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Transatlantic cooperation on AI between the EU and the U.S.: a new way to face climate change?

Author: Angelica Ricci
SNR: 2086817

Supervisor: PhD Researcher Laura Kaschny
Second reader: Prof. dr. Saskia Lavrijssen

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Transatlantic cooperation on AI between the EU and the U.S.: a new way to face climate change?

Chapter 1 – Introduction

1.1 Background

The Atlantic Ocean separates geographically the European Union and the United States, but an imaginary bridge can be built between the two legal systems when it comes to Artificial Intelligence. Cooperation is the key element to obtaining better results with shared efforts and Artificial Intelligence is one of the technologies that can benefit from it.

There are various definitions of Artificial Intelligence (AI) because it comprises 'a set of diverse approaches, methods, and technologies.'[1] The European Commission's Proposal for a Regulation on Artificial Intelligence[2] defines AI as 'software that […] can, for a given set of human-defined objectives, generate outputs such as content, predictions, recommendations, or decisions influencing the environments they interact with'.[3]

One key aspect of Artificial Intelligence is data, because 'AI systems rely on huge amounts of data to perform well'.[4] In fact, AI can interpret massive amounts of data and can perform various tasks, such as reducing time in intensive processes, predicting outcomes, or making transportation safer and more efficient.[5] Therefore, data play a central role in the development of AI but pose new challenges that must be faced, such as data quality and accessibility. These challenges involve the necessity for AI to rely on accurate and unstructured data that must be processed, to obtain better results. For instance, in the environment sector there is the need to collect a lot of high-quality data, and according to Amy L. Stein 'Meaningful climate science requires collecting huge amounts

[1] Peter Gailhofer and others, 'The Role of Artificial Intelligence in the European Green Deal' 13.
[2] Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on Artificial Intelligence (Artificial Intelligence Act) and amending certain Union legislative acts (COM/2021/206 final).
[3] Article 3 para. 1 of the Proposal for a Regulation of the European Parliament and of the Council Laying down harmonized rules on Artificial Intelligence (Artificial Intelligence Act), COM (2021) 206 final, 21.4.2021.
[4] Independent High-Level Expert Group on Artificial Intelligence set up by the European Commission, A definition of AI: main capabilities and disciplines, 2018, 5.
[5] 'What Is Artificial Intelligence (AI) and How Does It Work? - Definition from TechTarget' <https://www.techtarget.com/searchenterpriseai/definition/AI-Artificial-Intelligence> accessed 5 January 2022.

of data on many different variables such as temperature and humidity but working with such massive data sets is challenging.'[6]

AI systems require big efforts in terms of research, development, and data collection, and cooperation in these areas can be a step forward in technological advance.

The environment is one of the sectors that can benefit a lot from Artificial Intelligence because AI provides unprecedented opportunities to address environmental challenges[7]. Several AI systems are currently being developed to fight climate change, to help monitor species and oceans' conditions, to improve wiser exploitation of water, to reduce air pollution and energy and natural resource consumption.[8] The starting point of this work is a brief explanation of the possible ways in which Artificial Intelligence can be used to address climate challenges, with a focus on the EU and U.S. approach. Cross-border action is required to tackle climate change, and this work focuses on the EU and the U.S. because they have the 'most integrated economic relationship in the world'[9], and they can set the path towards future developments in AI.

This work focuses on the environment because this field is particularly demanding of concrete and urgent actions. Climate change impacts more and more our lives and it is one of the major global concerns. Global temperatures are rising, more extreme weather events occur, and they affect humans, animals, and biodiversity.[10] A concrete and immediate response to these issues is demanded, and Artificial Intelligence can play an important role in facing such challenges. According to Tristram Walsh and others, 'The pervasiveness of both climate change and AI means that they form a complex web of interdependencies, ranging from governance to technology. It is conceivable that one might not be successfully dealt with without the other.'[11]

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[6] Amy L Stein, 'Artificial Intelligence and Climate Change' 898.

[7] 'Can AI Help Achieve Environmental Sustainability? | Earth.Org - Past | Present | Future' <https://earth.org/data_visualization/ai-can-it-help-achieve-environmental-sustainable/> accessed 25 October 2021.

[8] 'AI Can Help Us Fight Climate Change. But It Has an Energy Problem, Too | Research and Innovation' <https://ec.europa.eu/research-and-innovation/en/horizon-magazine/ai-can-help-us-fight-climate-change-it-has-energy-problem-too> accessed 29 December 2021.

[9] 'EU Trade Relations with United States' <https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/united-states_en> accessed 7 July 2022.

[10] 'AI for Climate: Freedom, Justice, and Other Ethical and Political Challenges | SpringerLink' <https://link.springer.com/article/10.1007/s43681-020-00007-2> accessed 26 October 2021.

[11] Tristram Walsh, Alice Evatt, Christian Schröder de Witt, 'Artificial intelligence & climate change: supplementary impact report' <https://www.oxfordfoundry.ox.ac.uk/sites/default/files/learning-guide/2019-

1.2 Problem statement

This work analyses the ways in which the U.S. and the EU legal systems deal with AI that helps in facing climate change. It examines the two approaches and highlights the differences and the best practices that they share.

On one side, the European Union is committed to becoming 'a modern, resource-efficient and competitive economy'[12] and it has ideated the European Green Deal (EGD)[13], which has ambitious objectives[14] that can help to face climate change and become more resilient. The EU is aware of the potential benefits that AI applications can have in facing climate change,[15] for example in improving earth observation that helps 'monitoring environmental impacts (…) and strengthening predictive capabilities'[16] about complex natural phenomena.

On the other side, the United States has a different approach towards AI in general, with different prioritization, and a more evident competitive approach to research and funding, in particular towards China.[17] Despite that, the objectives in environment-related AI are quite similar to the European Union's, such as the willingness to integrate climate action in trade agreements and the development of sustainable practices in agriculture.[18] Tackling climate change is considered essential also in the U.S. and it is one of the immediate priorities that President Biden's administration established. [19]

The common features that the two legal systems share, even in partially different ways, such as democratic values and respect for human rights, can be the starting point for the development of a

11/Artificial%20Intelligence%20%26%20Climate%20Change_%20Supplementary%20Impact%20Report.pdf> accessed 27 October 2021.

[12]'A European Green Deal | European Commission' <https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en> accessed 28 November 2021.

[13] Communication from the European Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee of the Regions, The European Green Deal COM (2019) 640 final

[14] Annex to the Communication from the European Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee of the Regions

[15] Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on Artificial Intelligence (Artificial Intelligence Act) and amending certain Union legislative acts (COM/2021/206 final) (3), 18.

[16] Gailhofer and others (n 1).

[17] Final Report of the US National Security Commission on Artificial Intelligence, 2021.

[18]'Position Paper on EU-US Relations - Renew Europe' <https://www.reneweuropegroup.eu/policies/2021-03-23/position-paper-on-eu-us-relations> accessed 30 November 2021., p. 10

[19] 'Priorities | The White House' <https://www.whitehouse.gov/priorities/> accessed 30 November 2021.

climate change-related AI that has the same objectives, such as 'nature preservation, transformation of our economies towards climate neutrality, and a greener trade.'[20]

The work hypothesizes a cooperation on various aspects of AI in the climate sector between the two legal systems, explaining the reasons why such a cooperation would be effective and suggesting its possible pitfalls and ways to address them.

Hypothetical cooperation between the EU and the U.S. on climate change-related AI can bring improvements for many stakeholders at a global level. The EU and the U.S. should cooperate because they have strengths such as talent, innovation, funding, and influence at a geopolitical level[21] that can be shared, and these features can be used to develop AI that has a positive impact on humans and on earth. According to Christie Lawrence and others 'When the US and EU work together on global challenges such as (…) environment, the rest of the world benefits'.[22]

Environmental challenges do not have borders, they affect people and nature worldwide and the international community should cooperate to develop AI-based solutions to address these common and global concerns. This is the reason why hypothetical cooperation on AI that tackles climate change can be desirable because by sharing resources and efforts, as well as expertise and best practices, it can help to reach common objectives, such as a more sustainable world, emissions reduction and to foster green growth.[23]

The process of building the imaginary bridge of transatlantic cooperation on environment-related AI also sets a series of issues that must be examined. Data accuracy and data protection are two obstacles to the development of this transatlantic cooperation. Data protection presents some divergences between the two legal systems that are hard to reconcile. The U.S. and the EU have different traditions regarding certain topics, such as the rule of law, therefore when discrepancies

[20] 'Position Paper on EU-US Relations - Renew Europe' (n 18).
[21] Christie Lawrence and Sean Cordey, 'The Case for Increased Transatlantic Cooperation on Artificial Intelligence' [2020] Artificial Intelligence 148, 26.
[22] Christie Lawrence and Sean Cordey, 'The Case for Increased Transatlantic Cooperation on Artificial Intelligence' [2020] Artificial Intelligence 148.
[23] 'U.S.-EU Summit Statement | The White House' <https://www.whitehouse.gov/briefing-room/statements-releases/2021/06/15/u-s-eu-summit-statement/> accessed 30 November 2021.

emerge, cooperation becomes harder. However, this work suggests possible ways to overcome the obstacles to cooperation, for example by delineating AI's overarching principles.

1.3 Literature review

This research develops an analysis of the current approaches that the EU and the U.S. have towards environment-related AI and evaluates the feasibility of transatlantic cooperation between the two legal systems in this field, delineating its possible obstacles, and proposing ways to cope with them.

The work considers the most recent regulatory guidelines of the European Commission Proposal for regulation on AI,[24] and the U.S. guidance to federal agencies on the regulation of AI. [25] The work also examines some of the objectives of the new EU-US Trade and Technology Council,[26] which states possible ways to share best practices on AI.[27]

As affirmed by Lynn H. Kaack and others, 'AI can be applied to address climate change by providing methods that are useful for research, engineering, and policy for both mitigation[28] and adaptation[29].'[30] AI systems can monitor the quality of the air, pollution components in the oceans, and the migration routes of endangered species. AI combined with Earth observation data 'offers more (…) efficient, and timely monitoring of environmental impacts and trends, brings new

[24] Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts COM/2021/206 final
[25]Executive Office of the President, Office of Management and Budget, Memorandum on AI Guidance for Regulation of Artificial Intelligence Applications, 17 November 2020.
[26] Press corner of the European Commission, EU-US Trade and Technology Council Inaugural Joint Statement, 29 September 2021, <https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT_21_4951>
[27]Meredith Broadbent, What's Ahead for a Cooperative Regulatory Agenda on Artificial Intelligence?, Center for strategic and international studies, 17 March 2021, <https://www.csis.org/analysis/whats-ahead-cooperative-regulatory-agenda-artificial-intelligence>
[28] Mitigation constitutes emissions reductions via radical changes in areas including, but not limited to land-use, agriculture, energy, industry, buildings, transportation, and cities-design.
[29] Adaptation encompasses preparations for the environmental and societal degeneration that was not prevented with mitigation, and so involves climate modelling, risk prediction, and planning for resilience and disaster management.
[30]Lynn H Kaack and others, 'Artificial Intelligence and Climate Change' 16.

insights in the understanding of (…) environmental impacts and strengthens predictive capabilities.'[31]

The European Commission stated that AI systems should 'take into account the environment, including other living beings, and their social and societal impact should be carefully considered'.[32] The EU with the EGD is promoting the use of accessible and interoperable data related to the environment, that 'combined with digital infrastructure (…) and artificial intelligence solutions, facilitate evidence-based decisions and expand the capacity to understand and tackle environmental challenges'.[33] As stated in the EGD, 'The Commission will explore measures to ensure that digital technologies such as artificial intelligence, (…) can accelerate and maximise the impact of policies to deal with climate change and protect the environment.'[34] In fact, Artificial Intelligence can be used to enhance the capacities to understand and tackle environmental challenges[35] and to 'strengthen environmental administration and participatory Governance.'[36] The EU is engaged in various research projects that combine different AI techniques with earth observation data.[37]

On the other side of the Atlantic Ocean, the U.S. is aware that new AI applications can bring advantages and pose new challenges. Unlike the European Union, the United States is proposing regulatory guidelines for AI on a more fragmented and 'agency-by-agency basis'.[38] In the Guidance for Regulation of Artificial Intelligence Applications, it is affirmed that 'Agencies[39] should, when consistent with law, carefully consider the full societal costs, benefits, and

[31] Gailhofer and others (n 1).
[32]'Ethics Guidelines for Trustworthy AI | Shaping Europe's Digital Future' <https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai> accessed 11 January 2022.
[33]The European Green Deal, 18.
[34] The European Green Deal, 18.
[35]'Tech for Good: Artificial Intelligence Applications That' <https://www.globenewswire.com/news-release/2021/02/10/2172791/0/en/Tech-for-Good-Artificial-Intelligence-Applications-that-will-Improve-the-Environment-and-Healthcare-in-the-EU.html> accessed 19 January 2022.
[36] Gailhofer and others (n 1).
[37] Some projects deserve to be mentioned, such as Digital twin of planet earth, BigEarthNet, ExtremeEarth and DeepCube projects.
[38] 'U.S. Artificial Intelligence Regulation Takes Shape' <https://www.orrick.com/en/Insights/2021/11/US-Artificial-Intelligence-Regulation-Takes-Shape> accessed 11 January 2022.
[39] The Executive Order 12866 calls on agencies to "select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity)."

distributional effects when considering regulations related to the development and deployment of AI applications.'[40]

The U.S. is promoting and exploring several applications of AI that can tackle climate change. For instance, the National Oceanic and Atmospheric Administration (NOAA) is collaborating with Google in developing projects that use AI 'to amplify NOAA's environmental monitoring, weather forecasting, climate research, and technical innovation.'[41]

The work highlights differences between the two systems, as well as virtuous practices and shared democratic values that they have, for example, the need for AI systems to respect human rights and to be ethical. As affirmed by Walsh and others 'When developing AI-based climate solutions, it is important to take the possible ethical and social implications into serious consideration'.[42] Both EU and U.S. call for ethical AI as it plays a central role in the environmental sector.[43]

The concept of ethical AI is one of the three components of trustworthy AI, that according to the European Commission, should be 'lawful - respecting all applicable laws and regulations, ethical - respecting ethical principles and values, and robust - both from a technical perspective while taking into account its social environment'.[44] According to Seth Baum's opinion, 'AI is a distinctive class of technology that can contain representations of moral values'.[45]

Shared democratic values, such as the respect for human rights, can constitute a base for the development of a safe, ethical, and transparent environment-related AI and can be the foundation of hypothetical transatlantic cooperation.[46]

[40] Executive Office of the President, Office of Management and Budget, Memorandum on AI Guidance for Regulation of Artificial Intelligence Applications, 17 November 2020, 5.
[41] 'AI Agreement to Enhance Environmental Monitoring, Weather Prediction | National Oceanic and Atmospheric Administration' <https://www.noaa.gov/media-release/ai-agreement-to-enhance-environmental-monitoring-weather-prediction> accessed 25 November 2021.
[42] Tristram Walsh Alice Evatt and Christian Schröder de Witt artificial intelligence & climate change: supplementary impact report, 7
[43] 'AI for Climate: Freedom, Justice, and Other Ethical and Political Challenges | SpringerLink' (n 10).
[44] 'Ethics Guidelines for Trustworthy AI | Shaping Europe's Digital Future' (n 32).
[45] Seth Baum, 'Artificial Intelligence Needs Environmental Ethics' 4.
[46]Juraj Majcin, EU-US tech cooperation: Strengthening transatlantic relations in data-driven economies, Atlantic Council, 16 June 2021, <https://www.atlanticcouncil.org/blogs/geotech-cues/eu-us-tech-cooperation/>

This work focuses on ethical AI because as stated by Nadezhda Gotcheva and Nina Wessberg 'almost all the ethical issues covered in AI ethics also entail [with] AI in climate change use'.[47] As it will be further explained in the work, ethical AI is of central importance if the aim is to benefit not only humans but Earth in general.

Authors think that the time is now for the EU and the U.S. to start cooperating on AI,[48] but there is always to be careful when it comes to AI, because as stated by Christie Lawrence and Sean Cordey 'AI is a double-edged sword that carries abundant risks and opportunities for abuse.'[49]

Climate change represents a common concern at an international level, and it is demanding concrete interventions to mitigate its negative effects and reverse the route, and set the path towards a more sustainable world. AI, in Mark Coeckelbergh's opinion, 'can and should help to build a greener, more sustainable world and to deal with climate change'.[50]

1.3.1 Benefits of the transatlantic cooperation on climate change-related AI

Two fundamental concepts need to be explained at this point. The first is that the hypothetical cooperation should be developed to address issues that have global relevance and that require transnational solutions.[51] Climate change is one of the major current global challenges that can be addressed by transatlantic cooperation, because it affects humans and nature in general, regardless of national borders.

Therefore, the second concept that needs to be expressed is that to build effective cooperation it is necessary to raise awareness that climate change is having a huge impact on the planet and that addressing it should be a common stake,[52] in order to preserve the environment for current and for

[47] 'Ethical Aspects of AI and Climate Change - Etairos' <https://etairos.fi/en/2021/09/14/ethical-aspects-of-ai-and-climate-change-2/> accessed 13 February 2022.
[48] Jessica Newman, Now is the Time for Transatlantic Cooperation on Artificial Intelligence, Georgetown Journal of International Affairs, July 13, 2021, <https://gjia.georgetown.edu/2021/07/13/now-is-the-time-for-transatlantic-cooperation-on-artificial-intelligence/>.
[49] Lawrence and Cordey (n 22).
[50] Mark Coeckelbergh, 'AI for Climate: Freedom, Justice, and Other Ethical and Political Challenges | SpringerLink' (n 10).
[51] Cameron F Kerry and others, 'Strengthening International Cooperation on AI' 123.
[52] ibid.

future generations. Competitive concepts and ideas of rivalry are not beneficial for the realization of the hypothetical cooperation, in fact, the values that should be at the base of it are the common good, the promotion of common democratic values, and the collaboration to help the planet.

Having explicitly stated those two pillars, the analysis of this work can explore the benefits of the hypothetical transatlantic cooperation on climate change-related AI.

This work lists three benefits of cooperation, and they are strongly interconnected between each other: research and development, coordination of governmental projects, and promotion of common AI standards. However, this work does not embrace all the possible benefits, because several other positive outcomes could raise in the future.

Firstly, the cooperation on climate change-related AI can be beneficial for the Research and Development (R&D) of AI systems, because it can be a new way to 'establish research relationships'.[53] Cooperation between AI researchers and developers on both sides of the Atlantic Ocean could be a way to obtain advantages that benefit both parties[54], and the world in general. Cooperation can be helpful to avoid the duplication of investments in research in the same sectors, and share resources and results in an easier way. This can have many benefits for the fight against climate change, and it can be a way to develop new technologies that help the environment. A lot of data, computer capacity, knowledge, and talent are essential for the development of AI, and sharing can be a way to enhance this phenomenon.[55]

There are some research fields that can particularly benefit from the cooperation, and that need to be prioritized because they are being heavily affected by climate change, such as research about oceans, ice sheets and glaciers.

Secondly, the hypothetical cooperation on AI can be beneficial for the coordination of government projects that address climate change. According to Kerry and others, 'No country can "go it alone" in AI, especially when it comes to sharing data and applying AI to tackle global challenges like climate change'.[56] The cooperation on AI can help governments to be more involved in projects

[53] Lawrence and Cordey (n 22).
[54] ibid.
[55] ibid.
[56] ibid.

and to share ideas and interests in creating AI that is applied for the preservation of the environment, or for climate change mitigation and adaptation. Governments are realizing that transnational collaboration in the development of AI can be helpful for their AI strategies [57], and this can be also a way to avoid 'duplicative investments in AI capacity, creating unnecessary costs and leaving each government worse off in AI outcomes.'[58]

Thirdly, cooperation can be a way to promote common and global AI standards.[59] The EU and the U.S. agreed on the creation of a mechanism for Strategic Standardisation Information (SSI)[60], with the aim to promote and defend shared interests in standardization activities at an international level.[61] The cooperation requires aligned and interoperable technical standards in many technologies, and AI is one of the most relevant, as well as shared efforts to develop such standards.[62]

Common objectives on AI between the EU and the U.S. on the environment can be a way to create joint projects, optimize resources and expertise and develop common AI principles, that combined with better data resolutions will result in better environmental outcomes and assist in finding solutions to complex global issues like climate change and biodiversity loss.[63] When the outcomes of the hypothetical cooperation on AI reach a global level, geopolitical issues can arise and have to be taken into account.[64] These outcomes and some recommendations on the future impact that the hypothetical cooperation on AI can have at a global level are addressed in the final chapter of this work.

[57] ibid.
[58] ibid.
[59] The term 'standard' refers to the specifications for a product, system, or service.
[60]U.S.-EU Joint Statement of the Trade and Technology Council | U.S. Department of Commerce <https://www.commerce.gov/news/press-releases/2022/05/us-eu-joint-statement-trade-and-technology-council> accessed 7 June 2022.
[61]'Press Corner | European Commission' (n 75).
[62] ibid.
[63]Caleb Scoville and others, 'Algorithmic Conservation in a Changing Climate' (2021) 51 Current Opinion in Environmental Sustainability 30 <https://linkinghub.elsevier.com/retrieve/pii/S1877343521000191> accessed 26 October 2021.
[64]Ulrike Franke, Artificial divide: How Europe and America could clash over AI, European Council of Foreign Relations, 20 January 2021, https://ecfr.eu/publication/artificial-divide-how-europe-and-america-could-clash-over-ai/.

The gap in literature that this work tries to address consists in evaluating whether the current U.S. and EU approach to climate change-related AI leave room for hypothetical cooperation between the two legal systems, and what the main obstacles and ways to address them may be.

In order to do so, the main research question needs to be formulated and answered.

1.4 Main research question

The need for effective actions to face climate change is more and more explicit and the use of Artificial Intelligence can be helpful in various ways.

This work tries to analyse the ways in which the EU and the U.S. treat climate change issues with respect to AI, and tries to evaluate whether there is enough space for a hypothetical cooperation on environment-related AI by answering to this main research question:

To what extent can the European Union and the Unites States' regulation of environment-related AI set the path towards a transatlantic cooperation to address climate change?

In order to provide an effective response to the main research question of this work, the sub-questions listed above have to be answered.

1.4.1 Sub-questions

How can the law facilitate a transatlantic cooperation on AI between the EU and the U.S.?

What are the legal barriers in the EU and in the U.S. that need to be addressed to make AI more effective to face climate change?

What are the best practices that emerge when comparing the two approaches to the regulation of AI?

1.5 Methodology and methods

The work analyses the approaches that the EU and the U.S. have towards climate change-related AI and hypothesizes the possibility of a transatlantic cooperation in this sector using two methods: doctrinal research and comparative legal research.

The work examines both the EU and U.S. initiatives to regulate and develop AI that helps to face climate change. The different approaches that the EU and the U.S. have towards environment-related Artificial Intelligence are analysed and compared, therefore a comparative legal research method is used. The work highlights the legal barriers that currently exist and that must be addressed to make the cooperation on climate-related AI more effective. For example, there is a 'lack of access to external (private and public) datasets in Europe'[65], and this gap in data governance causes a 'barrier against responsible and ethical data sharing'.[66]

The main regulatory guidelines and acts published by these legal systems related to AI are studied in this work, for example, the recent European Commission's Proposal for a regulation on AI, and the U.S.' guidelines and regulations.[67] The European Union adopted a comprehensive approach towards the regulation of AI, whereas the United States decided to regulate it in a more fragmented way, based on the several agencies that use this technology. The work will examine the two different approaches, considering both positive and negative aspects of divergent types of regulation.

The comparative methodology helps to highlight the differences and common features of the two approaches, especially the shared values that EU and U.S. have in relation to AI and to technology

[65] Mia Hoffmann and Laura Nurski, 'What is holding back Artificial Intelligence Adoption in Europe?' 2.
[66] European Parliament. Directorate General for Parliamentary Research Services., The Ethics of Artificial Intelligence: Issues and Initiatives. (Publications Office 2020) <https://data.europa.eu/doi/10.2861/6644> accessed 19 January 2022.
[67] 'AI Regulation Is Coming' <https://hbr.org/2021/09/ai-regulation-is-coming> accessed 27 October 2021.

in general, such as the respect for human rights.[68] Ethical AI plays a fundamental role in this work because with the development of AI that tackles climate change, ethical issues arise and they need to be addressed.[69] Therefore, there is a need to agree on common AI principles that allow the cooperation and responsible development of AI systems.

Lastly but most importantly, the work evaluates the possibility of a transatlantic cooperation on climate change-related AI. In order to hypothesize this cooperation, a doctrinal research method needs to be applied. This method allows presenting the hypothesis of a transatlantic cooperation on AI in a balanced way, striking a balance between positive and negative aspects of the cooperation in the environmental sector. The main difficulties in starting and implementing the cooperation are delineated, as well as the main outcomes that the cooperation could bring. Therefore, regulations, papers, and articles written by lawyers and policymakers are studied in the work.

1.5.1 Structure

The work focuses on the approaches that the EU and the U.S. have towards climate change-related AI and evaluates the possibility of a cooperation in this sector between the two legal systems.

The second chapter uses a doctrinal method to explain in a balanced way the possible solutions through which the law can facilitate this cooperation, for example by elaborating a common AI definition, as well as common AI principles.

In the third chapter, the main legal barriers that exist and that need to be addressed to make AI more suitable for facing climate change are examined, such as data protection and data accuracy, as well as different conceptions with regards to the rule of law and the respect of human rights that the two legal systems have.

[68] JOIN (2020) 22 final, Joint Communication to the European Parliament, the European Council and the Council, A new EU-US agenda for global change, 5.
[69] Anders Nordgren, 'Artificial Intelligence and Climate Change: Ethical Issues' (2022) ahead-of-print Journal of Information, Communication and Ethics in Society <https://www.emerald.com/insight/content/doi/10.1108/JICES-11-2021-0106/full/html> accessed 13 February 2022.

The fourth chapter considers the findings that emerged in the third chapter and it operates a comparison between the two approaches towards AI, evaluating the best practices and highlighting the shared democratic values that they have, especially if compared to other legal systems, and referring to ethical AI.

Finally, the fifth chapter provides the conclusions of this work.

The building process of the imaginary bridge on the Atlantic Ocean that connects the United States and the European Union on AI is founded on common objectives and shared values. It has indeed to face challenges and mitigate differences between the two legal systems and their sometimes-divergent points of view, but it can lead to a new concept of AI, ready to face climate challenges.

Chapter 2 - Ways in which the law can facilitate the transatlantic cooperation

The second chapter of this work outlines the possible ways in which the law can facilitate the transatlantic cooperation. The chapter does not claim to be exhaustive, in fact, there can be other ways in which the law can be helpful in creating the cooperation. However, the legal ways delineated in this chapter are the most meaningful for the present research, since they can constitute the solution to the divergences and legal barriers that are examined further in the research. This chapter focuses on the already delineated benefits that transatlantic cooperation on AI can have with regards to one of the most urgent global challenges, which is to effectively tackle climate change.

The purpose of this chapter is to hypothesize ways to enhance the cooperation from a legal perspective, starting from the assumption that climate change should be a common concern, and that AI could 'help to create sustainable, beneficial outcomes for humanity and the planet we inhabit'.[70]

[70] Harnessing Artificial Intelligence for the Earth, p. 4

The chapter investigates the need for AI to have a common definition, common terms, and overarching principles. It explains the reasons why common starting points are needed, especially in climate change-related AI, to make this technology able to tackle this global challenge.

Moreover, the second part of this chapter examines other possible ways through which the law can facilitate the transatlantic cooperation.

2.1 Common definition, shared principles and AI-related terms

For the purposes of this research, a way to enhance the cooperation would be to elaborate on a common AI definition and common AI-related terms. In fact, Artificial Intelligence currently lacks a shared definition[71] at an international level, and the implementation of a common definition is the first important step to agreeing on other AI-related terms and common principles. In fact, many organizations currently use AI-related terms in different ways and contexts, and this can cause confusion and impede an effective collaboration in elaborating new ideas, conducting research, and pursuing innovation.[72] Divergences in definitions can be a problem when it comes to engaging in 'open dialogue on the value and ethics of AI'[73], and a common language is necessary to advance because it is the foundation for both research and communication.[74] EU and U.S., thanks to the hypothetical cooperation that this work tries to delineate, can be pushed to discuss and implement a shared definition of AI, as well as common AI principles[75], and to agree on the development of a 'joint roadmap on evaluation and measurement tools for trustworthy AI'.[76]

The shared democratic values[77] such as the rule of law and the respect for human rights[78] can be the starting point for an aligned elaboration of common terms and ethical priorities when it comes

[71] 'A Shared Language — AI Collective' <https://www.aicollective.co/a-shared-language> accessed 7 June 2022.
[72] ibid.
[73] ibid.
[74] ibid.
[75] 'Press Corner | European Commission' (n 75).
[76] ibid.
[77] 'The Importance of Shared Values in the EU-US Relationship | AmCham EU' <https://www.amchameu.eu/news/importance-shared-values-eu-us-relationship> accessed 12 July 2022.
[78] 'Shared Values | EU-US Relations | European Parliament Liaison Office in Washington' <https://www.europarl.europa.eu/unitedstates/en/eu-us-relations/shared-values> accessed 12 July 2022.

to AI.[79] In fact, technologies can bring new risks that are hard to foresee, and having common views on certain topics such as respect for human rights, is of central importance when elaborating on common AI-related terms and concepts.

EU and U.S. should use their common objectives and their relevant position at a global level to be the first legal systems in pushing for a common definition of AI, and for agreement on AI-related terms and concepts. As stated by Lawrence and Cordey, 'The US and the EU should capitalize on their areas of agreement and their first-mover advantage by coordinating their efforts on normative principles and guideline'.[80] The U.S. and the EU have shared goals such as the fight against climate change and nature preservation[81], and they should use their advantage and agree on the steps to take to achieve these goals in an ethical way, also with the help of technology.

However, there are divergences between the rule of law in the United States and in the European Union[82], that this work examines in the third chapter, and that need to be considered in view of the present research, because they can be obstacles in the realization of the cooperation.

As it is highlighted in the fourth chapter, both legal systems call for ethical AI, for technologies that protect human rights, and for data accuracy. According to Lawrence and Cordey 'US policymakers have recognized the importance of an ethical, human-centred approach to AI for their European counterparts and endeavoured to communicate alignment on AI principles'.[83] This can be one of the benefits of the delineated cooperation because it can bring the two legal systems closer when it comes to promoting shared democratic values as the basis for AI principles and ethical AI. In fact, EU and U.S. could face climate change in a common way, through their commitment to democracy and human rights, even with certain divergences.[84]

The transatlantic cooperation based on shared principles can be a way to improve responsible AI, and the future steps could be to translate these principles into 'policy, regulatory frameworks and

[79] Lawrence and Cordey (n 22).
[80] ibid.
[81] 'A Renewed EU-US Relationship for a Positive Global Change' <https://euobserver.com/stakeholders/151310> accessed 21 November 2021.
[82] Pietro Costa, Danilo Zolo and Emilio Santoro (eds), *The Rule of Law: History, Theory and Criticism* (Springer 2007).
[83] Lawrence and Cordey (n 22).
[84] 'Press Corner | European Commission' (n 75).

standards'.[85] Effective cooperation to fight climate change will require not only shared values but also shared efforts and concrete steps, which will be suggested in the next part of this chapter in the form of legal steps, and then in the fourth chapter in the form of recommendations for the future.

The law can facilitate the transatlantic cooperation on AI that fights climate change by preparing the path for 'long-term AI policy coherence'[86], by working on common AI definitions, that are then transposed into regulation. In this way, the law can be coherent in both legal systems, and this can facilitate cooperation because common definitions, principles, and AI-related terms simplify comprehension and communication and make it more effective.

The main reason why this work focuses on common overarching principles in AI is that these principles establish the desired outcomes or effects that can be achieved if AI is developed in compliance with them. Principles also leave the autonomy to each legal system on how to reach the goals set at a broader level. These overarching principles are necessary because they are easier to agree on rather than regulations, and they are easier to adapt to continuously developing technologies.[87] In fact, in dynamic fields such as AI, overarching principles can be more easily theorized and applied, especially with regards to ethical AI. In that regard, Floridi and Cowls developed a theory on five principles on which ethical AI should be based on ('beneficence[88], non-maleficence[89], autonomy[90], justice[91] and explicability[92,93]). These overarching principles on ethical AI can be applied to AI that fights climate change, especially because they are useful in the creation of AI that brings benefits to society. In this work, beneficence acquires a lot of importance, because it can be the promoter of the well-being of both humans and the Earth, therefore it can be

[85] Kerry and others (n 54).
[86] 'The EU and U.S. Are Starting to Align on AI Regulation' <https://www.brookings.edu/blog/techtank/2022/02/01/the-eu-and-u-s-are-starting-to-align-on-ai-regulation/> accessed 13 February 2022.
[87] 'AI4People—An Ethical Framework for a Good AI Society: Opportunities, Risks, Principles, and Recommendations | SpringerLink' <https://link.springer.com/article/10.1007/s11023-018-9482-5> accessed 12 July 2022.
[88] Beneficence means promoting well-being, preserving dignity, and sustaining the Planet.
[89] Non- maleficence means prevention of infringements on privacy and avoiding misuse of the technology.
[90] Autonomy means the power to decide, and in the context of AI, it means striking a balance between the decision-making power humans retain for themselves and that which they delegate to artificial agents.
[91] Justice in this context means promoting prosperity, preserving solidarity, and avoiding unfairness.
[92] Explicability means enabling the other principles through intelligibility and accountability.
[93] 'A Unified Framework of Five Principles for AI in Society · Issue 1.1, Summer 2019' <https://hdsr.mitpress.mit.edu/pub/l0jsh9d1/release/8> accessed 22 June 2022.

connected also with sustainability. The 'Statement on Artificial Intelligence, Robotics and 'Autonomous' Systems'[94] published by the European Commission, elaborates a wide definition of sustainability in the AI field, affirming that 'AI technology must be in line with the human responsibility to ensure the basic preconditions for life on our planet, continued prospering for mankind and preservation of a good environment for future generations'.[95]

Overarching principles can be a way to develop AI that is beneficial not only for humans but also for the Planet, especially with regards to climate change. The EU and the U.S. should cooperate proactively in the elaboration of common AI principles, as well as in the regulation, and include it in the various objectives of the Trade and Technology Council, setting the path for a more international community that has AI oversight measures.[96]

A small disclaimer is necessary at this point because the idea of transatlantic cooperation on AI should not be seen as an indiscriminate harmonization. Every legal system has its own peculiarities, and they should not be cancelled; on the contrary, if there are virtuous features in a certain legal system, they should be used as a model[97], to improve such aspects in the other system. Especially in dynamic fields such as technologies and climate change, the need to learn from each other and to use virtuous examples as models can be extremely helpful.[98] For instance, a certain solution that is developed in the U.S. as a response to a climate challenge respecting the delineated principles can be imitated in the EU if it is effective, and this can be considered a way in which cooperation is realized.

The idea behind this research is that cooperation can be a way for countries to easily engage and develop together AI that can help in fighting climate change. The main objective of the cooperation

[94] 'Statement on Artificial Intelligence, Robotics and "autonomous" Systems - Publications Office of the EU' <https://op.europa.eu/en/publication-detail/-/publication/dfebe62e-4ce9-11e8-be1d-01aa75ed71a1/language-en/format-PDF/source-78120382> accessed 25 June 2022.
[95] ibid., 19
[96] 'The EU and U.S. Are Starting to Align on AI Regulation' (n 105).
[97] Rodolfo Sacco, 'Legal Formants: A Dynamic Approach to Comparative Law (Installment I of II)' (1991) 39 The American Journal of Comparative Law 1 <https://academic.oup.com/ajcl/article-lookup/doi/10.2307/840669> accessed 12 July 2022.
[98] The concept of models taken from a legal system and used to improve another legal system is part of the theory o legal formants that was elaborated by Rodolfo Sacco, a distinguished Comparative Law professor (1923 – 2022). This concept argues that a certain legal instrument is elaborated in response to a certain need in a legal system, and if another legal system encounters the same need, it can imitate the already elaborated legal instrument to solve the problem, following a functionalist theory.

hypothesized in this research is to have common AI principles and initiatives that can bring positive outcomes and that help the common good, by fighting climate change in a coordinated and efficient way.

The development of common criteria and definitions can be particularly useful when it comes to addressing global problems such as climate change. [99]

The climate is dynamic, and climate change is a phenomenon that is constantly evolving, making it hard to foresee its impacts in the future. Therefore, an effective response to address climate change needs dynamism, and regulation frequently constitutes an obstacle to dynamic and rapid response. Dynamism is essential not only with regards to the analysis and prediction of climate change phenomena, but it plays a central role also with regards to climate adaptation and impact mitigation.[100] Dynamism is a common feature of both climate change and Artificial Intelligence, because the first is evolving in ways that are difficult to predict and it needs quick solutions, the latter is growing at a rapid pace.

Dynamism can be provided by constant research and algorithms that can rapidly analyse datasets and help with finding solutions to mutating environmental challenges. For example, Artificial Intelligence can be applied 'to more precisely document the ecological impacts of environmental change through improved and automated data collection and classification workflows'.[101]

Common AI principles can be helpful in this sense because they can be adapted to dynamic contexts, in fact they set the desired outcome, but they leave space for different means for the realization.

2.2 Other possible ways in which the law can facilitate the cooperation

Law should also encourage more sharing of information and the expansion of access to large datasets[102], because effective cooperation on AI 'needs a robust and coherent framework for data

[99] Kerry and others (n 54).
[100] Scoville and others (n 82).
[101] ibid.
[102] Kerry and others (n 51).

protection and data sharing.'[103] This legal step could be realized for example by incentivizing the creation of more data in open format, to allow an easier sharing between national bodies and agencies. [104]

Governments have large datasets with data regarding demographics, climate change, transportation and many other fields, and governmental data are an important resource for academic and scientific research, if they are accessible and re-usable. [105]

The publication and sharing of open data between governments can be a way to incentivize scientific research, because more accessibility allows more confrontation and more open dialogue. Especially environment-related data are available in different formats, frequently not accessible or difficult to find. Creating shared databases of open data about climate change, accessible from both the EU and U.S. can be a way to incentivize the cooperation on AI. There are some initiatives of making climate change-related data available in an open format, for example at a European level the 'Climate Change Initiative Open Data Portal'[106] created by the European Space Agency (ESA). In the U.S., the OPEN Government DATA Act requires federal agencies to publish government datasets in standardized data formats.[107]

However, more steps ahead still need to be taken, because much data collected by governments are still not available in an open format, nor they are easily searchable. The mentioned initiatives are a good starting point for the development of the transatlantic cooperation on AI.

The law could also help with the creation of a central office that works as an 'international AI regulatory coordinator'[108], that could give advice to governments and agencies to avoid contrasting regulations, and to encourage collaboration between regulators.[109]

[103] Kerry and others (n 54).
[104] 'The EU and U.S. Are Starting to Align on AI Regulation' (n 105).
[105] Kerry and others (n 51).
[106]'Climate Change Initiative Open Data Portal — Climate-ADAPT' <https://climate-adapt.eea.europa.eu/metadata/portals/climate-change-initiative-open-data-portal> accessed 9 June 2022.
[107] '2.15 Open Government Data Act (2018) | CIO.GOV' <https://www.cio.gov/handbook/it-laws/ogda/?clickEvt> accessed 9 June 2022.
[108]'The EU and U.S. Are Starting to Align on AI Regulation' (n 105).
[109] ibid.

Another way to facilitate the cooperation would be to adopt a 'joint approach to regulatory sandboxes',[110] to test AI systems in a collaborative way and to elaborate more coherent regulations.[111] As stated before, these steps should be taken with the objective to build a more efficient system to contrast climate change, and not to harmonize indiscriminately.

If the delineated legal steps are successful, the EU and the U.S. can cooperate on AI that fights climate change.

Chapter 3 - Legal barriers to a more effective climate change-related AI

Artificial Intelligence relies on data for its development and functioning, and, as discussed in the previous chapter, strong data governance is essential for effective cooperation on AI.[112] At the same time, there are some legal obstacles to the development of AI systems, also the ones that address climate change.

This chapter tries to highlight some of the regulatory barriers that are affecting AI systems and provides solutions to make them less invasive in the development of these technologies, especially using the overarching principles mentioned in the second chapter.

3.1 Preliminary obstacles

The recent AI Act [113] proposed by the European Commission uses a risk-based approach to classify AI applications (unacceptable risk[114], high-risk, limited risk, and minimal or no risk). Moreover, it outlines some areas in which AI applications are to be considered high-risk, such as critical infrastructures, employment, administration of justice, surveillance systems and others, and sets

[110] ibid.
[111] ibid.
[112] Kerry and others (n 54).
[113] Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts COM/2021/206 final
[114] Activities that are prohibited under the Act, such as those related to social scoring.

requirements[115] for such applications.[116] In fact, to be placed on the market, high-risk AI systems need to be compliant with Chapter II of the AI Act[117], and to follow four steps, that can be explained as the following: first of all, the development of the system should start preferably after having been conducted an AI impact assessment, then the system must undergo a conformity assessment and comply continuously the requirements established in the AI Act, thirdly the system is registered in a dedicated EU database, and finally, there is the signature of a declaration of conformity (CE marking).[118]

On November 2021, the European Council, published a Compromise Text[119] on the draft of the AI Act, that incentivizes innovation with the introduction of regulatory sandboxes[120], narrows the definition of AI system[121], and establishes that 'AI systems used solely for the purpose of scientific research fall outside the scope of the AI Act'.[122]

The Compromise Text in Annex III lists a series of areas that are considered to be high-risk, and the main change from the previous version is that the new version defines AI systems that will affect the protection of the environment as systems of high-risk.[123] The change is significant because the development of AI systems that affect the protection of the environment will have to respect the requirements for high-risk systems established in Chapter II of the AI Act. The high-

[115] Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence, Chapter 2, Articles 8-15.
[116]'Regulatory Framework on AI | Shaping Europe's Digital Future' <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai> accessed 9 March 2022.
[117] Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence, Chapter 2, Articles 8-15.
[118] Mauritz Kop, 'EU Artificial Intelligence Act - The European Approach to AI' 11.
[119]Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts - Presidency Compromise Text-2021/0106(COD)
[120] Definition: AI regulatory sandboxes established by one or more Member States competent authorities, or the European Data Protection Supervisor shall provide a controlled environment that facilitates the development, testing and validation of innovative AI systems for a limited time before their placement on the market or putting into service pursuant to a specific plan.
[121] Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts - Presidency Compromise Text-2021/0106(COD) II Main Changes, p. 3, par. 2 definitions.
[122]'EU Council Publishes Changes to Artificial Intelligence Act Proposal - Lexology' <https://www.lexology.com/library/detail.aspx?g=717f0c32-2043-4315-ba61-9f181ace3e50> accessed 9 March 2022.
[123] ibid.

risk systems list will be reviewed every two years, and the eight areas cannot be removed, they can 'only be further defined in future'.[124]

One of the applications of AI systems that will affect the protection of the environment is the control of emissions and pollution. In fact, 'Emissions can be halted in the energy sector by using AI technology to forecast the supply and demand of power for the national grid, improve the scheduling of renewables, and reduce life-cycle fossil fuel emissions through predictive maintenance'.[125]

In the Compromise text, there is a clear reference to the protection of the environment in paragraph (34) of the text, that affirms: '(…) AI systems that control emissions and pollution should also be classified as high-risk, taking into account the serious incidents and the irreversible damage to the environment and the health that can be caused.'[126] This is one of the changes realized by the Compromise Text, because in the AI Act drafted by the European Commission there was no mention of AI Systems that control emissions and pollution as high-risk systems.

This new statement affirms that special attention should be given to systems that can be deployed in the control of emissions and pollution, and that in order to be placed on the market, these systems should be compliant with the requirements established by Chapter II of the AI Act. CO2 emissions and pollution are some of the factors that cause climate change and that amplify its effects on the environment, therefore the systems that are aimed at reducing these factors can encounter some barriers in their development, that can make it hard to enter the market.

Moreover, Annex III of the Compromise Text further specifies the categories of environment-related AI systems that are considered high-risk, and states the following:

[124] ibid.
[125] 'AI Champions Driving New Industry Solutions For Climate Change' <https://www.forbes.com/sites/markminevich/2021/03/31/ai-champions-driving-new-industry-solutions-for-climate-change/> accessed 11 April 2022.
[126] Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts - Presidency Compromise Text- 2021/0106(COD) (34)

'High-risk AI systems pursuant to Article 6 (3)[127] are the AI systems listed in any of the following areas: […]

(2) Critical infrastructure and protection of environment:

(b) AI systems intended to be used to control emissions and pollution […]'.[128]

These statements will probably have consequences in the future steps of the regulation of AI systems that aim to protect the environment in the EU because if they are considered to be high-risk, they will have to be compliant with the special requirements[129] explained before to be able to enter the market.

Article 43 of the Artificial Intelligence Act delineates a conformity assessment in order to evaluate that high-risk AI systems are compliant with the requirements, and Article 47.1 of the same Proposal states that a derogation from the conformity assessment procedure is possible in case of environmental protection. In this case, it can be authorized to place on the market or put into service a specific high-risk AI system in a certain Member State, and one of the possible justifications[130] is the protection of the environment. [131] The scope of this derogation is limited to a certain Member State and only in exceptional circumstances, but it prioritizes the protection of the environment, also using high-risk AI systems.

In the U.S., the regulation of AI is being developed differently, and the NIST (National Institute of Standards and Technology) elaborated an initial draft on the risk management of AI, and it is using a 'voluntary risk management framework'[132], that aims to 'foster the development of innovative approaches to address characteristics of trustworthiness including accuracy (…)

[127] Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts - Presidency Compromise Text-2021/0106(COD), article 6(3):AI systems referred to in Annex III shall be considered high-risk.
[128] Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts - Presidency Compromise Text-2021/0106(COD) Annex III High-risk AI systems referred to in article 6(3), p.97
[129] Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence, Chapter 2, Articles 8-15.
[130] For example, public security
[131]Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts - Presidency Compromise Text-2021/0106(COD)Art. 47 derogation from conformity assessment procedure
[132]'USA: AI Development and Regulatory Initiatives | Insights | DataGuidance' <https://www.dataguidance.com/opinion/usa-ai-development-and-regulatory-initiatives> accessed 10 March 2022.

privacy (…)'. [133] The mentioned framework uses flexibility[134] to be responsive to possible new risks that can appear in the future, in fact, it does not list all the risks of AI systems, and it leaves space for possible new risks that can arise.[135] Flexibility is particularly important in the context of AI, because this technology is rapidly changing, and some possible risks are hard to foresee at the moment.[136] The framework mentions risk thresholds, but it affirms that these thresholds are likely to change in the future, and this makes the proposal quite future-proof. On the other hand, it makes it quite uncertain because it states that risk assessment should be case-specific.[137]

The U.S. is regulating AI systems in a more fragmented way, in fact, every U.S. agency is establishing its own regulation, and this can be an obstacle in the sense that a non-comprehensive approach leaves space for conflicting regulations. The efforts that the U.S. is making in the regulation of AI are not uniform, in fact, in certain sectors such as food and healthcare, some agencies already published their proposals on AI regulation[138], but the proposals have also been criticized by some authors.[139]

The different approaches towards risk that AI systems can create are the preliminary obstacle in cooperation because it can be hard to cooperate if the risk assessment is conducted in different ways. However, the differences between the two approaches can be mitigated by common AI principles, for example using the principle of beneficence and authorizing AI systems that are beneficial for the planet.

There are several legal barriers that need to be addressed to make AI more suitable to face climate change (such as data protection and intellectual property rights), but in this work, the focus is on data protection and on data accuracy because these two aspects of data governance are fundamental in the hypothetical cooperation between the U.S. and the EU on AI.

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[133] 'AI Risk Management Framework | NIST' <https://www.nist.gov/itl/ai-risk-management-framework> accessed 10 March 2022.
[134] ibid.
[135] ibid.
[136] ibid.
[137] ibid.
[138] Such as the U.S. Food and Drug Administration's (FDA) proposal to create a framework to regulate AI-powered medical devices.
[139] 'Why a Risk-Based Approach to AI Regulation Is Critical for Future Implementations | Spiceworks Tech' <https://www.spiceworks.com/tech/artificial-intelligence/articles/ai-regulation-best-approach/> accessed 12 July 2022.

In fact, the divergent data protection regulations and limited flows of low-quality information can be obstacles to the development of new environment-related AI applications, and as affirmed by Kerry and others 'Effective international cooperation on AI needs a robust and coherent framework for data protection and data sharing'.[140] At the end of the chapter, the third legal barrier is examined, and it consists of divergent legal traditions, and slightly different approaches with regards to human rights.

3.2 The first legal barrier: data protection

Artificial Intelligence requires large datasets to function properly and to build progress, at the same time the constant need for large amounts of data is raising questions about data governance, for example 'who shares the data, for what purpose, in whose interests, and who gets to set the terms of data use'.[141]

In the environmental sector, the amount of data that AI requires to function is notable, and effective use and sharing of the data can be helpful for the development of systems that effectively fight climate change.[142]

Data protection is the first legal barrier that needs to be addressed to make environment-related AI systems more effective to face climate change. AI systems need a notable amount of data to work effectively, and in certain cases, the data that they collect, and that they are trained with, can be personal data, defined as 'any information relating to an identified or identifiable natural person'.[143] In fact, the huge quantity of data collected by AI systems can make it easier to identify a certain individual, because by combining the data it is possible to reconstruct for example the habits of a certain person.

Regulations on data protection have an impact on the possibility to share data that can be used to develop and train Artificial Intelligence, also in the energy sector. For example, smart metering

[140] Kerry and others (n 54).
[141] Enabling data sharing for social benefit through data trusts, p. 4.
[142] 'Artificial Intelligence, Systemic Risks, and Sustainability - ScienceDirect' <https://www.sciencedirect.com/science/article/pii/S0160791X21002165> accessed 9 April 2022.
[143] General Data Protection Regulation, Article 4(1)

devices (that intelligently monitor energy, water, or gas consumption of a house or a building) have data protection implications because they provide an overview of the consumption behaviour.[144]

AI systems, especially the ones that are defined as high-risk systems, can have an impact on fundamental rights, such as the protection of personal data.[145] In fact, energy data are collected constantly and instantaneously by smart meters and they can reveal a lot of information about a certain individual, for instance, whether the resident of the house is present or absent at a certain moment.[146] Therefore, as stated by Jabier Martinez and others, 'energy consumption measurements can be considered personal data in the meaning of Article 4 (1) of the General Data Protection Regulation (GDPR)[147] with great potential to be processed, solely or in combination with other data, for professional or commercial activities'.[148] Data protection regulations can have an impact on the development of AI systems that help the environment, and the risk of conflicting legislation on AI and on data protection is possible.[149] On the other hand, smart meters can offer customized services and in general 'optimize the whole energy system'[150], and this can be helpful also for the environment because reducing energy consumption and energy waste is a way to reduce greenhouse gas emissions and therefore reduce the impact of climate change.[151]

[144]'What Does Data Protection Mean in the Energy and Environment Industry? | Wiki' <https://www.robin-data.io/en/data-protection-academy/wiki/data-protection-in-energy-environmental-industry> accessed 9 March 2022.
[145] Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts - Presidency compromise text (28): 'The extent of the adverse impact caused by the AI system on the fundamental rights protected by the Charter is of particular relevance when classifying an AI system as high-risk. Those rights include the right to human dignity, respect for private and family life, protection of personal data (…)'
[146]'Smart Grid Challenges Through the Lens of the European General Data Protection Regulation | SpringerLink' <https://link.springer.com/chapter/10.1007/978-3-030-49644-9_7> accessed 9 April 2022.
[147] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) OJ L 119, 4.5.2016
[148] 'Smart Grid Challenges Through the Lens of the European General Data Protection Regulation | SpringerLink' (n 165).
[149]'EU Council Presidency Pitches Significant Changes to AI Act Proposal – EURACTIV.Com' <https://www.euractiv.com/section/digital/news/eu-council-presidency-pitches-significant-changes-to-ai-act-proposal/> accessed 9 March 2022.
[150] The US-EU Rivalry for Data Protection: Energy Sector Implications | IFRI - Institut Français Des Relations Internationales' <https://www.ifri.org/en/publications/editoriaux-de-lifri/edito-energie/us-rivalry-data-protection-energy-sector-implications> accessed 11 April 2022.
[151] 'Energy and Climate Change — European Environment Agency' <https://www.eea.europa.eu/signals/signals-2017/articles/energy-and-climate-change> accessed 11 April 2022.

An important consideration that needs to be made is that energy companies are becoming 'massive data collectors'[152], and that the sharing of data in the energy sector is not limited to the European Union, it reaches also other legal systems. The impact of the GDPR does not only reach companies based in the EU, because companies based for example in the U.S. that process data from European Union's residents are subject to the extraterritorial scope of the GDPR.[153]

In the United States, the Clarifying Lawful Overseas Use of Data Act (Cloud Act)[154] posed the risk of jeopardization of the protection granted by the GDPR to the personal data of the residents in the EU that were processed by companies established in the U.S.[155] With regards to the energy sector, and in particular to smart meters, companies have the growing necessity to store outside their company the large amounts of data that they process, and this leads to a direct impact of the Cloud Act in these firms.[156]

After the concerns raised by the Court of Justice of the European Union in the Schrems II[157] case with regards to the data flows between the EU and the U.S., the European Commission and the United States have recently announced that they have reached an agreement on a new Trans-Atlantic Data Privacy Framework.[158]

The new Privacy Framework will allow the free and safe flow of data between the European Union and participating United States companies.[159] As stated by the European Commission, 'By advancing cross-border data flows, the new framework will promote an inclusive digital economy in which all people can participate and in which companies of all sizes from all of our countries can thrive'.[160] The White House published a Fact Sheet about the new Framework announcing that

[152] 'The US-EU Rivalry for Data Protection: Energy Sector Implications | IFRI - Institut Français Des Relations Internationales' <https://www.ifri.org/en/publications/editoriaux-de-lifri/edito-energie/us-rivalry-data-protection-energy-sector-implications> accessed 11 April 2022.
[153] ibid.
[154] Clarifying Lawful Overseas Use of Data (CLOUD Act) (02/06/2018) H.R.4943 — 115th Congress
[155] 'The US-EU Rivalry for Data Protection: Energy Sector Implications | IFRI - Institut Français Des Relations Internationales' (n 171).
[156] ibid.
[157] Judgment of the Court (Grand Chamber) of 16 July 2020 Data Protection Commissioner v Facebook Ireland Limited and Maximillian Schrems Case C-311/18.
[158] 'Press Corner | European Commission' <https://ec.europa.eu/commission/presscorner/detail/en/IP_22_2087> accessed 9 April 2022.
[159] ibid.
[160] ibid.

'By ensuring a durable and reliable legal basis for data flows (…) [it] will underpin an inclusive and competitive digital economy and lay the foundation for further economic cooperation'.[161]

The new Framework will have an impact in many economic sectors[162] as well as in the energy sector, and this new Privacy Framework needs to be considered in the lens of this research because to establish the hypothetical transatlantic cooperation on AI it would be possible to rely on this legal framework to share data to train AI systems that fight climate change.

When it comes to the protection of the environment there is the need to also evaluate the public interest, and to strike a balance between the rights of the individuals to the protection of their personal data and the rights of the community to live in a safe and preserved environment.

With regards to the training of AI systems, Article 10.5 of the AI Act affirms that special categories of personal data[163] may be processed by high-risk AI systems for the purposes of ensuring bias monitoring, detection, and correction.[164] The mentioned Article states that the providers of these systems should adopt the necessary safeguards such as 'pseudonymisation, or encryption where anonymisation may significantly affect the purpose pursued'.[165] This statement affirms that anonymization should be the preferred safeguard, but in cases in which bias detection is not possible with anonymized data, these data can be safeguarded with other methods such as pseudonymization. This aspect has implications on the operations that providers are requested to conduct on data that they use to train systems and to identify and correct bias, and it has a double advantage that data are safeguarded, and that the systems are trained in the best possible way.

[161] 'FACT SHEET: United States and European Commission Announce Trans-Atlantic Data Privacy Framework | The White House' <https://www.whitehouse.gov/briefing-room/statements-releases/2022/03/25/fact-sheet-united-states-and-european-commission-announce-trans-atlantic-data-privacy-framework/> accessed 10 April 2022.
[162] 'FACT SHEET: United States and European Commission Announce Trans-Atlantic Data Privacy Framework | The White House' <https://www.whitehouse.gov/briefing-room/statements-releases/2022/03/25/fact-sheet-united-states-and-european-commission-announce-trans-atlantic-data-privacy-framework/> accessed 11 April 2022.
[163] Special categories of personal data referred to in Article 9(1) of Regulation (EU) 2016/679, Article 10 of Directive (EU) 2016/680 and Article 10(1) of Regulation (EU) 2018/1725
[164] Article 10.5 of the AI Act
[165] Ibid.

With regards to the use of personal data in the regulatory sandbox[166], article 54.1 (a) (iii) of the AI Act[167] states that the AI systems 'shall be developed for safeguarding substantial public interest in one or more of the following areas: […] (iii) a high level of protection and improvement of the quality of the environment; […]' The mentioned Article[168] establishes that the protection and improvement of the quality of the environment play an important role also in balancing with the protection of personal data when it comes to the substantial public interest to have a protected planet to live in.

This aspect is very important for the present research since it affirms that it is possible to use personal data to train and develop AI systems that fight climate change because the protection and improvement of the environment are considered a public interest. In the opinion of the author of this work, the balancing of interests between the right of the individual to the protection of personal data and the public interest of a preserved environment will be of central importance in the establishment of the hypothetical cooperation on AI, because in case of a predominance of the public interest, the cooperation would be enhanced with the objective to protect the environment.

As explained above, electricity consumption measurement data are considered personal data in the EU, but not all the types of data related to the energy sector and the energy consumer are considered personal data. Many data that are needed to train environment-related AI systems come from the public sector, such as Earth observation and geospatial data, but they frequently are not open nor interoperable or accessible to the public. This problem leads to the second legal barrier to the development of AI that addresses climate change: data accuracy.

3.3 The second legal barrier: data accuracy

The quality of the data is a necessary aspect that needs to be developed, and it is one of the obstacles to the effective use of AI systems also in the environmental sector. In present times, several

[166] A regulatory sandbox is a regulatory approach that allows live, time-bound testing of innovations under a regulator's oversight. Novel financial products, technologies, and business models can be tested under a set of rules, supervision requirements, and appropriate safeguards.
[167] Article 54 of the Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act)
[168] Article 54 of the AI Act

applications and services collect data that are then analysed to obtain other information, but often there are limitations to the access and sharing of these data, that complicate the data analytics procedures also in the climate field.

In fact, machines that do not have access to high volumes of quality data, cannot provide a good level of accuracy of their models.[169] Low levels of standardization and interoperability of data pose barriers to the development of AI systems also in the energy sector.[170] The Clean Energy Package[171] on that regard states the importance of interoperable solutions to reach the objectives of the European Green Deal.

Moreover, there is a need to improve the collection and classification of data in order to obtain better solutions to address climate change issues. As stated by Scoville and others, 'data at higher temporal and spatial resolutions alongside more powerful analysis methods will result in better environmental outcomes and assist in finding solutions to complex global environmental issues like climate change and biodiversity loss'.[172]

Paragraph 44 of the Artificial Intelligence Act stresses the importance of high-quality data to train AI systems, especially the ones that are considered to be high-risk. High quality of the data includes 'accuracy, completeness, and application-area specific properties'[173] and allows for the best functioning of the systems and avoids bias that can lead to discrimination. The mentioned Paragraph 44 states that in order to have high-quality data used for training, validation, and testing of AI systems, there is the need to implement appropriate data governance and management

[169]'AI Measurement and Evaluation Workshop | NIST' <https://www.nist.gov/news-events/events/2021/06/ai-measurement-and-evaluation-workshop> accessed 11 April 2022.Data protection in the era of big data for artificial intelligence, Trends, existing solutions and recommendations for privacy-preserving technologies, < https://www.bdva.eu/sites/default/files/Data%20protection%20in%20the%20era%20of%20big%20data%20for%20artificial%20intelligence_BDVA_FINAL.pdf > 7

[170]'A New Deal for Energy Consumers: Consumer Data Management - Florence School of Regulation' <https://fsr.eui.eu/a-new-deal-for-energy-consumers-consumer-data-management/> accessed 10 April 2022.

[171] The Clean Energy for all Europeans package is an agreement adopted in 2019, and it will help to decarbonise EU's energy system in line with the European Green Deal objectives, in line with the EU's Paris Agreement commitments for reducing greenhouse gas emissions 'Clean Energy for All Europeans Package' <https://energy.ec.europa.eu/topics/energy-strategy/clean-energy-all-europeans-package_en> accessed 11 April 2022.

[172] Scoville and others (n 82).

[173] 'Demystifying the Draft EU Artificial Intelligence Act — Analysing the Good, the Bad, and the Unclear Elements of the Proposed Approach' <https://www.degruyter.com/document/doi/10.9785/cri-2021-220402/html> accessed 22 April 2022.

practices. [174] Despite these requirements that seem quite restrictive, the paragraph affirms that 'Training, validation and testing data sets should be sufficiently relevant, representative and free of errors and complete in view of the intended purpose of the system'.[175] On the other hand, there is the risk that too high-level and absolute requirements on data sets' quality can represent a utopic request, as highlighted by the several Member States that 'have stressed that requiring data sets that are complete and free of error might be largely unrealistic'[176], and 'while this should be the case to the greatest extent possible, it should not be an absolute requirement.'[177]

The AI Act focuses in particular on the different contexts in which the AI systems will be used, and establishes that the data used for training, validation and testing should consider 'the features, characteristics or elements that are particular to the specific geographical, behavioural or functional setting'.[178]

In the environmental sector, AI can be used to obtain better climate predictions, especially in cases of extreme events in nature that humans find hard to predict. AI can 'quickly analyse dynamic systems and simulate them (like atmospheric pressure and overlying chemistry) and produce accurate models that can then be applied by scientists and researchers for more robust decision making'.[179] For example, an initiative called Green Horizons[180] applies AI and uses data from several sources, such as meteorological satellites, to constantly adjust the predictive models and predict in advance the trajectory of pollution.[181]

To obtain more reliable predictions and to make effective decisions, the systems need high-quality data. In fact, algorithms are trained with data, and based on those data they generate a prediction

[174] Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts - Presidency Compromise Text-2021/0106(COD) (44), p.21
[175] Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts - Presidency Compromise Text-2021/0106(COD) (44), p.21
[176] 'EU Council Presidency Pitches Significant Changes to AI Act Proposal – EURACTIV.Com' (n 168).
[177] ibid.
[178] Paragrah 44 of the AI Act
[179] 'AI Champions Driving New Industry Solutions For Climate Change' (n 144).
[180] Green Horizons, an IBM research initiative, and it is able to forecast pollution 72 hours in advance, with an accuracy down to the nearest kilometer on where the pollution is coming from and where it will likely go.
[181] 'AI Champions Driving New Industry Solutions For Climate Change' (n 144).

of the likelihood of an outcome.[182] If the data accuracy is not high, the decision 'based upon the incorrect data will result in poor management decision'.[183]

The U.S., regarding the quality of data, has elaborated the concept of 'fitness for purpose'[184], which says that 'information destined for a higher-impact purpose must be held to higher standards of quality'.[185] The Federal Data Strategy 2021 Action Plan[186], published in October 2021, affirms that the federal government conducted research on the quality of data associated with AI, and it focuses on data quality to train AI systems. It establishes that agencies need to assess the quality of the data with which they train AI systems, and in the case of high-quality data, they need to include them in 'comprehensive data inventories',[187] that can be accessed by the government to improve its expertise in AI. Moreover, the Plan establishes that several agencies should proceed with the identification of the data assets that have a priority in the open data plans.[188] This aspect can be important in the light of possible cooperation on AI, because the fostering of open data plans can be a way to foster cooperation between the U.S. and the EU on AI, since open data are easily accessible also from the other side of the Ocean. Otherwise, data published in a not-open format can make the cooperation much more complicated, because they are difficult to find.

The National Institute of Standards and Technology (NIST) is the entity entitled of AI systems' evaluation. NIST is establishing common terminologies and it is defining concepts pertaining to characteristics of AI, such as accuracy, in order to build trustworthy AI systems.[189] NIST also evaluates the accuracy and robustness of AI systems.[190]

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[182] 'Why Business Should Focus on Data Accuracy for a Powerful AI Predicting System? - Data Pillar' <https://datapillar.ai/why-business-should-focus-on-data-accuracy-for-a-powerful-ai-predicting-system/> accessed 11 April 2022.

[183] 'Why Business Should Focus on Data Accuracy for a Powerful AI Predicting System? - Data Pillar' <https://datapillar.ai/why-business-should-focus-on-data-accuracy-for-a-powerful-ai-predicting-system/> accessed 11 April 2022.

[184] 'Federal Data Strategy 2021 Action Plan' 24.

[185] OMB Memorandum M-19-15, Improving Implementation of the Information Quality Act 3 (April 24, 2019), available at whitehouse.gov

[186] 'Federal Data Strategy 2021 Action Plan' (n 203).

[187] ibid.

[188] ibid.

[189] 'AI Measurement and Evaluation Workshop | NIST' <https://www.nist.gov/news-events/events/2021/06/ai-measurement-and-evaluation-workshop> accessed 11 April 2022.

[190] ibid.

Concerning the environment, an interesting passage of the Federal Data Strategy Plan deserves to be mentioned. In fact, the Plan refers specifically to wildland fires that had devastating effects in 2020 in the United States, and it affirms that to avoid, or at least limit those events, effective land management is necessary.[191] Land management 'requires fusing, interpreting, and managing a wealth of diverse data'[192] coming from several sources, such as federal, state, and territorial governments. The objective in this regard is to establish best practices for governing and combining different types of data coming from different sources. These practices are for example 'linking data to the original source, and then publishing the data as a knowledge graph that integrates feedback from subject matter experts'.[193] In this way, it is possible to add value to the data, and this can lead to new solutions that help to 'reduce wildfire risk, increase transparency, and benefit future uses with AI'.[194]

This concept is extremely interesting for the purposes of this research, because it puts data accuracy at the centre of AI development. The Action Plan affirms that data of improved quality can be shared to train and develop AI systems, and that this data sharing has positive impacts not only for a project, but it can be useful in general for the scientific domain.[195] The benefits of high-quality open data sharing to train AI systems can be even more evident if the sharing is not limited to a certain territory, but it is possible also between different legal systems. In this case, the EU could benefit from U.S. open data that has a governmental provenience and that can be used to train systems to predict or prevent for example forest fires also in Europe, that in the last decade have increased exponentially due to droughts and heatwaves, causing disastrous effects.[196]

3.4 The third legal barrier: divergent conceptions of the rule of law and the respect of human rights

The third legal barrier has a different nature, it lays more on legal traditions and different approaches to international law. In fact, the two legal systems have different political structures

[191] 'Federal Data Strategy 2021 Action Plan' (n 203).
[192] ibid.
[193] ibid.
[194] ibid.
[195] ibid.
[196] 'Forest Fires in Europe' <https://www.eea.europa.eu/ims/forest-fires-in-europe> accessed 23 April 2022.

and they come from different legal traditions. U.S. is a federal system composed of fifty states, whereas the EU is an economic and political union established between twenty-seven countries.[197] Secondly, the legal system in the U.S. is of a common law vocation, on the other hand, the EU has a tradition of civil law countries. These main differences are reflected in the way the two legal systems perceive the law and regulate phenomena. This can be seen in many fields, such as the environment and technologies. For example, policy in the environmental field is a shared matter between the EU and the Member States at a European level, whereas in the U.S. the federal government establishes a baseline, and the different states need to enact laws or regulations that at least reach the limit set at the federal level. [198]

The highlighted differences in the rule of law should not discourage the pursuit of the present research, because as will be demonstrated in the next chapter, there are many points that support transatlantic cooperation, and on which it can be founded.

With regards to respect for human rights, there is a contrast between the EU and the U.S. with regards to their support to international human rights law.[199] For example, the U.S. show selectiveness in the ratification of international human rights treaties, and they have not accepted the jurisdiction of the Inter-American Court of Human Rights (IACtHR).[200] On the other hand, the EU and its Member States have ratified most of the UN human rights treaties, and they have accepted the jurisdiction of the European Court of Human Rights (ECtHR).

However, as argued by Başak Çalı, it is possible to use four parameters to compare the support for international law, such as 'leadership, consent, compliance and internalization'[201], and according to the author, none of the two legal systems 'has taken on strong leadership in the development of

[197] 'What Is the Difference between a US Regulation and a EU Directive or Regulation | Enhesa' <https://www.enhesa.com/resources/fundamentals/what-is-the-difference-between-a-us-regulation-and-a-eu-directive-or-regulation/> accessed 22 June 2022.
[198] 'What Is the Difference between a US Regulation and a EU Directive or Regulation | Enhesa' <https://www.enhesa.com/resources/fundamentals/what-is-the-difference-between-a-us-regulation-and-a-eu-directive-or-regulation/> accessed 22 June 2022.
[199] 'Comparing the Support of the EU and the US for International Human Rights Law qua International Human Rights Law: Worlds Too Far Apart? | International Journal of Constitutional Law | Oxford Academic' <https://academic.oup.com/icon/article/13/4/901/2450824?login=true> accessed 24 June 2022.
[200] ibid.
[201] 'Comparing the Support of the EU and the US for International Human Rights Law qua International Human Rights Law: Worlds Too Far Apart? | International Journal of Constitutional Law | Oxford Academic' (n 107), 901.

IHRL in recent years'.[202] Therefore, divergences between the two approaches also with regards to respect of human rights exist, but there are also common points and aspects that still need to be improved on both sides of the Ocean.

The delineated differences can have an impact on the way the issues are seen and addressed by the two legal systems, and divergent policy making in the environmental sector can slow down the cooperation process due to different legislative procedures. From a human rights perspective, the ratification of different treaties can constitute an obstacle to cooperation because the two legal systems are committed to the respect of different legal dispositions.

Nevertheless, as it will be further explained in the work, there are common points and shared democratic values between the EU and the U.S., that can be considered similar for example if they are compared to China.

At this point, the reader may think that the legal barriers examined in this chapter create an unsurmountable obstacle that impedes the cooperation process. However, the common principles delineated in the second chapter consist of an effective way to overcome the legal barriers, because thanks to the overarching principles, the two legal systems can start rethinking some practices, for example for the benefit of humans and the Earth, they can start sharing data and making them available in an open format.

Chapter 4 - AI regulation in the EU and in the U.S.: a legal comparison

The fourth chapter of this work operates a comparison between AI regulation in the EU and in the U.S., highlighting the differences and evaluating the best practices that they have, especially referring to ethical AI, and the reason will be explained later in the chapter.

The chapter is a step further in the present research because it highlights the differences but most importantly the common points that the two legal systems have with regards to AI regulation, and

[202] ibid, 921.

that can be the basis on which it is possible to build the hypothetical transatlantic cooperation on AI that fights climate change.

In order to provide an effective comparison and to evaluate possible difficulties or factors that can enhance the hypothetical transatlantic cooperation, there is the need to consider both divergences and common features in AI regulation.

4.1 Differences between the two regulations of AI

The European Union, in the path towards the regulation of Artificial Intelligence, opted for a comprehensive approach, which can be easily seen from the title of the AI Act[203]: Proposal for a Regulation laying down harmonized rules on artificial intelligence. The EU's objective is to harmonize most of the aspects of AI systems' lifecycle, such as the development, placement on the market, use, prohibitions, and conformity assessment.[204] The President of the European Commission Ursula von der Leyen, in her political guidelines for the elections[205] expressed the intention to 'put forward legislation for a coordinated European approach on the human and ethical implications of Artificial Intelligence.'[206] The legislative process of the AI regulation[207] at the European level is still ongoing, but it is clear that the aim of the EU is to regulate these systems in a harmonized way, using a coordinated approach that is applicable in all Member States. In fact, before the publication of the AI Act, several Member States started to develop and publish their own national strategies on AI[208], but the EU clearly opts for a comprehensive and general approach that is common in all Member States. The EU is working towards the creation of comprehensive regulation of AI, and in this case, the regulation will be directly applicable and legally binding in

[203] A nice explanatory scheme of the AI Act is the following: 'A Visual Guide to the AI Act by Ronald Leenes – Digital Legal Lab' <https://www.sectorplandls.nl/wordpress/news/a-visual-guide-to-the-ai-act-by-ronald-leenes/> accessed 22 April 2022.
[204] 'Demystifying the Draft EU Artificial Intelligence Act — Analysing the Good, the Bad, and the Unclear Elements of the Proposed Approach' (n 192).
[205] A Union That Strives for More - Publications Office of the EU' <https://op.europa.eu/en/publication-detail/-/publication/43a17056-ebf1-11e9-9c4e-01aa75ed71a1> accessed 24 April 2022.
[206] 'A Union That Strives for More - Publications Office of the EU' <https://op.europa.eu/en/publication-detail/-/publication/43a17056-ebf1-11e9-9c4e-01aa75ed71a1> accessed 24 April 2022.
[207] 'Legislative Train Schedule | European Parliament' <https://www.europarl.europa.eu/legislative-train/theme-a-europe-fit-for-the-digital-age/file-regulation-on-artificial-intelligence> accessed 8 March 2022.
[208] 'JRC Publications Repository' <https://publications.jrc.ec.europa.eu/repository/handle/JRC122684> accessed 29 April 2022.

all Member States. Therefore, Member States will have to apply the EU regulation in their territory, and the EU legislation would prevail over national legislation.

On the other side of the Atlantic Ocean, the U.S. is adopting a completely different approach[209], much more fragmented than the one adopted by the European Union.

In the EU, Member States are adopting their own initiatives on AI, whereas in the U.S. the fragmentation is much more between different agencies, that are adopting their own initiatives and guidelines on AI, concerning their area of expertise. In fact, the U.S. is outsourcing[210] the regulation of this technology to the various Agencies, that are progressively publishing their own guidelines. For example, U.S. Agencies such as the Food and Drug Administration[211] and the Department of Transportation[212], gradually started to develop their own guidelines on AI, and incorporate them into their regulatory regimes.[213] This approach is less complete and a bit complicated, because it does not deliver a comprehensive regulation applicable to every situation. Depending on the situation and the field of development of AI, there is a need to search whether there are some applicable guidelines.

The more fragmented approach is the result of a political choice. In fact, during Trump's administration, the AI regulatory machine went at a low pace, however, the Office of Management and Budget[214] suggested to several agencies to evaluate the possible steps that could be done.[215] An important switch in the regulatory tendency happened with Biden's administration. Biden's election accelerated the process of AI regulation, and in general, the new administration seems more concerned and committed to fighting climate change than the previous one.[216]

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[209] 'Department of Commerce Establishes National Artificial Intelligence Advisory Committee | U.S. Department of Commerce' <https://www.commerce.gov/news/press-releases/2021/09/department-commerce-establishes-national-artificial-intelligence> accessed 11 April 2022.
[210] 'What Is Outsourcing and How Does It Work?' <https://www.techtarget.com/searchcio/definition/outsourcing> accessed 26 April 2022.
[211] 'Artificial Intelligence and Machine Learning in Software as a Medical Device | FDA' <https://www.fda.gov/medical-devices/software-medical-device-samd/artificial-intelligence-and-machine-learning-software-medical-device> accessed 24 April 2022.
[212]Automated Vehicles Comprehensive Plan | US Department of Transportation' <https://www.transportation.gov/av/avcp> accessed 24 April 2022.
[213]'The EU and U.S. Are Starting to Align on AI Regulation' (n 105).
[214] Russell T Vought, 'MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES' 11.
[215] 'The EU and U.S. Are Starting to Align on AI Regulation' (n 105).
[216] 'Position Paper on EU-US Relations - Renew Europe' (n 18).

The main difference is that the approach adopted by the U.S. allows a more rapid response to the new issues posed by AI applications than the one adopted by the EU, because according to Alex Engler 'given that it could take years from passage for the EU to set up and enforce its AI Act, the U.S. may find itself leading in many practical areas of AI regulation.'[217]

The differences between the two legal systems and their approaches towards the regulation of AI are visible also with regard to the environment, and the possible AI applications to fight climate change. In fact, on one hand, the European Union frequently mentions the environment as one of the possible fields of application of AI, whereas the United States hardly mentions it at a central level. However, NOAA is developing projects that deploy AI to predict hurricanes, tornadoes, and other severe weather conditions, that use Machine Learning to analyse images collected by ships, to evaluate the conditions of fish and mammals' populations in the oceans.[218] NASA is also developing projects that involve research on AI and its possible utilization in water resource monitoring.[219]

In the European Union, article 37 of the EU Charter on Fundamental Rights[220] sets the basis for the developments in sustainability and for the integration of environmental goals in the policies of the Union. In recent times, the attention on AI has increased, and the attention to AI's possible applications in addressing climate change is interesting the debate at a European level. Moreover, the European Parliament published an analysis on the role of AI in the European Green Deal.[221] Horizon 2020 developed several AI projects, such as the BRIDGE[222] and the Encompass project[223] that aim to use AI to 'optimize smart grids, energy infrastructure, and other energy-related needs'.[224] The research on environment-related AI is likely to further develop because the EU Green New Deal is between the priorities at the moment.[225]

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[217] 'The EU and U.S. Are Starting to Align on AI Regulation' (n 105).
[218] Lawrence and Cordey (n 22).
[219] 'HAP | COMPUTATIONAL HYDROLOGY - NASA AIST' <https://ncar.github.io/hydrology/projects/AIST> accessed 10 June 2022.
[220] Article 37 of the European Union's Charter of Fundamental Rights, named 'environmental protection' states that 'A high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development'
[221] Gailhofer and others (n 1).
[222] 'Home | Bridge' <https://bridge-smart-grid-storage-systems-digital-projects.ec.europa.eu/> accessed 10 June 2022.
[223] 'EnCOMPASS Project' <https://www.encompass-project.eu/> accessed 10 June 2022.
[224] Lawrence and Cordey (n 22).
[225] ibid.

The main attention in the U.S. is given to the possible applications of AI in other sectors, such as defence, economic development, and healthcare. Moreover, the U.S. is projected towards a more competitive vision than the EU. In fact, the U.S. is developing technologies and regulating them taking into account the current developments in China, and they are aware of the potential advantage that AI can give to U.S.' competitors. The U.S. would like to be leading the current development of AI technologies, and they see China as their main competitor. In that sense, the U.S. is seeking cooperation in AI with the European Union, especially to contrast China's possible economic advantage.[226]

The European Union sees AI as an instrument to promote its overall objectives regarding the environment, whereas the U.S. sees AI more as a possibility to further develop its economy. These different visions that the two systems have towards AI can pose obstacles to the hypothetical cooperation on AI, especially if the cooperation is focused on climate change.

The U.S. is not completely excluding the environment as a possible field of application of AI, in fact there are some agreements taking place between governmental agencies and big companies, such as the data partnership between NOAA and Google to monitor the environment and predict weather conditions.[227] However, at a general level the U.S. is not mentioning much AI that fights climate change in their regulatory documents, neither they are prioritizing the environment as a field of application of AI.

This difference in the prioritization of the fields of application between the EU and the U.S. can have an impact on the hypothetical cooperation on AI that fights climate change. The different conception of priorities can be an obstacle in the development of cooperation because the United States might feel the climate change topic less urgent, with respect to others that are felt more compelling. The Covid-19 pandemic and the ongoing conflict between Russia and Ukraine[228] certainly play a role in the prioritization of AI systems' areas of application because these

[226] Ulrike Esther Franke, 'ARTIFICIAL DIVIDE: HOW EUROPE AND AMERICA COULD CLASH OVER AI' 16.
[227] 'AI Agreement to Enhance Environmental Monitoring, Weather Prediction | National Oceanic and Atmospheric Administration' (n 41).
[228] At the moment of the drafting of this thesis, there is an ongoing conflict between Russia and Ukraine, that started on 24th February 2022.

technologies can play a significant role in both fields[229]. In that sense, considering the current global situation, the U.S. might prioritize fields such as defence or the healthcare sector rather than the fight against climate change, and they might concentrate their resources and funding in those fields rather than in the environmental field. On the opposite, in the European Union, the current situation seems to be pushing the environmental agenda even more.

This aspect needs to be taken into account, as it can be an obstacle in the realization of the hypothetical transatlantic cooperation on AI that fights climate change. This criticality can be mitigated by encouraging the dialogue at a global level on the importance of the fight against climate change, and by increasing the general consciousness that the environment needs an immediate and coordinated effort, and that the more collaboration is made possible, the better impacts caused by climate change can be addressed. Common AI principles such as beneficence can help overcome these kinds of obstacles.

Another difference between the two systems that needs to be considered is the openness to innovation, research and funding that characterizes the U.S., which historically always attracted the best talents from all over the world, whereas the EU suffered a problem of lack of talents and especially insufficient fundings, as well as a more 'uncoordinated AI expertise (…) across the Member States.'[230] This aspect also needs to be evaluated in light of the present research, because divergences in research and innovation can be another limit to effective cooperation on AI, but at the same time, they can be an objective of the cooperation. In fact, a transatlantic cooperation on AI can also facilitate the collaboration between researchers, for example with joint projects, and it can make the funding process easier between the EU and the U.S.

[229] 'Artificial Intelligence In Russia-Ukraine War - Series' <https://www.tuicakademi.org/artificial-intelligence-in-russia-ukraine-war-series/> accessed 28 April 2022.
[230] Lawrence and Cordey (n 22).

4.2. Common features of the two AI regulations and recommendations to make the cooperation future-proof

The previous paragraph highlighted the differences between the two legal systems in their approach towards AI regulation, and maybe it raised doubts in the reader on whether there are common features between the EU and the U.S.

This paragraph illustrates some of the common points that the two legal systems share in AI regulation, and it focuses in particular on common democratic values and ethical AI, especially referred to the environmental sector.

The purpose of this paragraph is to evaluate the common elements that can be the starting point and the foundation of the hypothetical transatlantic cooperation on AI that fights climate change, therefore it does not claim to be exhaustive, nor to cover all possible common aspects.

Despite what the previous paragraph highlighted, there are also common features that the two systems share and that deserve to be examined in light of the present research.

First of all, in the U.S. a trend reversal is happening with regards to AI regulation. In fact, Biden's administration is demonstrating a more proactive approach towards AI regulation, and this is bringing the U.S. closer to the EU's approach.[231] In the last months, many policy interventions on algorithmic fairness have been published in the U.S., such as the initiative of the Equal Employment Opportunity Commission[232] and the inquiry[233] on the outcomes of AI practices in the financial sector started by financial institutions.[234] Most importantly, the NIST is developing an AI risk management framework[235], that is contributing to bringing the most recent U.S.' approach a bit closer to the EU's approach towards high-risk systems. This aspect can have a positive impact

[231] 'The EU and U.S. Are Starting to Align on AI Regulation' (n 105).
[232] 'EEOC Launches Initiative on Artificial Intelligence and Algorithmic Fairness | U.S. Equal Employment Opportunity Commission' <https://www.eeoc.gov/newsroom/eeoc-launches-initiative-artificial-intelligence-and-algorithmic-fairness> accessed 29 April 2022.
[233] 'Agencies Seek Wide Range of Views on Financial Institutions' Use of Artificial Intelligence | Consumer Financial Protection Bureau' <https://www.consumerfinance.gov/about-us/newsroom/agencies-seek-wide-range-of-views-on-financial-institutions-use-of-artificial-intelligence/> accessed 29 April 2022.
[234] 'The EU and U.S. Are Starting to Align on AI Regulation' (n 105).
[235] 'Federal Register :: Artificial Intelligence Risk Management Framework' <https://www.federalregister.gov/documents/2021/07/29/2021-16176/artificial-intelligence-risk-management-framework> accessed 29 April 2022.

on the hypothetical transatlantic cooperation on AI, because if the U.S. adopts an approach that is similar to the EU's, also with regards to definitions and high-risk systems, the cooperation on AI can be easier.

Moreover, the recent Trade and Technology Council (TTC) included AI issues to be addressed jointly between the EU and the U.S., and both legal systems are willing to 'develop and implement AI systems that are innovative and trustworthy and that respect universal human rights and shared democratic values.'[236]

Ethical AI and shared democratic values are two central points of this research. This work previously presented the divergent conceptions of the rule of law and the respect of human rights as a legal barrier to cooperation. However, there are common aspects between the two legal systems in that regard, especially if compared with other more authoritarian systems such as China.

Both the EU and the U.S. are promoting the creation of the TTC to develop an engagement between governments and stakeholders to ensure that the cooperation produces economic growth on both sides, always respecting the shared values.[237] The shared values that the EU and the US have are democratic principles, human dignity and individual rights[238] and 'a form of governance that is open, transparent, and accountable to citizens'[239]. These shared values can be the base to develop a joint agenda between the EU and the U.S., especially regarding AI. These values in the past guided a common approach between the EU and the U.S. with regards to internet governance, for example, the two legal systems have 'aligned over the importance of an open, neutral environment in which freedom of expression and innovation can thrive'.[240]

In order to develop AI that respects shared values, there are many factors to consider. Firstly, AI is 'a general purpose technology comprising software and hardware enabling technologies'[241], and

[236] 'Press Corner | European Commission' <https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT_21_4951> accessed 25 October 2021.
[237] 'Inaugural US-EU Trade and Technology Council Meeting Recap | Center for Strategic and International Studies' <https://www.csis.org/events/inaugural-us-eu-trade-and-technology-council-meeting-recap> accessed 25 October 2021.
[238] 'A Renewed EU-US Relationship for a Positive Global Change' (n 100).
[239] Joshua P Meltzer, Cameron Kerry and Alex Engler, 'Submission to the EC White Paper on Artificial Intelligence (AI) The Importance and Opportunities of Transatlantic Cooperation on AI' 9.
[240] ibid.
[241] ibid.

it can be applied in different fields. AI can be guided by values, and these values can be democratic or not. For example, China has access to huge quantities of data about its population, and it is using AI surveillance systems to monitor its citizens in several ways.[242] China is also using the 'state power to boost domestic AI at the expense of AI developed elsewhere'[243], and it is advancing a different idea of AI innovation, much more founded on surveillance and authoritarianism. The EU and the U.S. together can propose and develop common AI principles and a joint different idea of AI innovation, that puts at the centre common democratic values and human dignity.[244] These two legal systems share the interest in ensuring that Artificial Intelligence is both developed and used respecting common democratic values, and that everyone can benefit equally from AI. [245] The fight against climate change is one of the common objectives that the EU and the U.S. share at an international level, as well as the promotion of the common democratic values previously illustrated. [246] Therefore, the following step in this research is briefly on AI ethics and on ethical AI in the environmental sector.

4.3 AI ethics, ethical AI as the basis for the cooperation

This paragraph examines the potential of the cooperation between EU and U.S., and it considers ethical AI as the basis for the cooperation. In order to do so, brief considerations on AI ethics need to be developed. This paragraph needs to be read in light of the present research, and the considerations developed here will be useful for the final evaluation on the feasibility of the hypothesized cooperation.

This work examines positive applications of AI, that are developed and used to protect the environment and promote human flourishing.[247] Virginia Dignum stated that 'Responsible Artificial Intelligence is about human responsibility for the development of intelligent systems

[242] The Rise of Digital Authoritarianism, Freedom on the net 2018, <10192018_FINAL_FOTN_2018.pdf (freedomhouse.org) > accessed 28 April 2022.
[243] Meltzer, Kerry and Engler (n 258).
[244] ibid.
[245] Franke (n 245).
[246] 'A Renewed EU-US Relationship for a Positive Global Change' (n 100).
[247] Bernd Carsten Stahl, *Artificial Intelligence for a Better Future: An Ecosystem Perspective on the Ethics of AI and Emerging Digital Technologies* (Springer International Publishing 2021) <http://link.springer.com/10.1007/978-3-030-69978-9> accessed 23 April 2022.

along fundamental human principles and values, to ensure human flourishing and well-being in a sustainable world.'[248] The point of intersection between AI ethics and human flourishing is Responsible research and innovation (RRI)[249], and the European Parliament suggested that 'the potential of artificial intelligence (…) should be maximized and explored through responsible research and innovation'.[250] RRI is defined as the 'on-going process of aligning research and innovation to the values, needs, and expectations of society'.[251] RRI can be one of the sectors in which the hypothetical transatlantic cooperation on climate-related AI can take place because it is possible to conduct research and innovation and align it to the expectations of society with regards to new technologies that help with the preservation of the environment.

The following step is to assess that AI is used in a positive way; therefore, it is necessary to establish what is 'AI for good'[252] for the purposes of this research. At an international level, the UN's Sustainable Development Goals (SDGs) are helpful in this regard because six[253] of the seventeen goals directly apply to the environment and the impact that humans have on it.[254] The Stockholm Declaration[255] at Principle 18 affirms that 'Science and technology, as part of their contribution to economic and social development, must be applied to the identification, avoidance and control of environmental risks and the solution of environmental problems and for the common good of mankind'. Moreover, one of the main suggestions of the United Nations Framework Convention on Climate Change is for the States to 'promote and cooperate in scientific, technological (…) research, systematic observation and development of data archives related to the climate system and intended (…) to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude, and timing of climate change (…)'.[256]

[248] ibid., 25
[249] ibid.
[250] ibid.
[251] ibid.
[252] This concept has been elaborated by Berendt, and it is defined as 'AI created specifically for ethical purposes'
[253] The six goals that directly refer to the environment are: combating climate change, using ocean and marine resources wisely, managing forests, combating desertification, reversing land degradation, developing sustainable cities and providing clean affordable energy'
[254] Harnessing artificial intelligence for the earth
[255] The Declaration of the United Nations Conference on the Human Environment
[256] Article 4 (1)g of the United Nations Framework Convention on Climate Change.

AI can help in developing new solutions to the most pressing environmental challenges such as climate change[257], and ethical AI plays a role in this field. The European Union has a leader role with regards to the development of ethical AI guidelines[258], in fact, the EU highlighted that the ethical implications of AI are one of its main interests, and the High-Levell Expert Group on AI created by the European Commission developed this topic publishing the Ethics Guidelines for Trustworthy AI. [259]

However, ethical AI is not a concern just for the EU, in fact in the U.S. this topic is also the object of debate, but in a less comprehensive way.[260] For instance, the U.S. Department of Defence adopted a series of ethical principles for the use of AI[261], and the U.S. National Security Commission on AI published a report[262] that mentions ethics in the context of global AI cooperation.[263]

The U.S. is trying to become a leader with regards to AI in general, while the EU is leading especially with regards to ethical AI; these two different dominant positions can be a positive start of the cooperation between two legal systems that can have the first-move advantage.

In the environmental field, the use of ethical AI is of central importance, especially if AI is used for mitigation and adaptation. In fact, AI can be used in mitigation 'to build a more efficient use of energy, to improve climate models, and to steer human behaviour in a more climate-friendly way'.[264] On the other hand, AI can be used in adaptation for example to increase resilience and prevention, and to improve weather forecasting, in order to predict extreme weather events.[265]

The main ethical issue is the evaluation of how AI should be used to make decisions about climate change mitigation and adaptation, and more in general about the environment, which can affect

[257] 'Smart Information Systems and The Environment – Project Sherpa' <https://www.project-sherpa.eu/smart-information-systems-and-the-environment/> accessed 24 April 2022.
[258] Lawrence and Cordey (n 22).
[259] Franke (n 245).
[260] ibid.
[261] 'DOD Adopts Ethical Principles for Artificial Intelligence > U.S. Department of Defense > Release' <https://www.defense.gov/News/Releases/Release/Article/2091996/dod-adopts-ethical-principles-for-artificial-intelligence/> accessed 29 April 2022.
[262] Final Report National Security Commission on Artificial Intelligence 2020 < https://www.nscai.gov/wp-content/uploads/2021/03/Full-Report-Digital-1.pdf > accessed 25 April 2022
[263] Franke (n 245).
[264] Nordgren (n 88).
[265] ibid.

many people's lives. In that aspect, the overarching AI principles explained in the second chapter such as beneficence, non-maleficence, autonomy, justice, and explicability, can be extremely helpful, because they can be an instrument to develop AI systems that are ethical and that benefit both humans and the planet.

There is also the need to prioritize AI uses in mitigation or adaptation. A possible assessment of the benefits of several options for machine learning that fight climate change have been elaborated by Rolnick and others, that divided the options as follows: "high leverage" (these are particularly useful options), "long term" leverage (these options have their main impact after 2040), and "uncertain impact".[266] In this way, it is possible to have a clear idea of which AI applications should be prioritized and for which purpose, for instance, it would be wise to prioritize high leverage options due to the need for urgent action to contrast climate change. Following this assessment, it would be possible to also prioritize the options for machine learning that can be the object of the hypothetical transatlantic cooperation.

Moreover, a cooperation between countries that share the same AI principles is important to reaffirm values such as respect of human rights, as opposed to other countries that have techno-authoritarian regimes, and whose citizens can be exposed to human rights violations, such as China.[267] The use of AI solutions by such regimes can hinder the global benefit that these technologies bring and can build fragmented systems that are incompatible with democratic values.[268] Therefore, ethical AI can be the basis for the successful transatlantic cooperation on AI that fights climate change, and that has the benefit of humans and the planet as its main objective.

After having evaluated the possible benefits, legal barriers, divergences in regulation, and common points, this research can conclude that the hypothesis of a transatlantic cooperation on AI that fights climate change can be realized with the help of overarching principles such as beneficence, and especially using ethical AI to make decisions on how to deploy AI applications in fighting climate change.

[266] David Rolnick and others, 'Tackling Climate Change with Machine Learning' [2019] arXiv:1906.05433 [cs, stat] <http://arxiv.org/abs/1906.05433> accessed 13 February 2022.
[267] Kerry and others (n 54).
[268] ibid.

Chapter 5 - Conclusions

The intent of this thesis is to hypothesize a cooperation between the EU and the U.S. on AI that fights climate change, and to analyse its possible pitfalls and benefits. The need for concrete and immediate action to fight climate change is urgent because this phenomenon is impacting more and more everyone's lives, and it should be one of the major global concerns. Artificial Intelligence can play an important role in the climate change fight, mitigation, and adaptation.

The first chapter of this work introduces ways in which AI can be used to fight climate change, and after analysing the current state of the literature, and the benefits of the cooperation, it delineates the gap in the literature, and it poses the main research question and the sub-questions that this thesis tries to answer.

The second chapter examines possible ways through which the law can facilitate the cooperation, for example with the elaboration of a common AI definition, and of common AI-related terms. The chapter elaborates on the idea of common AI overarching principles such as beneficence, non-maleficence, autonomy, justice, and explicability, on which ethical AI should be based, and that can be helpful for the transatlantic cooperation on climate change-related AI.

The third chapter examines the main legal barriers that need to be addressed to make the cooperation on AI more suitable to fight climate change. Data protection and data accuracy are the two main legal barriers that this work tries to address. The thesis examines different issues in terms of data protection and hypothesizes that the new Trans-Atlantic Data Privacy Framework could be a way to address this legal barrier. Environmental data are frequently difficult to find, not interoperable or available in different formats, therefore the chapter examines the two different legal frameworks and pushes for more open environmental data, especially the ones that have governmental sources. In this aspect, the EU could use the U.S. approach as a model, to make more governmental environment-related data available in an open format.

The fourth chapter examines the ways in which EU and U.S. are dealing with the regulation of AI and operates a comparison between them. It evaluates the best practices and shared democratic values that they have, such as the rule of law and the respect for human rights, especially compared

to other legal systems for example China. The current situation with health and conflict issues can change the priorities, and this can be a problem for the cooperation delineated in the present work. Ethical AI is of great importance in this context because it sets the objective of developing AI for the global good and at the same time, it is the basis of the cooperation. Ethical AI can be used to develop common AI principles, and it can be the key to the success of the transatlantic cooperation between U.S. and EU, especially with regards to techno-authoritarian regimes such as China.

The present research has some limitations, especially with regards to exhaustiveness, due to the limitation of space. For example, not all the possible ways in which the law can enhance cooperation are listed, neither all the possible common elements between the two legal systems are examined. Moreover, the field that this research explores is experiencing continuous evolution, therefore, completeness is hard to achieve due to constant developments in technology and science.

This work tries to imagine cooperation on AI as an imaginary bridge that crosses the Atlantic Ocean and connects EU and U.S. The bridge has strong foundations such as common objectives and shared AI principles, but the building process can face difficulties and obstacles, especially legal barriers, and divergent prioritizations. However, the bridge can be a new starting point to create a new concept of ethical AI that is developed for the common good and that is ready to address one of the current most challenging issues, climate change.

The current times are exciting because there is the possibility to tackle global issues with technologies such as Artificial Intelligence. AI has enormous potential, and it should be used to fight climate change, especially with a coordinated approach that can be a way to enhance the positive effects of AI on the environment.

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