participation and collaboration are also foreseen within activities and initiatives promoting gender equality and women contributions in Science, Technology, Engineering and Mathematics (STEM).

What above demands for a deep attention to ethical and legal aspects connected to the research activities developed within the project. Moreover, although none of the Key Exploitable Results (KERs) of the project is foreseen to achieve the full commercial and industrial implementation (i.e. the target TRL is far lower than TRL9 for all KERs, and mostly ranges from TRL5 to TRL7) at the end of the project, a preliminary assessment of social impact is foreseen within WP4 (Task 4.3) to analyse the potential impacts on health and safety conditions at the workplace and requirements for personnel upskilling and training to drive the adoption of the developed solutions. The analysis will also comprise the expected changes in task structures and the skill requirements for operators, technicians, maintenance, engineering, and will guide the development of training material as part of the Dissemination and Communication strategy.

To sum up, ethical and legal aspects need to be carefully considered within GreenHeatEAF and some guidelines are required. This report illustrates the ethical and legal guidelines to be followed by the project partners and all the participants to the research activities. In this context, it includes the experience and lessons learned from previous research projects performed by the GreenHeatEAF consortium members.

The consortium has extensive experience in managing complex research projects for the European Commission (EC). A proper monitoring of ethical and legal issues will be carried out at each relevant stage of GreenHeatEAF, to ensure that any arising risk in this context is faced in an effective and timely manner. The present document analyses the ethical and legal framework upon which such monitoring is based explains way and means to implement it.

## 1.2 Scope of application

All the activities developed within GreenHeatEAF must comply with ethical principles, applicable international, European and national regulations. This implies that the GreenHeatEAF consortium is fully committed to ensure respect for people and for human dignity as well as an appropriate and fair distribution of the benefits and obligations deriving from the research activity.

The GreenHeatEAF Consortium commits itself to protect the values, rights, and interests of all research participants. Moreover, in all the situations in which this is relevant, GreenHeatEAF partners must obtain any necessary ethics approvals, and the free and fully informed consent of any person who takes part to the research activity at any level.

GreenHeatEAF needs to ensure that the research methodologies that are adopted within its framework do not result in discriminatory practices or unfair treatment, by complying with the overall principle of maximising benefits and minimising risks and harms.

Furthermore, for those activities which implies the development of surveys, interviews, brainstorming and training procedures where personal information is gathered and stored, all the project beneficiaries must comply with all the regulations and good practices concerning privacy, data protection, data management, and the health and safety of participants.

In the framework of implementing any research that fits the above description, GreenHeatEAF fully adopts and applies all the ethical requirements introduced by the European Commission.

With that in mind, the present deliverable describes measures and procedures, through which an ethically compliant implementation of the project activities is ensured and monitored.

## 1.3 Structure of the document

This document is divided into 8 main sections:

- Section 1 introduces the context of this document and its objectives.
- Section 2 introduces the ethical and legal framework in which the project is developed by also analysing in depth the main ethical issues and principles inspiring research activities that are funded by the EU.
- Section 3 describes the main ethical dimension and potential ethical issues identified so far for GreenHeatEAF.
- Section 4 analyses the main aspects related to human participation in research activities.
- Section 5 overviews the basic rules and procedures that will be followed to protect personal data.
- Section 6 shortly overviews the policy of the project concerning the adoption of an inclusive language.
- Section 7 provides an overview of the profile of the appointed Ethics Mentor and its role within the project.

## 2. Analysis of ethical and legal framework

### 2.1 Legal framework on ethics in the Grant Agreement for Horizon Europe Projects

In the Grant Agreement of GreenHeatEAF, in line with the general rules for Horizon Europe project, ethics is treated in Article 14 which states as follows:

The beneficiaries must carry out the action in compliance with:

- ethical principles (including the highest standards of research integrity) and
- applicable EU, international and national law, including the EU Charter of

Fundamental Rights and the European Convention for the Protection of Human Rights and Fundamental Freedoms and its Supplementary Protocols.

No funding can be granted, within or outside the EU, for activities that are prohibited in all Member States. No funding can be granted in a Member State for an activity which is forbidden in that Member State.

The beneficiaries must pay particular attention to the principle of proportionality, the right to privacy, the right to the protection of personal data, the right to the physical and mental integrity of persons, the right to non-discrimination, the need to ensure protection of the environment and high levels of human health protection.

The beneficiaries must ensure that the activities under the action have an exclusive focus on civil applications.

Other part of the same article refers to research on research on human embryos or human embryonic stem cells, which is clearly out of the scope of the GreenHeatEAF project.

In addition, the beneficiaries must respect the fundamental principle of research integrity as set out in the European Code of Conduct for Research Integrity [1], which will be analysed in deeper detail in the next Subsection.

### 2.2 General ethical issues and principles in research

#### 2.2.1 Ethics in research

The term research ethics is a general concept that covers all the ethical viewpoints and evaluations that are related to science and research. Ethics are norms of conduct that distinguish between acceptable and unacceptable behaviour. As people can interpret ethical norms in different ways in the light of their own values and life experiences, it is necessary to establish common definitions and rules in the framework of the project.

In GreenHeatEAF, 'ethics' is perceived as earlier defined by the European Commission [2]. According to the EC (see [2], page 2):

*"The consideration of ethical issues, starting at the conceptual stage of a proposal, enhances the quality of research, increases its likely social impact, promotes research integrity, promotes a better*

*alignment of research with social needs and expectations and, finally, supports the societal uptake of the fruits of research because high ethical standards generally merit public trust. In this spirit, the Commission aims to build a relationship between the research process and ethics that is collaborative and constructive (rather than negative and inhibitive)."*

The GreenHeatEAF consortium acts in line with this notion and sees research ethics as the vital basis for conducting high-quality research. In particular, the ethical norms sustained in R4C are **Impartiality, Reliability, Integrity, and Responsibility**. These norms stress the importance of good and responsible practices and lay the foundations for sincere, reliable, and confidential cooperation among the consortium members and other stakeholders. The norms are closely tied with the notion of research integrity which is addressed next.

### 2.2.2 Research Integrity

In addition to research ethics, good research practices are based on fundamental principles of research integrity. Research integrity emphasises the honesty and integrity that all researchers are required to adopt in their research activities. The research integrity principles guide researchers in their work as well as in their engagement with the practical, ethical, and intellectual challenges inherent in research.

The beneficiaries are committed to respecting the fundamental principle of research integrity as set out in the European Code of Conduct for Research Integrity [1] document provided by ALLEA - All European Academies -group. The document states that "good research practices are based on fundamental principles of research integrity. They guide researchers in their work as well as in their engagement with the practical, ethical, and intellectual challenges inherent in research" (see [1], page 4).

According to the European Code of Conduct for Research Integrity, the fundamental principles of research integrity are the ones reported in Article 14 of the Grant Agreement, which are reported below for the sake of clarity:

- **reliability** in ensuring the quality of research reflected in the design, the methodology, the analysis, and the use of resources
- **honesty** in developing, undertaking, reviewing, reporting, and communicating research in a transparent, fair, full, and unbiased way
- **respect for colleagues**, research participants, society, ecosystems, cultural heritage, and the environment
- **accountability** for the research from idea to publication, for its management and organisation, for training, supervision, and mentoring, and for its wider impacts.

This means that beneficiaries must ensure that persons carrying out research tasks follow the good research practices including ensuring, where possible, openness, reproducibility and traceability and refrain from the research integrity violations described in the Code.

In addition to the European Code of Conduct for Research Integrity, the beneficiaries must follow other relevant international and national research integrity guidelines.

### 2.2.3 Contexts of ethical research practices

Good research practices – which are based on the previously addressed research ethics and research integrity – apply to different contexts of the project's processes. These contexts are defined by ALLEA as follows:

- Research Environment



- Training, Supervision and Mentoring
- Research Procedures
- Safeguards
- Data Practices and Management
- Collaborative Working
- Publication and Dissemination
- Reviewing, Evaluating and Editing

Continuous supervision and guidance are done by the management of the project with the support of a nominated Ethics Mentor to ensure that good research practices are sustained in all these contexts. Notably, all participating organisations as well as individual researchers and management staff are responsible for following good research practices. This includes reporting of any misconduct that might be detected.

#### 2.2.4 Notes on communication, publication, and dissemination activities

The general communication and dissemination principles of GreenHeatEAF are based by design on high ethical conduct. The strategy to implement dissemination and communication are addressed in depth in *Deliverable 5.1 “Dissemination and Communication Plan”* which was completed and submitted in March 2023. The redaction of official communication and dissemination material and documents follows the same qualitative rules and procedures that are applied to any kind of official document originated by the project, which are defined *Deliverable 6.2 “Quality Control and Risk Management”* completed and submitted in April 2023. Therefore, in this subsection, we limit to mention a few core notes on ethics in communication and dissemination activities of the project.

First, the researchers involved in GreenHeatEAF are committed to agreeing on the sequence of authorship, acknowledging that authorship itself is based on a significant contribution to the design of the research, relevant data collection, or the analysis or interpretation of the results. The consortium members must acknowledge the work and intellectual contributions of others, including collaborators, assistants, and funders.

Second, the researchers acknowledge that they are fully responsible for the content of a publication, unless otherwise specified. The authors should ensure that their work is made available to colleagues in a timely, open, transparent, and accurate manner, unless otherwise agreed. They must also be honest in their communication with the general public and in the media. Moreover, the researchers involved in GreenHeatEAF are committed to disclosing any conflicts of interest and financial or other types of support for the research or for the publication of its results [3].

#### 2.2.5 Research misconduct and other unacceptable practices

The GreenHeatEAF consortium has a zero-tolerance policy for research misconduct, disregard for responsible conduct of research and other unacceptable practices in research.

- Research misconduct can be, for example (the list is not exhaustive),
- fabrication, i.e., making up results and recording them as if they were real.
- falsification, i.e., manipulating research materials, equipment or processes or changing, omitting, or suppressing data or results without justification.
- plagiarism, i.e., using other people’s work and ideas without giving proper credit to the original source, thus violating the rights of the original author(s) to their intellectual outputs.
- misappropriation, i.e., unlawful presentation of another person’s result, idea, plan, observation, or data as one’s own research.



Sometimes, research violations are not as distinct in which cases they can be seen as disregarding the responsible conduct of research. Examples of these can be (the list is not exhaustive):

- denigrating the role of other researchers in publications
- reporting results and methods in a careless manner, resulting in misleading claims
- inadequate record keeping and storage of results and data
- publishing the same results many times as novel results (self-plagiarism)
- misleading the research community in other ways.

In addition, there are other unacceptable research practices which are condemned. These can be, for instance,

- manipulating authorship
- exaggerating one's own achievements (e.g., in CV)
- re-publishing substantive parts of one's own earlier publications without duly acknowledging it ('self-plagiarism')
- citing selectively to enhance own findings or to please editors, reviewers, or colleagues
- withholding research results
- delaying the work of other researchers e.g., in the peer-review process
- allowing funders/sponsors to jeopardise independence in the research process or reporting of results
- accusing a researcher of misconduct or other violations in a malicious way
- exaggerating the importance and practical applicability of findings

To prevent any kind of misconduct, disregard, or other unacceptable practice to take place, the GreenHeatEAF consortium expects responsible conduct from all its researchers and implements clear ethics monitoring processes.

## 3. Main ethical dimensions and issues in GreenHeatEAF

### 3.1 Ethics self-assessment

At the proposal stage, the GreenHeatEAF Consortium developed a preliminary ethics self-assessment related to the technologies investigated in the project and the research activities that are carried out, which is summarised in Table 1.

Table 1. Preliminary ethics self-assessment developed at the proposal stage.

<b>1. Human Embryonic Stem Cells and Human Embryos</b>	
Does this activity involve Human Embryonic Stem Cells (hESCs)?	NO
Does this activity involve the use of human embryos?	NO
<b>2. Humans</b>	
Does this activity involve human participants?	NO
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study participants?	NO
Does this activity involve conducting a clinical study as defined by the Clinical Trial Regulation (EU 536/2014)? (using pharmaceuticals, biologicals, radiopharmaceuticals, or advanced therapy medicinal products)	NO
<b>3. Human Cells / Tissues (not covered by section 1)</b>	
Does this activity involve the use of human cells or tissues?	NO
<b>4. Personal Data</b>	
Does this activity involve processing of personal data?	NO
Does this activity involve further processing of previously collected personal data (including use of preexisting data sets or sources, merging existing data sets)?	NO
Is it planned to export personal data from the EU to non-EU countries? Specify the type of personal data and countries involved	NO
Is it planned to import personal data from non-EU countries into the EU or from a non-EU country to another non-EU country? Specify the type of personal data and countries involved	NO
Does this activity involve the processing of personal data related to criminal convictions or offences?	NO
<b>5. Animals</b>	
Does this activity involve animals?	NO
<b>6. Non-EU Countries</b>	
Will some of the activities be carried out in non-EU countries?	NO
In case non-EU countries are involved, do the activities undertaken in these countries raise potential ethics issues?	NO
It is planned to use local resources (e.g. animal and/or human tissue samples, genetic material, live animals, human remains, materials of historical value, endangered fauna or flora samples, etc.)?	NO

Is it planned to import any material (other than data) from non-EU countries into the EU or from a non-EU country to another non-EU country? For data imports, see section 4.	NO
Is it planned to export any material (other than data) from the EU to non-EU countries? For data exports, see section 4.	NO
Does this activity involve low and/or lower middle income countries, (if yes, detail the benefit-sharing actions planned in the self-assessment)	NO
Could the situation in the country put the individuals taking part in the activity at risk?	NO
<b>7. Environment, Health and Safety</b>	
Does this activity involve the use of substances or processes that may cause harm to the environment, to animals or plants. (during the implementation of the activity or further to the use of the results, as a possible impact)?	NO*
Does this activity deal with endangered fauna and/or flora / protected areas?	NO
Does this activity involve the use of substances or processes that may cause harm to humans, including those performing the activity. (during the implementation of the activity or further to the use of the results, as a possible impact)?	NO
<b>8. Artificial Intelligence</b>	
Does this activity involve the development, deployment and/or use of Artificial Intelligence? (if yes, detail in the self-assessment whether that could raise ethical concerns related to human rights and values and detail how this will be addressed).	NO
<b>9. Other Ethics Issues</b>	
Are there any other ethics issues that should be taken into consideration?	NO

Moreover, at the proposal and negotiation stages no ethical issues have been identified concerning objectives of the activity, methodology, and potential impacts. The research work that is being developed in GreenHeatEAF does not involve people tracking, recognition or collection of personal data and does not raise ethical concerns related to human rights and values.

## 3.2 Compliance with ethical principles and relevant legislations

All participants of GreenHeatEAF are committed to the responsible professional principles and codes of conduct and will conform to the current legislation and regulations in the countries where the development and innovation actions will be carried out. The consortium is committed to rigorously apply Ethical standards and guidelines of Horizon Europe (HEU) in all work regardless of the country in which the research/demonstration is carried out. The project complies with the Charter of Fundamental Rights of the EU. We subscribe to the requirements within HEU to deal with ethical issues following the regulation (EU) 2021/695 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, Article 19 (1): “*Actions carried out under the Programme shall comply with ethical principles and relevant Union, national and international law, including the Charter and the European Convention for the Protection of Human Rights and Fundamental Freedoms and its Supplementary Protocols. Particular attention shall be paid to the principle of proportionality, to the right to privacy, the right to the protection of personal data, the right to the physical and mental integrity of a person, the right to non-discrimination and to the need to ensure protection of the environment and high levels of human health protection.*” GreenHeatEAF is a project of the Innovation Action (IA) type. As such, the project will follow international and national ethics guidelines. Particular attention will be paid to complying to the EU’s General Data Protection Regulation (GDPR) Regulation (EU) 2016/679, 27 April 2016, which supersedes the Data

Protection Directive 95/46/EC as of May 2018 as the primary law regulating how organisations protect EU citizens' personal data; with the EU's E-Privacy Directive 2002/58 on Privacy and Electronic Communications; and with Commission decisions on the adequacy of the protection of personal data in third countries, as well as Privacy Shield that supersedes International Safe Harbour Privacy Principles as of 2015.

During the first months of activity the GreenHeatEAF Consortium has identified some aspects besides more general ethical issues that might require more specific consideration from the ethical point of view, related to the potential collection of personal data which could be carried out at the end of the project during the assessment of the social impact. In effects, in Task 4.3 an analysis will be carried out on improved health and safety conditions at the workplace which are conveyed by the solutions developed within the project and on the requirements for personnel upskilling and training that might be connected to the implementation of such solution. This analysis will also comprise the expected changes in task structures and according to skill requirements for operators, technicians, maintenance, engineering as well as potential skill shortages and suitable countermeasures.

Moreover, the GreenHeatEAF Consortium has defined basic principles to drive human participation in research activities as well as hints for a fair and ethical communication among participants using inclusive language.

In the next sections the plans and procedures for handling the identified ethical aspects are described.

Moreover, to drive the actions of the Consortium as well as to monitor and timely identify emerging ethical issues which are not foreseen at the present stage, the Consortium has appointed an ethics mentor to help with ensuring activities comply with ethical and legal requirements for research, especially (but not exclusively) with humans and personal data processing.

## 4. Human participation in research activities

GreenHeatEAF will demonstrate the integration of non-fossil fuels and renewable C-sources in EAF process to decrease CO<sub>2</sub> emissions and dependence from fossil energy and C-sources markets. The project will address the challenges linked with these applications by combining pilot, on field and simulation investigations. Moreover, GreenHeatEAF focus on improvement of heat recovery solutions both from off-gases and slag considering the changes of their features with the introduction of H<sub>2</sub> and/or biomass and considering different charge materials and modes. Technologies and processes for heat recovery are tested and control approaches are developed.

To achieve its ambitious objectives, GreenHeatEAF will involve researchers and operators working in the different stages of the electric steel production route and will consider aspects related to the digital transition of the steel sector, for instance as far as simulation and optimised digital control is concerned. Therefore, the project also needs to ensure acceptance and awareness of this digital approaches and tools as well as to achieve a comprehensive understanding of the requirements and needs of those people to embrace these approaches. Age and gender issues need to be considered, since they are sensitive indicators in the workforce transition from current to future digital industry.

Furthermore, an analysis will be made of the necessary skills, knowledge and training gaps, and consequent necessary learning resources. For that reason, GreenHeatEAF will analyse directly with operators involved in the pilot use-cases the real scenarios and barriers to contribute to a smooth transition towards these advanced digital tools.

As a consequence, social impact is considered in Task 4.3 and human science will play a role in such analysis. Workers are a key part of the deployment of the GreenHeatEAF solutions. Data about gender, age and opinions in specific issues (related mainly with work skills in digital technologies and digitisation towards a new model of electric steelworks) will be collected and analysed in Task 4.3. The design and development of the study will take into account all the requirements to grant compliance with all ethical and data protection issues, fulfilling also the ethical standards of Horizon Europe.

### 4.1 Recruitment, inclusion and exclusion criteria

The workers involved in the GreenHeatEAF project will be volunteers. Wherever applicable, the involved steelworks will analyse the actual skills and work procedures of the workers, and some of them will be asked to participate in the project experimental stages. Those potential workers will be asked for their consent to participate in GreenHeatEAF. Presently, no exclusion criteria have been defined, but if they do arise during the execution of the project, then the consortium will act upon them at that time.

### 4.2 Informed consent procedure

In any of the research taking place in GreenHeatEAF that involves humans, potential participants will undergo an appropriately-designed informed consent procedure implemented by project partners in compliance with the ethical requirements set forth by the Commission as well as with relevant EU and national legislation.

The consortium will prepare a form/survey template in which the selected workers will be duly informed about the project aims and the Protection Data rules followed by the project. The form will be prepared in in the languages of the nations where the specific activities and/or analyses will take place, and the workers will better understand the particularities of their participation in the project. The form will include a box to be marked with the sentence *"I consent to be involved in the*

*GreenHeatEAF project* or similar. The worker will be asked to sign the form before participating in the work of the project.

The informed consent procedure will start by providing potential participants with an information sheet, which includes sufficiently detailed information on the research at hand, so that they can make an informed, voluntary and rational decision to participate. More specifically, the information sheet handed to research participants will contain:

- a commonly understandable written description of the project and its objectives;
- sufficiently detailed information on the purposes of the analysis.

After reading the information sheet, to ensure that potential participants have fully understood the scope of their participation, they will be asked to provide their consent in writing by signing the informed consent form which:

- Highlights the need to read the information sheet carefully, to fully understand why the research is being carried out and what it will involve for them before deciding to participate.
- Explicitly states that their participation in the research is entirely voluntary and that they have the right to refuse to participate and to withdraw their participation at any time without needing to justify their decision.
- Explains that the data collected may be used in reports and other publications about the project
- Declares that any personal data they may provide in the framework of their participation will be handled in accordance with GDPR, as well as any relevant national laws (see also Section 5).
- Provides the contact details of the responsible project partner that they can communicate with to address any complaints, concerns or simply further questions that may arise from their participation in the research.

The project partner that engages the participants and seeks to receive their informed consent will be responsible for ensuring that the informed consent form is not signed and provided under any form of duress. Both the participant and the responsible project partner will sign the informed consent form and keep a copy of it, concluding the informed consent procedure and proceeding to the implementation of the research.

## 5. Protection of personal data

### 5.1 Definition of personal data

*“Personal data”* means information relating to an identified or identifiable natural person. An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person (art. 2(a) EU General Data Protection Regulation (GDPR)).

In accordance with the General Data Protection Regulation (GDPR) (Article 4 (13), (14) and (15) and Article 9 and Recitals (51) to (56) the following personal data are considered “sensitive” and are subject to specific processing conditions:

- personal data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs
- trade-union membership
- genetic data, biometric data processed solely to identify a human being
- health-related data
- data concerning a person’s sex life or sexual orientation.

As such, GreenHeatEAF will ensure that the rules regarding the processing of such sensitive personal data outlined in the GDPR are followed, particularly in Article 9.

*“Processing of personal data”* means any operation (or set of operations) performed on personal data, either manually or by automatic means. This includes:

- collection (digital audio recording, digital video caption, etc.)
- recording
- organisation, structuring & storage (cloud, LAN or WAN servers)
- adaptation or alteration (merging sets, application, etc.)
- retrieval & consultation
- use
- disclosure by transmission, dissemination or otherwise making available (share, exchange, transfer)
- alignment or combination
- restriction, erasure or destruction.

### 5.2 Justification for the processing of sensitive personal data

Due to the scope of the project, in general personal data are not required to develop the core research activities foreseen in the project, such as already declared by the GreenHeatEAF Consortium in the preliminary ethics self-assessment. Nonetheless, the GreenHeatEAF Consortium is aware that personal data may come from any type of research activity, such as, for instance, ICT research, personal records (financial, criminal, education, etc.), gender and ethnic background, location tracking and domicile information, etc. Therefore, the GreenHeatEAF Consortium decided to anticipate the potential generation on ethics issues on this topic, by trying to identify activities where personal data might even accidentally be provided by participants and/or where personal data might somehow “enrich” the analysis, such as, for instance, the assessment of the social and environmental impact of the developed solutions, to be prepared to face any kind of ethic issue which might arise. Table 2 summarises the outcome of the analysis developed at the present stage.



Table 2. List of activities where sensitive personal data might accidentally be collected and/or where their provision might be decided at a later stage within GreenHeatEAF.

WP	Type of data	Ethical / Legal Restrictions
WP4	<p>In the analysis of (perceived and real) social impact of the developed technologies the following data might be collected (e.g. in interviews)</p> <ul style="list-style-type: none"> <li>• age</li> <li>• sex</li> <li>• education and cultural background</li> <li>• ambitions and expectations related to the development of the considered tools/systems/technologies</li> <li>• opinions and personal expectations on the future evolution of the electric steelmaking route</li> </ul>	These data will be anonymised or pseudonymised.
WP5	<p>In the development of training seminars for the workers, the following data might be collected to customize the seminars with respect to the demands and background of the audience:</p> <ul style="list-style-type: none"> <li>• age</li> <li>• sex</li> <li>• education and cultural background</li> </ul>	These data will be anonymised or pseudonymised.

In the context of Table 2, pseudonymisation means that all the respondents are referred through alias, which makes only relevant information and not identity available. It is also agreed that any eventual opinion or assessment provided by workers during interviews or survey will be shared with the employer only in anonymous form or, in case the dimension of the audience is sufficiently large, in pseudonymized form.

### 5.3 Consent for personal data processing

When data processing is based on the consent given by the data subject, the controller is obligated to demonstrate that such consent for a specific purpose is given, in compliance with the principle of purpose limitation established by the GDPR (art.5(b)). If the purpose changes, new consent must be acquired for the new purpose from the individual. The withdrawal of the consent should be as easy as giving the consent.

Personnel involved in the provision of data and information which can be partly classified as sensitive personal data will be required to sign an Informed Consent form, that will be prepared in the native language by their Company/Institution according to the principles and procedures described in Section 4.2.

## 6. Inclusive Language

Speaking and writing are actions that not only depict but can also shape reality. When we express things in a specific manner, we generate mental pictures or strengthen existing ones. According to [4], language mirrors our beliefs, whether apparent or concealed, and influences individuals' beliefs about what is acceptable or customary. Particularly when referring to individuals or communities, this has significant consequences since language may perpetuate pre-existing discriminatory biases and prejudices [5]. Therefore, it is paramount to use inclusive language while preparing R4C materials, events and in all communication activities, either internal or external.

Inclusive language is sensitive, non-discriminative, and treats everyone equally by choices of word, tone of speech and manner of conversation. The use of inclusive language is crucial in creating environments that are respectful, psychologically safe, and welcoming to all individuals [6]. By using inclusive language both internally and externally, consortium members can signal to colleagues, external partners, and general audience that they are accepted and valued as they are.

Figure 1 provide a schematic overview of the pillars of the importance of inclusive language.

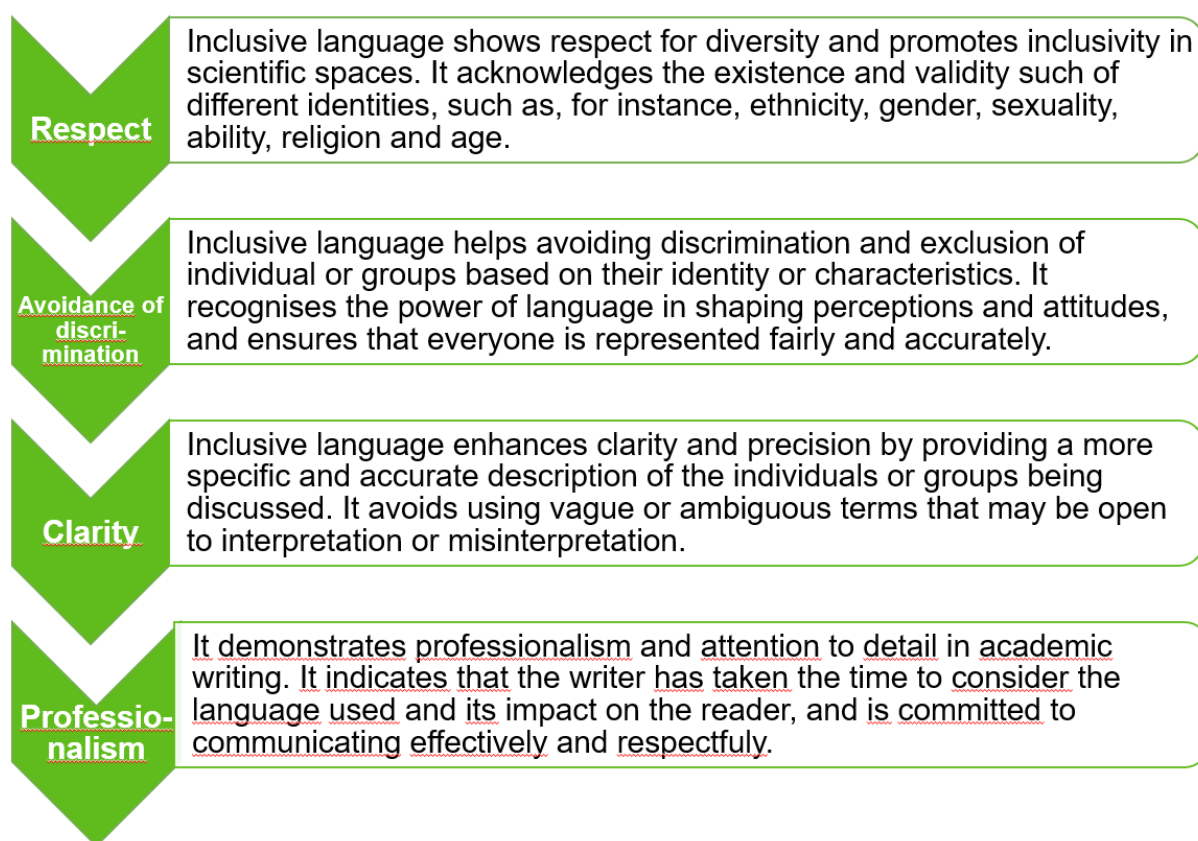


Figure 1 The importance of inclusive language.

In practice, inclusive language is about using people-centered language that refers to a person's characteristics, such as gender or ethnicity, only when relevant to the context. For instance, when discussing research personnel, it is best to refer to them by their last name and professional title rather than their marital status (Mr., Mrs., or Ms.), and to avoid assuming their gender pronouns. Moreover, in case of questionnaires, where the respondent is asked to indicate sex and gender,

the options “*prefer not to say*” and “*not binary*” must always been provided. This approach helps to avoid making assumptions and promotes a more inclusive and respectful dialogue.

Overall, using inclusive language in research and innovation practice is an important way to promote equity, respect, and fairness, and to ensure that everyone (beyond the consortium group) is represented accurately and with dignity.

## 7. Ethics Mentor

Based on the recommendations provided during the negotiation phase, the Consortium appointed an Ethics Mentor (EM) for the project to help with ensuring activities comply with ethical and legal requirements for re-search with humans and personal data processing. The GreenHeatEAF EM is Prof. Anna Loretoni, full professor of Political Philosophy of Scuola Superiore Sant'Anna.

### 7.1 Curriculum Vitae and experiences of the GreenHeatEAF Ethics Mentor

Anna Loretoni is Full Professor of Political Philosophy at Sant'Anna School of Advanced Studies (DirPolis Institute), where she is also Dean of the Department of Social Sciences. She is the Principal Investigator of several EU funded and nationally funded projects, namely 2022-2025 CERV-Daphne Project ENGINE - *Engaging Men and Boys against Gender-based Violence and Discrimination through Technology-based Trainings* and PRO3 2021-2023 Scuola Sant'Anna-SNS, *"Sostenibilità sociale e diseguaglianze di genere: cultura, politica, economia"* (In English *"Social sustainability and gender inequalities: culture, politics, economy"*).

Prof. Loretoni has a long-standing experience and publication record in top-ranked journals on several issues in political philosophy, including gender studies, international order theory, political identity, European constitutionalization and human rights. Among Her publications, the following books are available: *"Ampliare lo sguardo. Genere e teoria politica"* (in English *"Broaden your gaze. Gender and political theory"* - Donzelli Ed., 2014, ISBN: 9788868430887), *"Teorie della pace. Teorie della guerra"* (in English *"Theories of peace. Theories of war"* ETS Ed. 2005, EAN 9788846712912), *"Pace e progresso in Kant"* (in English *"Peace and progress in Kant"* ESI Ed. ISBN 8881143607, 1996).

### 7.2 Role of the Ethics Mentor in the project

The Ethics Mentor is an individual ethics expert providing ethics guidance and advice on issues of ethical gravity that relate to the planned and/or ongoing research.

The Ethics Mentor will assess the ethical merits of the work performed by the Beneficiary/ies, give independent recommendations, and, if required, report to the Commission/Agency/Funding Body on the project's compliance.

Where appropriate, they can give advice on approval requirements, risk-benefit assessments, guidance on specific ethical questions and guidance concerning the relevant legal framework and regulatory requirements in the countries where the research takes place.

The Ethics Mentor will maintain an overview of operations throughout the project, helping with preparation in terms of thinking ahead about possible problems and how they can be addressed.

They will do whatever is necessary to diligently monitor the aims, objectives, methodology and implications of the research to ensure that it conforms to the highest ethical standards, thereby assisting in ensuring that researchers, research participants nor the general public are exposed, by the work of the project, to activities that would be considered to be ethically unacceptable or even prohibited.

The societal implications of the project will be also considered to be relevant to ethics oversight.

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## 10. List of acronyms and abbreviations

Acronym	Full Name
BFI	VDEh Betriebsforschungsinstitut GmbH
CFD	Computational Fluid Dynamics
CO	Project Coordinator
DDP	Document Development Plan
DL	Deliverable Leader
EC	European commission
ESTEP	European Steel Technology Platform
EU	European Union
Q&RM	Quality and Risk Manager
SSSA	Scuola Superiore Sant'Anna
TM	Technical Manager
TRL	Technology Readiness Level
WP	Work Package
WPL	Work Package Leader

## 11. References

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