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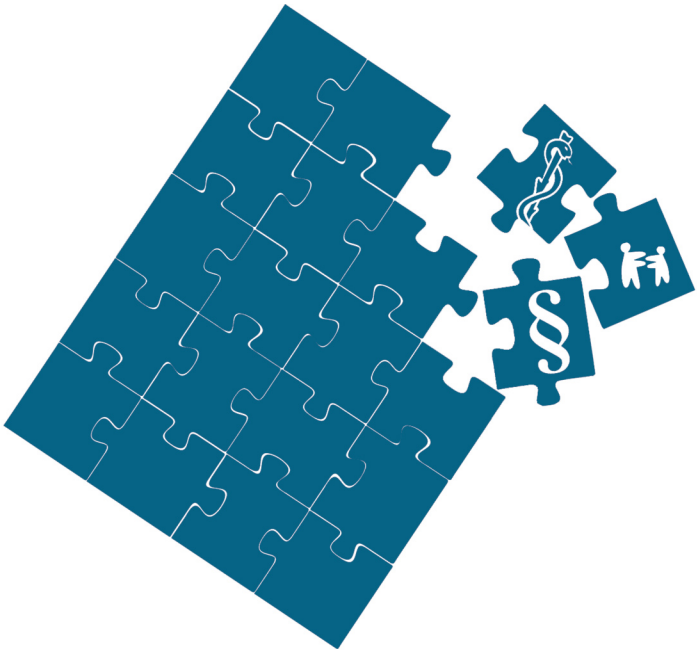

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CONSCIENTIOUS OBJECTION (GENERAL ASPECTS AND THE SLOVENIAN REGULATION OF CONSCIENTIOUS OBJECTION TO ABORTION)

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Abstract This article discusses the theoretical aspects of conscientious objection. It is primarily a moral category. In relation to law, it is the disobedience of an individual to certain legal norms (principles and rules) that conflict with the individual's moral conscience. Conscientious objection differs in several respects from other forms of disobedience to authority, such as civil disobedience. As a moral phenomenon, conscientious objection is first and foremost the inner moral obligation of an individual to resist a particular political, legal or other norm of authority or behaviour. Conscientious objection may also be permitted by law, but to a very limited extent. Conscientious objection can only be defined as a right in a rationalized reflection of morality and, above all, in the sphere of law which is based on the dualism of rights and duties (attributive-imperative character of law). In the article, some important factors for the legal assessment of the (right to) conscientious objection and some fundamental aspects of the Slovenian constitutional and legal regulation of the right to conscientious objection to abortion by a physician are presented in more detail.

Keywords
civil disobedience,
moral consciousness,
morality,
ethics and law,
medical conscientious objection to abortion

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1 Introductory Explanation

This article discusses some theoretical aspects and questions of conscientious objection. The focus is primarily on the description of its authentic moral character, its relationship to the law, and the legal regulation of conscientious objection. The article then explores the Slovenian legal regulation of a physician's conscientious objection to abortion as an illustration.

2 Conscientious Objection and Other Forms of Disobedience

Conscientious objection is one of the forms of disobedience or rejection of certain legal and/or political norms and practices. According to the traditional classification, morally, politically, and otherwise motivated forms of disobedience can generally be divided into the following three categories (Raz, 1986, p. 263):

1. Revolutionary disobedience or revolution is a politically motivated radical violation of the foundations of the legal order aimed directly or indirectly at changing the government and the constitutional system;
2. Civil disobedience is a politically motivated violation of the law resulting from dissatisfaction with the law and government policy, where the demand for a change in law and policy is generally expressed in the form of a public protest;
3. Conscientious objection is a violation of the law by a person who believes that he or she is morally prohibited from acting in accordance with a particular legal norm, either because of the general nature of that norm (e.g., a person acts as an absolute pacifist and opponent of military service) or because the person believes that the norm extends to particular cases to which it should not apply (e.g., relative pacifism, euthanasia).

This classical classification results primarily from the criterion of the intensity of disobedience. In a social context, the most intense form of disobedience is revolution, while the least intense is conscientious objection. This classification can be further illuminated by one that characterizes different forms of disobedience on the basis of the same criterion and also in a general form, but somewhat more differentiated and descriptive (Hanson & Fowler, 1971, pp. 173-174):

1. At the first level, we can talk about permissible legal forms of non-conformity with the existing regulation. In this case, the legal entity opposes a particular legal norm but expresses its disagreement within the permissible legal framework;
2. At the second level, it is possible to identify disobedience that is clearly (intentionally) illegal. Still, the person expressing their disagreement does not agree to any legal punishment for their behaviour. In such cases, the person is convinced that certain legal norms, government policies or some of the state institutions are unlawful, unjust, etc;
3. At the third level, there are forms of dissent that do not relate to a particular norm or area of law or policy but are aimed at a general reform of social institutions. In these cases, it is much more difficult to justify the reasons for resorting to this form of disobedience, given the complexity of the reform demanded;
4. At the last level, there is revolutionary disobedience, which is no longer just about the desire for reform but about the desire for a radical transformation of society based on alternative principles and values.

3 Conscientious Objection and Civil Disobedience

The concept of conscientious objection is best illustrated by comparing it with the concept of civil disobedience. Bay (1971, p. 226) points out that at least the following five meanings of the term "civil" are equally legitimate for the context under consideration:

1. The term "civil" can refer to the recognition of the general duties of citizens and, thus, to the legitimacy of the existing legal order as a whole. Sanctions that are used to limit the disregard of individual legal norms or state policies and to prevent violence can, therefore, (but need not) be justified as an affirmation of general civic duties.
2. The term civil can be the opposite of the term military in the broader sense. In this respect, civil disobedience is usually understood as an expression of the principle of non-violence.
3. The term civil can also be understood as the opposite of uncivil or uncivilized, resulting in the requirement that acts of civil disobedience must embody the ideals of civilized and moral behaviour of citizens.

4. The term civil can refer to the public as opposed to the private. This gives rise to the principle of the public practice of civil disobedience.
5. The term civil may also lead to the conclusion that disobedience is aimed at such changes in the political system that affect not only individual or group freedoms, but the freedoms of all citizens.

Taking into account the above and also the views of other authors, civil disobedience can be narrowly defined as individual or group-based conscious, public, reasoned and non-violent resistance to legal regulations or official decisions with the desire to enforce illegal but legitimate social values, while at the same time consenting to the legal consequences of such disobedience (cf. Rawls, 1989, p. 64; Perenič, 1990, p. 704; Bedau, 1971, p. 205; Bay, 1971, p. 225). Looking at the individual structural elements of this phenomenon in more detail (Rawls, 1989, pp. 64-66; Raz, 1986, p. 269; Bedau, 1971, pp. 197-205; Bay, 1971, pp. 225-228), civil disobedience can be defined as:

1. Illegal act (an act that violates the Constitution and/or the law). In this case, a disputed legal provision may be directly violated or a legal provision that is not the subject of a protest may be violated (e.g., a group of citizens publicly expresses their opposition to a particular criminal or administrative law provision by violating traffic regulations);
2. conscious conduct, which means that all elements of civil disobedience are the result of a conscious decision by the actors;
3. public action carried out in a public place and in a way that appeals to the public;
4. reasoned action because without a reasoned explanation of the purpose and meaning of a particular act of civil disobedience, it is not possible to adequately legitimize it;
5. usually a political action by which a socially weaker group (a minority or a majority subordinate to a stronger minority group) seeks to enforce its political demands by exerting pressure on authorities or other bodies with decisive political power;
6. a value-oriented act, because those involved in civil disobedience invoke a general social sense of justice or another general social value that they believe the existing legal order and political authorities do not sufficiently take into account;

7. usually an act of last resort, which means that all legal means and measures must have been exhausted (unsuccessfully) beforehand in order to achieve the desired changes;
8. usually a non-violent action, which means that citizens prevent the enforcement of certain legal regulations in the form of so-called passive resistance. Non-violence can also be defined more broadly, namely in such a way that an action that is in itself non-violent must not be intimidating;
9. an action whose aim is to achieve the required change in the legal order or the political activity of the state authority.

At this point, the problematic character of some of the elements mentioned should at least be briefly pointed out. Raz (1986, p. 275), for example, is of the opinion that civil disobedience is not only justified when it is an act of last resort, a public and non-violent act, and so on. According to him, in certain circumstances, it is not essential that civil disobedience be practiced only as a last resort because it may be justified earlier in support of a just end, as it is often even less socially harmful than certain legally permissible acts of dissent (e.g., a prolonged strike in an important branch of national industry or service). According to Raz, even the claim that civil disobedience must necessarily be public, non-violent, etc.,[1] can only mean an attempt to routinize this phenomenon and a tendency to transform civil disobedience into a regular form of political action to which everyone would be (legally) entitled. The exceptional character of civil disobedience is exactly the opposite because in a democratic state governed by the rule of law it is a political act to which individuals and social groups have no legal claim (Raz, 1986, p. 275). The latter position is particularly controversial (e.g., Dreier, 1981, pp. 200 ff.). However, one should generally be aware that civil disobedience and conscientious objection are only politically and legally tolerated to a considerable extent in a democracy. In a democratic system, the political and legal reaction of the authorities to such behaviour by civil society groups and individuals in a spirit of non-violence and partial tolerance towards the excesses of civil society and free individuals is not radical. In contrast, in authoritarian and totalitarian systems, where free individuals and civil society associations are virtually non-existent, such actions are usually

[1] Bay (1971, p. 228) is of the opinion that civil disobedience can also be violent, provided, of course, that the methods and means of force used are carefully selected and limited.

suppressed with extreme violence and cruelty using police or military force, and dissidents are usually also subject to very severe criminal sanctions.

If we now turn to the central concept of this article, we see that conscientious objection is similar to civil disobedience in some elements but also differs from it in many respects and thus represents a relatively specific phenomenon. In general, conscientious objection is the individual's rejection of legal (constitutional, statutory or administrative) commands and prohibitions (Rawls, 1989, pp. 66-67), whereby the similarity of this concept to that of civil disobedience lies above all in the conscious and non-violent behaviour, which is usually also an "ultima ratio" behaviour. In contrast to civil disobedience, conscientious objection is characterized above all by (ibid.; cf. Sagi & Shapira 2002, pp. 186-182):

1. that, as a rule, it is not an appeal to the majority social sense of justice or any other general social value, because here the individual acts primarily according to his individual moral conscience, regardless of whether or not this agrees with the morality of the larger community;
2. for this reason, conscientious objection is not usually a public act, which of course does not mean that such an act is always hidden from public view, but rather that the individual does not intend to draw public attention to it;
3. conscientious objection is not necessarily or predominantly based on political principles or demands, as it is generally based on the individual's personal moral, religious and other convictions.

There is, therefore, no particularly sharp distinction between civil disobedience and conscientious objection, as some of their structural elements often overlap to a certain extent. One of the things they have in common is that in both cases, people who express their rejection of the legal order or policy agree to legal sanctions. However, despite the similarities and affinities between the two concepts, it should be emphasized that the above-mentioned differences between the two phenomena are important and, to a considerable extent, essential distinguishing features that require the two phenomena to be treated separately and, in some cases, with different criteria.

4 Nature of the (Right to) Conscientious Objection

For a deeper understanding of conscientious objection, it is not enough to define its essential elements analytically, but it is necessary to delve deeper into the actual nature of this phenomenon, in which all the elements mentioned and others are interwoven into a complex unity. Within this complex unity, the personal morality of the individual is usually of decisive importance. Therefore, we will refer to this complex whole in a broader sense as morality. By its very nature, the right to conscientious objection is not a legal right but a human (natural) moral right,[2] whereby illegality is, by its very nature its basic element. Conscientious objection is, principally, a moral rejection or protest against a legal regulation to which the individual's morals are firmly opposed. Only in exceptional cases is a situation possible and viable in which a politically and legally organized society permits conscientious objection to certain legal norms to a very limited extent, thus enabling their unsanctioned implementation.

If, for example, we define conscientious objection as a human natural right, we mean only the legitimacy of that natural necessity of every individual to oppose his moral postulates to positive (valid) legal norms. As said before, conscientious objection can be recognized to a very limited extent by positive law as a permissible exception to general legal norms, but it is by no means possible to understand conscientious objection as a fundamental human legal right. The reason why the right to conscientious objection in the rational sense is primarily a moral right arises from the fact that conscience as such is a moral phenomenon, which makes it possible to define conscientious objection authentically only in terms of morality.[3]

[2] As will be explained below, from the perspective of authentic morality this »right« is actually a »moral duty«, because in the dimension of morality the right is only a rational reflex of moral duty.

[3] The distinction between conscientious objection and conscientious objection on principle is not discussed in this article, as this question would require special treatment. A basic and framing explanation is contained in the summarized definition of the distinction between the two phenomena in Black's Law Dictionary (1990, p. 304), where it states: "A conscientious scruple against taking an oath, serving as a juror in a capital case, doing military duty, or the like, is an objection or repugnance growing out of the fact that the person believes the thing demanded of him to be morally wrong, his conscience being the sole guide to his decision; it is thus distinguished from an 'objection on principle', which is dictated by reason and judgment, rather than the moral sense, and may relate only to the propriety or expediency of the thing in question."

Moral conscience is the moral inclination and ability of a person to feel and judge the good and the bad (evil).[4] Since moral conscience responds to and extends to legally regulated dimensions as well as ethical, political, religious, and other normative dimensions, it seems to some extent that conscientious objection is also part of these other dimensions. On the surface, then, moral conscience extends to those normative human dimensions that are existentially more externalized than morality (e.g., law, politics, practical ethics, custom) on the one hand and to normative dimensions that are existentially even deeper than the moral dimensions (e.g., spirituality, religion) on the other. However, if the phenomena are viewed strictly analytically (discriminatively), moral conscience in its authentic essence is exclusively a moral phenomenon. Therefore, the objection of conscience is, by its origin and fundamental nature, a moral phenomenon and concept.

At this point, it should be pointed out that from the broadest and deepest philosophical-ontological perspective, moral conscience itself is not really authentic as a moral category, since as such it is only an artificially (rationally) isolated section of the all-encompassing Reality. From a holistic perspective (as far as the limited human mind can conceive it), consciousness is an inseparable part of the whole of existence. But in the sensory-rational reflection of man, who perceives the Oneness or Unity of all that exists (monistic concept) only indirectly, i.e. through many particularities and individualities (dualistic/pluralistic concept),[5] the part of consciousness that defines good and evil is the main carrier of the human moral dimension. In this sense, the part of a person's consciousness that triggers the

[4] Various philosophical, religious and other views on the concept of conscience are presented, for example, by Sruk (1985, pp. 211-212). See also LaFollette (2017, pp. 48-53), who discusses when someone should act according to their conscience.

[5] To illustrate the "relationship" between monistic and pluralistic concepts, we can use the well-known example of the relationship between the ocean (the Whole) and the drops of water and groups of drops of water in it, which represent innumerable individualities and particularities. Each individual drop or group of drops forms an awareness of its separate and rounded identity (being), while temporarily losing the awareness of its actual fusion with the Whole. With the help of this simile, we can perhaps more easily understand that in a subjective and relative sense there are innumerable individual and collective dimensions of consciousness, which on the one hand exist only apparently, being an inseparable part of the Whole, and on the other hand are real at the level of the consciousness that is not aware of the Whole. In this sense, the parts of our relative and subjective social reality are also many different kinds of individual and collective human consciousness expressed through various social norms, such as religious, moral, ethical, customary, political and legal norms. Since all these normative aspects of consciousness are in fact part of the same and indivisible Reality (the Whole), all these social norms are inherently interrelated and interdependent. But due to the different needs of society at the present stage of civilizational development, where individual and collective social consciousness is still deeply rooted in individuality and particularity (drops and groups of drops), it is theoretically and practically necessary to distinguish between moral, legal, religious, political and other types of particular normative consciousness and to maintain an appropriate dynamic balance and coherence between them.

recognition of good and evil in an individual and his reactions to it is authentic as such only as moral formation.

In such a perspective and context, conscientious objection is torn between the moral and legal spheres, which are separate in the rational view, but in the holistic sense are inseparable parts of the same Whole. When a person enters the world of law within the framework of a dualistic or pluralistic view of the human world, they leave the world of morality and, thus, the original dimension of the abode of moral conscience. If we start from our everyday rational, i.e. differentiating perspective, in which morality and law are predominantly or completely separate normative areas (dimensions), we find that the moral dimension creates conscientious objection, while the legal dimension generally prohibits it systematically. Only in exceptional cases can conscientious objection be legally permissible to a limited extent in some areas.

For a true understanding of conscientious objection, it is not only important to know its authentic moral nature, but above all to know that conscientious objection in its authentic manifestation is not a moral "right" as it appears in rationalized (reflected) morality or ethics, but in its authenticity is the moral duty of the individual. In fact, the individual must express his rejection of the law when he is prompted to do so by a moral necessity arising from his moral conscience. As a rule, people are of course, aware that we must obey legal norms even if our morals contradict them. However, if the moral imperative and the resulting inner sense of duty of the individual are so strong in a particular case that the individual assesses and decides that he or she must follow their personal moral imperative and not the law, this leads to an objection of moral conscience, which manifests itself in the disregard or violation of one or more legal norms. In such a case, the tension between the unacceptable legal norm and his personal moral attitude is so strong and unbearable for the individual that he decides to resolve this inner conflict in favour of his own morality, even though he knows that he will receive a legal sanction as a result. In this context, the concept of morality is to be understood in a broader sense, which also includes various philosophical, religious and other values or world views that are essentially linked to and conditioned by the moral core of the human being, i.e. his moral conscience.[6]

[6] By way of illustration, it should be noted that, for example, conscientious objection to military service in the United States and also in other Western democracies was initially only recognized on the basis of individual religious grounds (Bay, 1971, p. 238).

As soon as we get to the moral core of a person, we can no longer identify individual rights and duties in this core separately and correlatively[7] because both merge here into a unity for which it is impossible to find a completely adequate term in the established terminology. In the following, I call this unity of right-duty "moral duty", which is the inner tendency of an individual to act in accordance with his moral conscience in such a way that he must and may act in a certain way at the same time. From a moral point of view, the individual feels and understands his moral duty to conscientious objection as his moral right, which from his subjective point of view justifies his disagreement with the law and thus, his individual rebellion against the legal norm even more strongly. Thus, if in the sphere of law, right and duty are seen as two separate and correlative phenomena,[8] in the deeper cognitive spheres of the human world (e.g., morality, intuition, belief in God) the relationship between right and duty is increasingly one of interpenetration, fusion and ultimately even identity.

5 Consequences of Conscientious Objection

Regarding the question of the consequences of an individual's behaviour according to his moral conscience, the question arises whether actions based on moral conscience are to be evaluated subjectively or objectively. From the monistic-holistic sense, the answer is superfluous, because the differences between phenomena and perspectives are transcended in the unified Whole. However, since our discussion must naturally be considered within the context of an interpersonal, emotional-rational and social framework, it makes sense to find an answer within this framework that best corresponds to the nature of morality and law in their confrontation brought about by the objection of moral conscience.

In such a context, three criteria must be considered in order to understand and judge the permissibility of acting according to conscience. First, a subjective criterion is crucial for understanding conscientious action, for only if we know the subjective impulses and motives of a person's moral conscience can we understand his reaction to them. However, regarding the question of the permissibility of a person's

[7] The correlativity of rights and duties is particularly characteristic of law (various forms of this correlativity are described, for example, by Hohfeld, 1923, pp. 23 ff., 65 ff.), which, as a predominantly rational formation, is also based on many other dualisms or correlations, such as creditor - debtor, plaintiff - defendant, conviction - acquittal.
[8] Leonid Petražicki, one of the pioneers of the psychological conception of law, states that the imperative-attributive (duty-right) dualism is one of the essential elements of law as such, while in the dimension of morality only imperative emotions appear in people (quoted by Podgorac, 1981, pp. 64, 79).

behaviour based on their moral conscience, we encounter two situations in which we must apply two additional criteria:

a. At the level of legal judgment, the decisive objective criterion is the one that informs us whether such conduct of an individual is in accordance with the law, or, if we are in an area where the law allows greater leeway for the free conduct of legal subjects, whether such conduct of an individual is at least not contrary to the law. In this case, the subjective aspects of the individual's moral thinking and feeling may be relevant as accompanying circumstances that may affect the aggravation, mitigation or even waiver of a legal sanction. As a rule, however, they cannot change the objective fact that the individual has violated one or more legal norms by refusing to act for reasons of moral conscience.

b. At the level of objectified moral judgment, which is formed within the framework of an externalized collective morality (e.g., village morality, worker morality, student morality or a morality formed on the basis of a particular professional code of ethics), the objective criterion is also decisive. In a community or a professional group or an organization, the moral judgment of the majority is decisive. However, this objective criterion is naturally much more strongly interwoven with the subjective evaluations and prejudices of the social group that accepts moral judgment than in law. Unlike in law, where, for example, a judge judges the illegality of conscientious objection on the basis of officially published and content-specific legal and other rules, in the field of collective morality, there are generally far fewer clear criteria (even ethical codes are generally shorter and less explicit and unambiguous than legal and other legal norms) on that a social group or its representatives can rely to decide whether or not conscientious objection is genuinely moral.

In the following, the consideration of conscientious objection as such will be limited mainly to the relationship between the moral and the legal dimension. In this relationship, law and a person's moral conscience can either coincide in content (e.g., legal and moral condemnation of murder) or be indifferent to each other (e.g., legal regulation of units of measurement or a critical moral reaction to a friend's unfulfilled promise of a family visit), or they can be in conflict with each other (e.g., a person's moral conscience opposes a legal prohibition, commandment or sanction). Freedom of conscience, which is highly legally recognized in democratic

political systems where human rights and the rule of law are respected, includes the moral conscience of the individual, but in any legal system, freedom of conscience is also limited by the rights and freedoms of other subjects, as well as by the public interest and similar legally protected values.

If an individual violates legal norms by acting out of conscience, this must be punished with a prescribed legal sanction, unless the law expressly provides for other possibilities. Even if an individual claiming conscientious objection still sincerely believes that he is acting (morally) right and that the legal norms are unjust, unacceptable, etc., that individual implicitly agrees to respect the legal norms of that (state-organized) society by his conscious participation in organized society. If we agree to a different logic, i.e. the logic of the legal arbitrariness of individuals, we thereby deny the possibility of a legally organized society. The latter is imperfect in many ways (like everything in this world) and causes many frictions between the personal moral views of individuals and the positive legal regulation, but for a sustainable and civilized life in society such a solution is necessary. Of course, a particularly authoritarian or totalitarian, and therefore downright inhumane and violent, law can at some critical point lead to wider and more serious collective forms of discontent and even rebellion by members of society.

The conflict between personal morality and the legal system can be vividly illustrated by the example of infanticide. If, for example, a mother voluntarily takes the life of her mentally and physically severely handicapped newborn child, she does so because she (subjectively) believes that this is the best solution for her and, above all, for the newborn child. The mother's moral assessment is that this action has more good than bad (evil) consequences. Her conscience, which has dutifully led her to such an act, is a central moral criterion for her, so the mother has a predominantly "clear conscience", at least from a subjective point of view,[9] even if she has committed murder (infanticide) according to legal and ethical standards. According to the legal criteria under which infanticide is a criminal offence, it is

[9] Of course, the mother's moral conscience, in conjunction with her rational consciousness, is usually internally torn in such a serious case, as she is aware of the pronounced value bipolarity of such an act, which represents "rescue" on the one hand"and the arbitrary killing of another human being, even her child, on the other. In such and similarly difficult cases, "clear conscience" therefore only means that the mother's subjective balance of emotion and rational judgment was predominantly oriented towards infanticide, even if she was aware that such a decision would be judged as unacceptable and reprehensible, at least predominantly, from the perspective of collective (communal, social) morality.

indisputable that the mother has to bear the criminal responsibility for this act and must be punished accordingly. Her legal status as a natural person gives her the right and the duty to be treated in accordance with the law of the state to which she formally belongs. If, for example, a medical doctor were also to assist the mother in killing the child, he would not only be acting unlawfully but also against medical ethics, whereas on his intimate personal moral level, his own moral conscience would also be decisive as a criterion for him.

Remaining at the level of comparing morality and law, we can say that authentic morality (as opposed to ethics and law) is essentially individualistic. Of course, morality is strongly socially conditioned, since the individual inevitably forms his moral attitudes through the process of socialization. However, every moral decision that an individual makes is always the result of their personal (intimate, subjective) judgment. In contrast to morality understood in this way, law is by its nature and essence a social, collective phenomenon. For this very reason, law also assumes, to a certain extent, the function of an enforced collective moral or ethical evaluation of the individuals' actions. If the individual cannot be instructed or convinced that, for example, murder, theft and lying are immoral actions because his moral conscience is not sufficiently developed in this respect or is deformed due to various social and other factors, at least the majority of such actions must also be prohibited by law (e.g., as criminal acts such as murder, theft or slander), whereby it is logically and institutionally assumed that every psychophysically sufficiently developed (adult) individual must be subject to such legal norms.

Kant and Hegel were among the first to systematically reflect in legal philosophy on such a necessity of the subordination of a member of society to the law of that society and in their specific way provided a legal philosophical basis for the legal principle of generality and consequently the principle of legal equality in modern law. Hegel (1989, p. 100) believed that the legal sanction imposed on a criminal is not only just in itself, but is simultaneously the right of the criminal himself, grounded in his existing will, in his behaviour. It follows from the criminal's mental act that the legal punishment is something general, that with it a certain law is established which he has recognized for himself and under which he can therefore be subsumed under his right (Hegel, 1989, p. 100).

Hegel's conclusion, which refers to the objection of conscience, also fits in with this. Hegel describes those groups of people (above all certain religious communities) who do not agree with the fulfilment of a state-imposed legal duty to defend against the enemy as active members of civil society. Concurrently, however, Hegel believes that they cannot be members of the state because of their failure to recognize state obligations (Hegel, 1989, p. 389). To a certain extent, the state is tolerant towards these people and allows them to fulfil their civic duties in other ways (Hegel, 1989, p. 389). This is in line with the above statement that such disputants do not enter the dimension of (national) law in this respect, but remain only within the framework of morality according to their own view. In such a case, legal punishment is not their right because, from their authentic moral point of view, external punishment is not relevant to them. This does not mean that the community or society cannot punish them, but it does mean that they cannot punish them in an authentic moral way, because the only truly authentic moral sanction (punishment) is only the suffering of their (own) guilty conscience.

Thus, in such a Hegelian spirit, when we consciously enter the dimension of law, the legal sanction for our illegal action becomes not only our right, but also a corresponding duty for the one who is obliged to determine and guarantee it. This is vividly illustrated by Kant's (1967, p. 139) hypothetical case of society's self-dissolution. Even if a society decided to dissolve itself (e.g., all its members would leave the island on which they lived and scatter all over the world), according to Kant, every murderer awaiting execution in prison should be punished beforehand (with the death penalty), for only then would everyone get what he deserved by their deeds, and the blame would not fall on the collective people. In this respect, we must agree with the findings of Zupančič (1985, p. 62), who says that the criminal has violated the norm *in concreto* and the society that would refrain from punishing this criminal would violate the norm *in abstracto*, and the latter violation deserves a much stronger condemnation. An abstract violation of a norm has a generalizing effect *pro futuro*, while a concrete violation is an individual act irretrievably lost in the past (Zupančič, 1985, p. 62). The individual act of a criminal should not be condemned until the abstract norm is generally respected by society (ibid.).

As indicated above, the essential difference between a legal and a moral sanction is that the former can only be imposed on a person "from the outside" (which does not mean that the punished person cannot internalize it, i.e. accept it autonomously),

whereas an authentic moral sanction can only act "from the inside" - i.e. as an auto-sanction in the form of suffering under a guilty conscience. The only authentic moral sanction is therefore one that man imposes on himself[10] after he has realized that his thinking or behaviour violates his own moral conscience and duties. A moral, ethical or legal sanction imposed on him "from the outside", i.e. by other individuals and the wider community or social institutions, is not actually a moral sanction for him in the proper sense, but only a more or less expected external reaction of others to his thinking or behaviour. If an individual acts morally according to his own judgment, his own moral conscience and his own duty, then everything that contradicts this is extra-moral (a-moral) for him. In other words, it is not anti-moral (which is usually referred to as immoral), because, from an individual subjective point of view, a person can only be anti-moral if they themselves act in contradiction or disagreement with their own moral conscience. A morally acting person therefore judges the morality of another person not only from the perspective of his own morality but also, as far as possible, from the perspective of the morality of this specific other person. This does not mean that a morally acting person will not act, e.g. admonish, criticize or otherwise take verbal or physical action against someone whom they themselves judge to be acting immorally, but in doing so they will only be fulfilling their moral, ethical or legal duty and not denying from the outset the fact that the perpetrator of the immoral behaviour may also be acting entirely in accordance with their own moral conscience. Although it may sound paradoxical, a person who acts sincerely in accordance with his moral conscience should be respected in this regard, even if simultaneously we do not respect him or even strongly condemn him from the point of view of our different personal morality, the morality of the community and ethics or law.

From the point of view of the dualistic and pluralistic ontological conception mentioned above, morality is also only one of many normative dimensions of an infinitely plural world and is also infinitely dual (plural) in itself. The fundamental dualism of morality manifests itself in the distinction between good and evil and then in the positive and negative definitions of the innumerable manifestations of good and evil. Since the balance of good and evil never rests in man as an imperfect

[10] The suffering of a guilty conscience as an inner moral punishment of a person manifests itself in the human psyche in various ways, but can also manifest itself externally in various forms, e.g. when a person inflicts physical pain on himself due to feelings of guilt, verbally condemns himself in front of others, renounces certain advantages, isolates himself from society, etc.

and, at the same time dual and plural being, it happens repeatedly with every individual that he doubts his moral convictions and attitudes and the moral actions he performs and experiences them, especially in rational reflection, at one time as moral and at another time as immoral. This can be illustrated by the opposing principles of yin and yang as they are understood in Chinese Taoist thought (Kjels, 1990, pp. 43-71), which is characterized by the fact that each of them, even in its greatest intensification, always contains a part of the opposite principle. On the one hand, this reminds us that each individual's authentic moral values and attitudes can change over time depending on social, personal and other circumstances, and on the other hand, it tells us that each person's authentic moral choice carries at least a hint of uncertainty or doubt that it is definitely right.

There are also many collective (communal, etc.) moral codes that represent established (objectified) average moral values and norms in a given time and space. But any territorial, class- or group-based or otherwise socially bounded collective morality is in fact inauthentic, so it can somehow be categorized between authentic morality and law. It is inauthentic because not all its members share common moral values and attitudes. Even if, for example, in a village, a religious community, a student organization or in the field of public administration, there are shared moral values and norms among the members of such a social community or organization, this does not generally mean that all these members inwardly (subjectively) fully identify with these values and norms. In fact, some or many of them may have completely different personal moral views, but for fear of being criticized or excluded from the community or organization, they submit to the prevailing moral values and views, which are either an expression of the moral views of the majority or the imposed views of the leading members of the community or organization. Such collective morality is on the one hand consensual, a compromise, but it can also be imposed by dominant individuals or leading groups, so that it cannot be defined as authentic morality. On the other hand, such a collective morality differs in many respects from law, which is characterized by many formal and substantive peculiarities.

There is a genuine collective morality only to the extent that the individual moral concepts are clearly similar in their value and rational content. Although they have the same deepest origin, which is intuitively perceptible, they are only markedly similar at the level of the cognitively limited and, therefore subjective superficial

feeling and thinking of individuals. Therefore, (every) authentic moral community comprises people who value, feel and think in a markedly similar (related) way. Such a community can be called an authentic moral community. This does not mean that the morality of such a community is objectively or absolutely correct, for each such community defends its own morality. Nor are such true moral communities territorially or functionally rounded, for moral kinship knows no spatial, social-organizational or temporal boundaries. The common denominator of true moral communities is therefore a similar (related) moral evaluation, thinking and behaviour, so that these communities are not connected to each other, e.g. territorially (village community, etc.), class-wise (farmers, workers, townspeople, etc.), profession-wise (physicians, judges, civil servants, journalists, etc.) or within another territorial, functional or institutional framework.

It is also important to understand that no code of professional ethics can correspond to an authentic morality since it is the product of an agreement within such communities, in which there can be no real (complete) moral consensus due to the diversity of its members.[11] A code of ethics is merely an expression of a certain objectified morality, which usually comprises average existing and agreed (compromise) moral norms, which are also supplemented by certain formal elements, such as the adoption and publication of the code in written form, the formal definition of certain bodies (e.g., ethics committees) and procedures and sanctions for cases of breaches of ethical norms. Significantly, the content of ethical codes naturally influences the development of authentic moral views of individuals, especially those who are (professionally) bound by the respective code, just as, on the other hand, the authentic moral views of individuals influence the content of the codes and also the law.

Finally, in this context, we do well to remember that authentic morality is the most internalized compared to collective (communal) morality and law, since its values and views are most closely linked to the deeper psychological and spiritual layers of a person (intuition, emotions, sense of distinction between good and evil and other psychological feelings), while collective morality and, to an even greater extent, law

[11] Thus, for example, we can in principle agree with the argument that a conscetious objection is unethical when healthcare practitionars treat patients only as means to their own spiritual ends (Dickens, 2009, p. 337), but this objective approach is not persusasive for objector who according to his or her spiritual view sincerely morally feels and beleives that his or her concrete treatment of patients, which others condemn as unethical, is morally justified.

are based on rational and other more external human and social factors. This means that authentic, personal morality is a much stronger inner motivating factor for a person than collective morality, ethics and law. This can often be seen in conscientious objection. For example, conscientious objectors who justify their disobedience on personal moral, moral-religious and similar grounds (e.g., regarding issues of euthanasia, abortion or pacifism) are much more persistent in their behaviour and willing to make greater personal sacrifices than those objectors who justify their behaviour in the more external spheres of worldview.

6 Some Basic Guidelines for the Legal Judgment of the (Right to) Conscientious Objection

Here, the focus is on six basic guidelines that are important for the legal evaluation or assessment of conscientious objection. All these guidelines must be considered in the interrelated and wider context of all the factors and circumstances of each specific case.

First, conscientious objection is only legally permissible to a limited extent. The state can indeed eliminate the need for conscientious objection if it regulates social conditions through legal acts in such a way that the goods for which potential conscientious objectors stand up are generally protected. For example, there is no need for conscientious objection to military service if the state does not prescribe or abolish general service. However, if a legal act directly guarantees the right to conscientious objection, then such a right can only have the character of an exception to the rule. The general legal authorization of conscientious objection would be inherently contradictory from a legal standpoint, since conscientious objection is by its very nature directed against the law. The law must therefore limit the right to conscientious objection, if it is expressly defined as such, at least by a relatively restrictive definition of the scope of its enforcement and by prohibiting the objector from interfering with the rights of other legal subjects.

In the Constitution of the Republic of Slovenia, such a restrictive approach is found directly in the second paragraph of Article 123, which restricts conscientious objection only to the performance of military duties,[12] and indirectly and in principle

[12] Article 123 (Duty to participate in national defence) of the Constitution reads: *"(1) Participation in the national defence is compulsory for citizens within the limits and in the manner provided by law. (2) Citizens who due to their religious, philosophical, or*

in Article 46,[13] whose provision restricts the right to conscientious objection by prohibiting interference with the rights and freedoms of other persons, but generally leaves it to the legislator to define the concrete cases in which conscientious objection may be invoked. The legislator is, therefore, responsible for correctly assessing the nature of conscientious objection and defining its scope.

Second, in the concrete assessment of the sincerity, factual basis and legal admissibility of a conscientious objection, in cases where such an objection is generally legally admissible under certain conditions, it is appropriate for the representative of the authority to decide in favour of the individual's expressed (subjective) point of view in cases of doubt and to recognize his right to conscientious objection. The sincerity and subjective validity of the conscientious objector's expressed point of view cannot, of course, be entirely reliably and truthfully verified. Thus, the person deciding on the refusal must, on the one hand, endeavour to understand and take into account the individual's (subjective) reasons for the refusal and, on the other hand, prevent a possible deliberate deception and dissimulation of the individual.[14]

The point of the individual on which he bases his conscientious objection must of course also be assessed in the light of all legal criteria, in particular the relevant provisions of legal acts and established legal practice, and only a conscientious objection which meets these criteria should be upheld. In case of doubt, if the competent person is not sure whether the conscientious objection is authentic and meets the legal criteria, he or she must, as stated, give precedence to the statements or interpretation of the objector.[15] Such a position sensibly follows the general democratic norm of the recognition of freedom, according to which the individual in a democratic system and in a state governed by the rule of law is in principle

humanitarian convictions are not willing to perform military duties, must be given the opportunity to participate in the national defence in some other manner."

[13] Article 46 (Right to conscientious objection) of the Constitution reads: *"Conscientious objection shall be permissible in cases provided by law where this does not limit the rights and freedoms of others."*

[14] To find out whether a conscientious objection is authentic (true) in a particular case, we should not be satisfied only with the superficial assertions of the person concerned, but we must find out why and to what extent an individual's belief in the rightness of his behaviour is central to his personal dignity or self-respect, according to Raz (1986, pp. 280-281).

[15] Murray (1971, p. 334), for example, thinks along the same lines when he says, with regard to selective conscientious objection, that the right to (selective) conscientious objection must also be guaranteed for the possible mistaken belief of the individual, because otherwise it cannot be said that this right is guaranteed at all (this statement can also be applied to conscientious objection in general).

permitted any conduct that is not expressly prohibited by law and that does not interfere with the rights and freedoms of other subjects.

The objective (more precisely: objectified) criteria for assessing the validity of conscientious objection, which result from legal acts and established interpretations and norms of the competent state authorities, appear at first glance to be even more important than the subjective criterion, i.e. the will of the objector. This appears particularly convincing if one subscribes to the view that the individual's claim to the rightness of an act is always also the demand for permission or even authorization of this act by others (Prosch, 1971, p. 218). In this case, the universalistic tendency of an individual's expression or behaviour may pose a threat to a certain part of the legal order (e.g., if it leads a large number of like-minded individuals to behave illegally). However, the fallacy of such a position is revealed by the fact that in such a case - according to the definition presented in the introduction – it is no longer conscientious objection, but one or another form of civil disobedience by which an individual calls for general criticism or rebellion against the existing system. As explained in the introduction, conscientious objection does not in itself have such a universalist and activist tendency, so it does not in itself threaten the existence of a valid legal regime. Considering these and other characteristics of conscientious objection, it is therefore more appropriate, in general and especially in cases of doubt, to emphasize a subjective criterion in its assessment, i.e. the identification and evaluation of the authentic will of the objector. However, the subjective criterion should not prevail if the person making the conscientious objection is insincere and manipulative, or if his or her justification for the conscientious objection is clearly exaggerated or unreasonable.

Third, when deciding on the permissibility of conscientious objection, certain limits of principle must always be taken into account in addition to the limits expressly laid down by law. It necessarily follows from the previous discussion that the right to conscientious objection cannot encompass those phenomena which, although related to this form of protest, are nevertheless substantially different, such as various forms of civil disobedience. It has also already been explained that the right to conscientious objection cannot be a general human right in the sense that it would legally allow the individual to assert conscientious objection in all legal relationships and that it must not interfere with the rights of other people as legal subjects. In

addition, the following two general restrictions on the right to conscientious objection must be considered:

a) A behaviour or position that compels a person to conscientious objection must be imposed on him in whole or at least in part (a typical example is the obligation to serve in the army), otherwise, the objection cannot be invoked. For example, if someone voluntarily and knowingly chooses the profession of judge and the role of criminal judge, they cannot claim conscientious objection to imposing more severe criminal sanctions without an explicit legal basis, even if their objection may be morally understandable and acceptable in individual cases. Of course, exceptional or complex situations are also possible in such cases, for example if only a narrower and outstanding area of a judge's powers is morally unacceptable to him or if, for example, a severe penalty (e.g., life imprisonment or the death penalty) was only imposed by law after he took office. It is therefore necessary to resolve such cases by considering all specific characteristics and circumstances, of course, taking into account the applicable legal regulation.
b) The individual's conscientious objection must be based on his conviction that he is protecting the highest values, such as life, health, safety, freedom or privacy. In this case, the subjective criterion (the value judged by the individual) is the main criterion in the evaluation, but the reasons of the conscientious objector for the refusal must not be false or, manifestly exaggerated or unreasonable.

Fourth, conscientious objection can be expressed both actively and passively.[16] For example, the objector may actively oppose the regulation through certain outwardly recognizable conduct (e.g., protesting in writing or orally against his conscription into the army) or passively express his objection (e.g., a physician who, without justification but clearly consciously and knowingly, refrains from providing medical care to a terminally ill patient). The indication that conscientious objection can be expressed actively or passively is of practical importance, especially if the objector is

[16] This distinction must not be confused with the difference between negative and positive conscientious objection (see Saporiti, 2015, pp. 420-423), where negative conscientious objection consists in the faculty of neglecting a prescribed legal duty for reasons of moral conscience (for example, the physician's conscientious objection to an abortion), whereas positive conscientious objection can consist in the capacity to perform an act prohibited by law, or in the power to enact a valid legal act for reasons of conscience, even though the law would not normally uphold the effect of the act - such a power could be attributed, for example, to the Constitutional Court in the context of constitutional review (Saporiti, 2015, p. 422-423).

passive in that he does not wish to explain his objection. In such cases, it is important to check whether the objector is concealing their true reasons for refusal due to shame, prejudice, fear or similar reasons.

The principle of recognizing the possibility of passive conscientious objection obliges us, in the case of a violation of the legal norm, to treat an accused at least potentially as a possible objector on the basis of his moral conscience. We must do so despite his passive behaviour if there are indications that his moral conscience may be a reason for such behaviour. The competent official who decides in such a case must therefore use all permissible and appropriate means and methods to determine, on the basis of the circumstances of the case and an appropriate discussion with the person concerned, whether his conduct is to be regarded as a conscientious objection. Of course, no one may force a person to define an act as conscientious objection, even if there are convincing external indications of this.

From a legal point of view, in cases where an explanation (justification, reasoning) for the objection on the part of the opponent is completely lacking (such cases are of course rare in practise), it is decisive whether the legal acts expressly prescribe admissible grounds for the objection and their justification. If the regulations are silent in this respect, it makes sense, in the spirit of acting in favour of the individual's freedom of conscience as already explained, to legally take into account an objection of conscience for which the objector has not given any explanation, if there are convincing external indications that it arises from his moral conscience.

Fifth, in interpreting the right to conscientious objection, a distinction must be made between the moral and the legal understanding of conscientious objection. In addition to what has already been said, it should be emphasized here that the law always presents its own concept of conscientious objection. This can be seen in the already mentioned example of the second paragraph of Article 123 of the Constitution of the Republic of Slovenia, according to which citizens who are not willing to perform military duties due to their religious, philosophical or humanitarian convictions[17] must be given the opportunity to participate in the national defense in other ways. This provision has not been relevant in Slovenia for

[17] As I said, in a broader sense, the (value) intersection of these views relevant to conscientious objection can be characterized by a common denominator: morality. Only when the various forms of these views are differentiated as the moral conscience of a concrete individual can such views be asserted as conscientious objection.

a long time, as compulsory military service was abolished more than 20 years ago. But this example of a legal regulation clearly shows how the legal norm (in this case a constitutional provision) refers to extra-legal sources to justify a legally permissible conscientious objection, while the concrete relevance of these sources is ultimately defined by the law, more precisely by legal decisions accepted by competent state or other authorities or authorized individuals.[18]

In the event that the declaration or conduct of a person asserting a conscientious objection is not decided by an authorized person, commission or state body that would expressly legally permit or deny that objection, it must be assumed that the declaration or conduct of the holder expressing the conscientious objection is the individual legal act on the basis of which he exercises that specific right. For example, in order for a healthcare worker's conscientious objection to be taken into account in Slovenia, it is sufficient under the law for the healthcare worker to inform the institution in which he or she works (more on this below). In the event of a legal dispute over a particular conscientious objection, the final decision on the admissibility of such an objection will of course always lie with the person or institution responsible, with the court deciding in the last instance.

Despite the fact that the authentic moral understanding of conscientious objection is subjective, this understanding is objectified in law, since it is based on legal criteria which naturally take moral criteria into account to a large extent. This does not contradict the point that the subjective view of the individual takes precedence in law when it comes to assessing the validity of conscientious objection, because this subjective view is already a priori placed in an objectified (legal) context within the framework of the law.

Sixth, if conscientious objection is legally impermissible, the objector must be found guilty by operation of law, unless it is a case of minor social importance in which the state waives its legal consideration. After the conviction, it is then possible and

[18] At the time when general (compulsory) conscription was still in force in Slovenia, against which conscientious objection was permissible, according to Article 43 of the then valid Conscription Act (Official Gazette of the Republic of Slovenia, No. 108/02 - official consolidated text), the validity of each specific conscientious objection was decided by a special commission in which a social worker, a psychologist, a doctor and representatives of administrative bodies responsible for internal affairs, defence matters or protection and rescue made decisions. Their concrete decision on conscientious objection meant the legal recognition of conscientious objection and thus the reduction of concrete moral conscientious objection to a common denominator which represented an intersection of the various professional, legal and personal criteria of the members of the commission.

appropriate, if the particularities of the individual case permit or require it, to apply mitigating mechanisms to the legal sanction. If the judge were to acquit the conscientious objector in the case of conscientious objection, he would thereby deny him his existence within the framework of the law. With Hegel, one can philosophically say that, on the one hand, the judge would deprive him of condemnation and punishment as his legal rights; on the other hand, he himself would violate the law (the latter violation could also mean a legally inadmissible conscientious objection by the judge under the conditions mentioned).

In the liberal and humanistic spirit of modern law, this categorical position of Hegel must admittedly be softened, for in the case of an inadmissible objection, a legal conviction suffices for "fulfilment in the world of law", while the penalty may or may not be imposed (the judge may also acquit the convicted person of the penalty). This view, which sees at least part of the sanction (punishment) already in the conviction itself, is controversial. Still, it makes sense in cases in which the exercise of conscientious objection does not lead to harmful consequences or these are minor. It, therefore makes sense for the judge or another state authority to condemn the unlawful conscientious objection legally but only impose a mild penalty for it or not impose the penalty at all if the legal system permits this. Of course, remission or mitigation of punishment for conscientious objection should not be a fundamental legal guideline or principle but only an option in specially justified cases.

7 The Refusal of Artificial Abortion on Grounds of Conscience in the Slovenian Constitutional and Legal System

The last part of this paper will consider the case of conscientious objection to artificial abortion in the Slovenian legal system. Article 55(1) of the Slovenian Constitution stipulates that the decision to give birth to a child is free, and this provision also includes the right of women to an artificial abortion.[19] A doctor's refusal to perform an abortion on grounds of conscience is therefore a refusal against a constitutional legal norm (and not only against a legal norm) in the Slovenian legal

[19] Although the constitutional text itself does not explicitly mention the right to abortion, this right is included in this provision. The official explanation of the draft constitution of the Republic of Slovenia of December 19, 1991, states that the freedom in Article 55 "also includes ... the right of women to an artificial termination of pregnancy." It also states that the State must ensure the availability of medical and other services for the exercise of this and other rights covered by this freedom. This interpretation of Article 55 of the Constitution has been consistently followed in practice by the relevant government bodies, health institutions and individuals.

system. Concurrently, the legal basis for such conscientious objection in Slovenia is already enshrined in the Constitution, as Article 46 of the Constitution states that conscientious objection is permitted in cases defined by law if it does not restrict the rights and freedoms of other persons.[20] Despite the fact that physicians' right to conscientious objection is more precisely defined at the legislative level (according to the law, conscientious objection is also allowed for other healthcare workers, but for the purposes of this article, the focus will be only on physicians' conscientious objection), the legal and general legitimacy of this institute[21] is much stronger due to its explicit general constitutional basis.[22]

Article 56 of the Health Care Act stipulates[23] that a physician or other health care professional may refuse to perform a medical procedure if he/she considers that it is "not in accordance with his/her conscience and the international rules of medical ethics." This is a general right (entitlement) of the physician to invoke conscientious objection in relation to his/her medical activity, which means that the physician is thus given a legal basis for refusing an artificial termination of pregnancy on grounds of conscience. Article 56 also stipulates that the doctor must inform the medical institution of his or her conscientious objection. The latter must take the doctor's decision into account, while at the same time giving patients the opportunity to exercise their healthcare rights, which means that a woman who wishes to have an artificial abortion must be provided with the services of another doctor in the exercise of her constitutional right. Article 56 also stipulates that a physician (medical worker) may not refuse to provide emergency medical assistance.

[20] Some general observations on the conditions and limits of medical conscientious objection as an expression of the physician's freedom of conscience are presented by Ciuca (2017, pp. 23-24).

[21] As the right to an induced (artificial) abortion is always controversial in a society, the legal right of the physician to refuse such or any other medical intervention may also be controversial (see, e. g., Campbell, 2011). Munthe & Nielsen (2017) present arguments for and against a legal right to conscientious refusal for healthcare professionals and take the position that the idea of a legal right to conscientious refusal in medicine or any other profession is either fundamentally incompatible with elementary legal-ethical requirements or implausible because it undermines the functioning of a related professional sector (healthcare) or even a society as a whole. On the consequentialist and deontological arguments for and against conscientious objection by physicians see e.g. Cummins (2021, pp. 249-250).

[22] The explicit legal basis for the legal regulation of conscientious objection in Slovenia, as a member of the European Union, is also given at international level, in the second paragraph of Article 10 of the Charter of Fundamental Rights of the European Union (18 December 2000 – 2000/C 364/01), which states: "The right to conscientious objection is recognised in accordance with the national laws governing the exercise of this right.

[23] Healthcare Act (Official Gazette of the Republic of Slovenia, No. 23/05 - official consolidated version, 23/08, 58/08 - ZZdrS-E, 15/08 - ZPacP, 77/08 - (ZDZdr), 40/12 - ZUJF , 14/13, 88/16 - ZdZPZD, 64/17, 1/19 - odl. US, 73/19, 82/20, 152/20 - ZZUOOP, 203/20 - ZIUPOPDVE, 112/21 - ZNUPZ /21 - ZDUPŠOP, 100/22 - ZNUZSZS, 141/22 - ZNUNBZ, 76/23 - ZNUZSZ-A, 196/21 - ZDOsk - ZDOsk-A, 84/23 - ZDOsk-1, 136/23 - ZIUZDS, 35/24).

This regulation is supplemented by the provisions of the Medical Service Act,[24] which only apply to physicians (medical doctors) and not to other health workers. According to Article 49 of this law, a physician may refuse a medical intervention if he considers that it is both not compatible with his conscience and that it is not an emergency medical aid. This law therefore does not mention the international rules of medical ethics as a possible legal basis for the refusal of a medical intervention (i.e. for the refusal on grounds of conscience), which is incompatible with Article 56 of the Healthcare Act. Thus, the question remains open whether in this case, according to the principle of *lex specialis*, only the provisions of the Medical Service Act for physicians are to be observed, or whether the provisions of the Healthcare Act, which apply to all health care workers, also apply to physicians, which would of course be logical and reasonable from the nature of the matter, because it is difficult to imagine that physicians in particular, unlike all other health care workers, should not refuse a medical intervention that they consider to be a violation of the international rules of medical ethics.

The statutory regulation does not expressly provide for a special review of the validity of the physician's conscientious objection, e.g., by the doctor's superior or another superior organ of the institution or a special commission. Of course, this does not preclude the possibility that, if the physician is employed by a healthcare institution, his or her superior could not or should not assess the validity of the physician's conscientious objection because it would be manifestly insincere, false or otherwise objectionable in principle (e.g., if a physician refuses to perform a medical procedure on a patient by invoking his or her own conscience when he or she has previously performed the same medical procedure on other patients on a regular basis).

The legal regulation takes into account a subjective criterion, namely the doctor's own assessment of what is consistent with his conscience or medical ethics. It is only a genuine (authentic) conscientious objection if the doctor refuses the medical intervention in accordance with his moral conscience.[25] However, if he does so in

[24] Medical Service Act (Official Gazette of the Republic of Slovenia, No. 72/06 - official consolidated text, 68/06 - ZSPJS-F, 58/08, 15/08 - ZPacP, 107/10 - ZPPKZ, 40/12 - ZUJF, 88/16 - ZdZPZD, 40/17, 64/17, 49/18, 66/19, 203/20 - ZIUPOPDVE, 206/21 - ZDUPŠOP, 199/21, 141/22 - ZNUNBZ, 136/23 - ZIUZDS, 35 /24).

[25] Theoretically, this concept overlaps with the concept of identity, according to which one retains one's moral integrity if and only if one's actions are consistent with one's core moral convictions. Wicclair (2017) notes that the concept of identity is subject to a number of criticisms and objections, such as that it lacks a social component and

accordance with the provisions of Article 56 of the Law on Health Care out of the conviction that a certain medical intervention is incompatible with the international rules of medical ethics, objective criteria already appear in the assessment, since the norms of international medical ethics are objectified as common ethical denominators and as such are already a matter of rational interpretation. This interpretation must take into account the established professional norms and standards that are considered compatible or incompatible with international medical ethics in medical doctrine and practice. In doing so, the individual does not act exclusively according to his (intimate, authentic) moral conscience, but also according to rational professional considerations in relation to the objectified criteria mentioned above.

At the same time, the question arises as to whether the provision of the Healthcare Act sets moral conscience and international ethical rules as a cumulative or alternative condition for conscientious objection. The conjunction "and" suggests the cumulative conditionality of conscientious objection with both conditions, but the logical and purposive (teleological) interpretation of this provision argues rather for an alternative standard, because if conscientious objection were always to be directed simultaneously against both the physician's (moral) conscience and the international medical ethical rules, this would in many cases make the physician's authentic objection, i.e. objection solely on the basis of his or her own conscience, impossible. At the same time, it could trigger procedures to determine whether a conscientious objection is really justified in the case of conduct that is incompatible with international medical ethics. In the event of a medical intervention that does not comply with the international principles and rules of medical ethics, an even more serious problem arises, because in such a case all physicians would naturally have to refuse the medical intervention, as they are all bound by international professional ethics. In such a case, it would be practically impossible to exercise the statutory obligation to ensure the desired medical intervention by another physician.

Since this article focuses primarily on the fundamental theoretical aspects of conscientious objection, a more detailed discussion of the legal issues mentioned above would go beyond the purpose and scope of this article. Therefore, in

is a concept of subjective rather than objective integrity, etc., but argues that none of the objections establish the unsuitability of the concept of identity in the specific context of responding to health professionals' conscientious objections and their requests for accommodation.

conclusion, I wish to briefly draw your attention to the provisions of Articles 31 and 81 of the Medical Service Act. Article 31 provides that a physician's declaration of conscientious objection must be included in the medical register, while Article 81 provides that a physician who does not make a declaration of conscientious objection under Article 31, but later claims such objection, must be punished with a fine of EUR 650 - 1,200. Such a legal regulation is clearly unconstitutional (cf. Šturm, 2019), as it contradicts the essence of the right to conscientious objection, which is a constitutional category and has a permanent and dynamic character, which means that it cannot be waived in advance. Conscientious objection cannot be accurately predicted in advance, since both medical activity and the moral conscience of the individual are by their very nature dynamic, changing phenomena. A physician cannot reliably predict which medical interventions his or her conscience will reject in the future. There are exceptions, including a physician's conscientious objection in the case of an abortion, where such a prediction is usually possible. The latter only applies if the physician is absolutely opposed to an abortion, i.e. in any case, but not only under certain conditions, which may also depend on unforeseeable life situations (e.g., if a physician is prepared to perform an artificial abortion on a woman who has been raped, the decisive factor for him will be whether it really was a rape, whereby the criterion of his conscience will not necessarily be legal criteria, and the physician will also not be able to wait for the final judgment of the court in such a case).

8 Conclusion

Conscientious objection is primarily a moral (and not an ethical or legal) category. In relation to law, it is the rebellion of an individual against certain legal norms that conflict with his moral conscience. Conscientious objection to military service differs in several respects from other forms of disobedience to authority, such as civil disobedience. As a moral phenomenon, conscientious objection is principally the moral duty of an individual to resist a particular political, legal or other norm of authority or behaviour. Conscientious objection can only be defined as a right in a rationalized reflection of morality (e.g., from the standpoint of community or other collective morality or from the standpoint of ethics), and above all in the sphere of law, which is based on the dualism of rights and duties (attributive-imperative character of law).

When assessing the (right to) conscientious objection, the following guidelines must be taken into account. First, conscientious objection may be legally permissible, but only to a very limited extent. Second, in the specific assessment of the sincerity, factual justification and legal admissibility of a conscientious objection, the subjective view of the objector should generally be given preference in cases of doubt. Third, in addition to the limitations expressly laid down in the legislation, certain guiding principles must be considered when deciding on the admissibility of conscientious objection, including (i) the finding that the situation compelling a person to conscientious objection is at least partly imposed on that person, and (ii) the finding that conscientious objection is based on the individual's conviction that he or she is thereby protecting important life values (such as life, health, safety or liberty). Fourth, conscientious objection may be expressed in an active or passive form. Fifth, when interpreting the right to conscientious objection, a distinction must be made between the (subjective) moral and the (objectified) legal understanding of conscientious objection. Sixth, if conscientious objection is legally impermissible, the objector must at least as a rule be sentenced to a legal penalty, and then it is possible and sensible, if the particularities of the individual case permit and require it, to apply mitigating mechanisms to the legal sanction.

In Slovenia, according to the Constitution and laws, a physician can (also) oppose performing an abortion on grounds of conscience. In this case, the subjective criterion for evaluating his decision is given priority. As a rule, his declaration is sufficient for the legal recognition of this decision, even if this does not mean that the sincerity and validity of this a person's decision need not be examined at all if there are obvious doubts about the credibility of this declaration. In the event of a physician's conscientious objection, the medical institution must provide the patient with access to another doctor who will perform the desired and permissible medical intervention. Concerning the legal regulation of a doctor's conscientious objection, a number of legal issues arise, among which the unconstitutional provision of the Medical Service Act should be highlighted, according to which a doctor is punished with a fine if he invokes a conscientious objection to a medical intervention that he has not already invoked in advance by making a general declaration in the medical register that he would exercise conscientious objection in such cases.

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Povzetek v slovenskem jeziku

Zadevni članek govori o teoretičnih vidikih ugovora vesti. Primarno gre za moralno kategorijo. Z vidika prava, gre za posameznikovo neupoštevanje določenih pravnih norm (načel in pravil), ki so v konfliktu s posameznikovo moralno vestjo. Ugovor vesti se od drugih oblik neupoštevanja oblasti, kot je denimo civilna neposlušnost, razlikuje v več vidikih. Kot moralni pojav je ugovor vesti, najprej in predvsem, notranja moralna obveznost posameznika, da se upre določeni politični, pravni ali drugi normi oblasti ali vedenja. Ugovor vesti je lahko dovoljen tudi z zakonom, vendar v zelo omejenem obsegu. Ugovor vesti je lahko definiran kot pravica samo v racionaliziranem zrcaljenju morale in predvsem v sferi prava, ki temelji na dualizmu pravic in obveznosti (atributivno-imperativni značaj prava). V članku so podrobneje obravnavani nekateri pomembni dejavniki za pravno presojo (pravice do) ugovora vesti in temeljni vidiki slovenske ustavne in pravne ureditve pravice do ugovora vesti pri splavu na strani zdravnika.

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SUBSTANCE USE DISORDER AND TREATMENT COURTS IN THE AMERICAN CRIMINAL JUSTICE SYSTEM

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Abstract The global issue of drug and alcohol addiction leads to the commission of crimes, wasted lives, and unnecessary deaths. Although judicial systems in every country are positioned to encourage treatment of this disease, the focus is too often on imprisonment. One promising alternative is "Treatment Courts," a relatively recent program in the United States. This program incentivizes citizens accused of crimes by providing rewards for successful completion. Beyond other benefits, this alternative to confinement provides reduced punishment, and in some instances, even dismissal of the offense. This article explores treatment courts and other emerging American alternatives to imprisonment.

Keywords
substance use disorders, alcohol and drug abuse, criminal justice system, treatment courts, United States of America

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1 Introduction

Drug and alcohol addiction can often be found at the heart of the American Criminal Justice System. In fact, without alcohol and drugs, the workload of the criminal justice system in the United States, and perhaps the world, would be greatly reduced. Many crimes are directly related to substance use disorders ("SUD"), while others are committed as a result of the offender using both legal and illicit substances. According to the National Institute on Drug Abuse, an estimated 65 percent the United States prison population suffers from a substance use disorder, while another 20 percent who did not meet the criteria for an addiction diagnosis were under the influence of drugs or alcohol when committing their crime.[1]

While certainly no universal "cure" or solution has yet been developed for a substance use disorder, certain alternatives to incarceration have proven to be of significant assistance to overcome this challenge. One under-used alternative is treatment courts, which provide specialized court dockets that allow the criminally accused to undergo long-term substance use treatment while under court supervision. Not only do treatment courts provide an effective alternative to incarceration, but in some instances may allow first time offenders to have their offenses dismissed and expunged. The current challenge lies in convincing those involved in certain criminal justice systems in the United States and other countries that have yet to adopt similar programs to more frequently adopt alternatives such as treatment courts instead of incarceration.

To better understand the issues surrounding addiction in the criminal justice system, one must understand the underlying elements. This article seeks to (1) explain substance use disorder, (2) identify the legal rationales of different forms of criminal punishment, (3) explore the roles of the lawyers involved in the criminal justice system, and (4) review the benefits of Treatment Courts.

[1] National Institute on Drug Abuse, Criminal Justice Drug Facts. Retrieved from https://nida.nih.gov/publications/drugfacts/criminal-justice (January 22, 2025).

2 Substance Use Disorder

To properly address this issue, one must first understand the definition of "substance use disorder," or as it is commonly abbreviated, "SUD." A substance use disorder has been defined as a "treatable mental disorder that affects a person's brain and behavior, leading to their inability to control their use of substances like legal or illegal drugs, alcohol, or medications."[2] Though often also characterized as an "addiction,"[3] the National Institute of Mental Health notes that symptoms of substance use disorder can be moderate to severe, "with addiction being the most severe form of SUD."[4]The U.S. Department of Health and Human Services has estimated 46.3 million people in America suffer from a substance use disorder.[4]

Because lawyers do not typically receive any medical or psychological counseling education, we must exercise caution not to provide medical advice, as doing so may bring additional harm to our clients. For example, defense attorneys should never advise a client to stop drinking or consuming intoxicating substances abruptly, as such advice could lead to serious health consequences to clients. In fact, acute, complete alcohol withdrawal may lead to significant health risks, or even death (Trevisan et. al, pp. 61-66). It is always preferable to instead refer a client to a medical health professional for evaluation and treatment.

In cases where the client does obtain a substance abuse assessment, it is also important to know how to interpret the results. In the United States, the most common resource used to diagnose mental health conditions, including substance use disorder, is the Diagnostic and Statistical Manual of Mental Illnesses (currently in 5th edition), also often referred to as "DSM-5."[5] An assessment will likely also

2 National Institute of Mental Health, Substance Use and Co-Occurring Mental Disorders. Retrieved from https://www.nimh.nih.gov/health/topics/substance-use-and-mental-health (January 22, 2025).
3 *See*: Mayo Clinic, *Drug* addiction (substance use disorder). Retrieved from https://www.mayoclinic.org/diseases-conditions/drug-addiction/symptoms-causes/syc-20365112 (January 22, 2025).
4 National Institute of Mental Health, Substance Use and Co-Occurring Mental Disorders. Retrieved from https://www.nimh.nih.gov/health/topics/substance-use-and-mental-health (January 22, 2025); U.S. Health and Human Services, SAMHSA Announces National Survey on Drug Use and Health (NSDUH) Results Detailing Mental Illness and Substance Use Levels in 2021. Retrieved from https://www.hhs.gov/about/news/2023/01/04/samhsa-announces-national-survey-drug-use-health-results-detailinghttps://www.hhs.gov/about/news/2023/01/04/samhsa-announces-national-survey-drug-use-health-results-detailing-mental-illness-substance-use-levels-2021.htmlmental-illness-substance-use-levels-2021.html (January 22, 2025).
5 *See:* Cleveland Clinic, DSM-5. Retrieved from https://my.clevelandclinic.org/health/articles/24291-diagnostic-and-statistical-manual-dsm-5 (January 22, 2025).

refer to the suggested treatment, based upon "ASAM Criteria." The abbreviation "ASAM" refers to the American Society of Addiction Medicine.[6] Taking the time to educate oneself about the criteria will help both lawyer and client better understand the results of an assessment. The ASAM website also has a link to a free brief assessment[7] to learn about what level of care might meet the client's needs. Defense lawyers may also refer this resource to the prosecution to help educate the government representative about the illness from which the client suffers. This is especially important when the results of the assessment indicate that the client does not meet the criteria for treatment.

3 The Legal Rationales of Punishment

Despite the large number of Americans who suffer from SUD, this condition is rarely considered when punishing those convicted of alcohol or drug related crimes. Rather than seeking to treat underlying addiction issues, the primary legal rationales of punishment used in the courts within the United States include: (1) Restraint/Incapacitation; (2) Rehabilitation; (3) Education; (4) Deterrence; and (5) Retribution (Cohen, § 1:5).

3.1 Restraint/Incapacitation

Restraint, of course, incapacitates the offender from potentially harming others and provides some retribution for violating the laws of society. The United States leads the world in total prison population according to World Prison Brief.[8] The problem, though, is that we cannot lock up these offenders forever. Once they are released, most will return to their prior habits and continue to violate the law. Clearly, those who suffer from substance use disorder are more inclined to re-offend because the underlying problem is never really addressed. This underlying SUD problem may be psychological, physiological, or, most commonly, simply undiagnosed.

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[6] *See:* American Society of Addiction Medicine, About the ASAM Criteria. Retrieved from https://www.asam.org/asam-criteria/about-the-asam-criteria#:~:text=The%20ASAM%20Criteria%20is%20the,addiction%20and%20co%2Doccurring%20conditions (January 22, 2025).
[7] Treatment connection, Addiction Treatment Needs Assessment. Retrieved from https://www.treatmentconnection.com/assessment (January 22, 2025).
[8] Prison Studies, Highest to Lowest - Prison Population Total. Retrieved from https://www.prisonstudies.org/highest-to-lowest/prison-population-total?field_region_taxonomy_tid=All (January 22, 2025).

Moreover, given the advances in technology, alternatives to this form of punishment readily exist at a cost that is minimal compared to incarceration. These alternatives include tamper-proof GPS tracker bracelets, continuous alcohol-monitoring (CAM) bracelets,[9] portable alcohol-monitoring devices,[10] and ignition interlock devices.[11]

At the very least, offenders should be provided an opportunity to only be incarcerated when not working at their regular employment (work-release). Accordingly, most, if not all, defendants are able to serve any confinement in a house-arrest environment using today's technology. Such options reduce the risk of the offender injuring others, and, particularly in the case of young offenders, avoids situations where jail inmates may convert an immature offender into a hardened criminal (Cohen, § 1:5). At least one study has verified that a non-residential program of house arrestees showed better results, with lower recidivism rates, than the residential program of community treatment centers (91.8 versus 73.8 percent) (Sandhu, H. S., Dodder, R. A., Mathur, M., pp. 131-144). If house-arrest and work-release were used more frequently, the savings in costs to the government alone would be enormous. Accordingly, incarceration should not be looked upon as the first solution.

While each of these alternatives to incarceration have their own advantages and disadvantages, one or more may also be used in conjunction with a court treatment program to promote rehabilitation and incorporate the offender into society as a sober, successful individual.

3.2 Rehabilitation

Establishing the goals of rehabilitation with a SUD individual should begin with an assessment of the offender's level of addiction/abuse followed by treatment. This may include detoxification group counseling, individual counseling and/or

[9] *See, e.g.:* Scram Systems, SCRAM CAM Provides Accountability and Encourages Compliance. Retrieved from https://www.scramsystems.com/monitoring/scram-continuous-alcohol-monitoring/ (January 22, 2025). Author's note: The author is a paid consultant for Scram Systems and LifeSafer.

[10] *See, e.g.:* Life Safer, Portable Alcohol Monitoring Device by LifeSafer. Retrieved from https://www.lifesafer.com/portable-alcohol-monitoring/ (January 22, 2025). Author's note: The author is a paid consultant for Scram Systems and LifeSafer.

[11] *See, e.g.:* Life Safer, What is an ignition interlock device? Retrieved from https://www.lifesafer.com/ignition-interlock-devices/what-is-an-ignition-interlock/ (January 22, 2025). Author's note: The author is a paid consultant for Scram Systems and LifeSafer.

counseling focused on re-integrating the offender back into society as a productive member of the community.

As part of rehabilitation, it is imperative that the offender show a strong commitment to the necessary treatment and continuing counseling in order to maintain sobriety. It is relatively easy for a court or probation officer to confirm an offender's commitment by requiring proof of treatment, ongoing aftercare, and/or random drug/alcohol screening.

Closely monitored supervised release (also known as probation or a "compliance program" (*See* the Deterrence discussion below) is an excellent way to monitor the rehabilitation of an offender. "When it is managed well, supervised release can serve the complementary goals of protecting the public and rehabilitating an offender who is returning to free society. Supervised release should not be an afterthought; it deserves careful and thoughtful attention from the sentencing judge."[12]

3.3 Education

Education, an often-ignored factor, is very important in preventing recidivism. This is especially true of crimes stemming from underlying substance use disorder. Many offenders may not yet have been diagnosed with a substance use disorder. Understanding one's diagnosis, as well as how consumed substances are processed in the human body is imperative to correcting future behavior. For instance, learning how various abused substances affect one's body and the period of time that one remains impaired after consuming the substance(s) helps an offender better understand the consequences of their actions. Some believe that it is equally important for offenders to understand how their actions affect not only their own families and acquaintances but also the families of their victims.[13]

[12] United States v. Lewis, 823 F.3d 1075, 1080 (7th Cir. 2016).
[13] *See, e.g.,* Mothers Against Drunk Drivers Victim Impact Panel. Retrieved from https://maddvip.org/(January 22, 2025). ("The purpose of the Victim Impact Panel (VIP) program is to help drunk and drugged driving offenders to recognize and internalize the lasting and long-term effects of substance-impaired driving. The classes seek to create an empathy and understanding of the tragedy, leave a permanent impression that leads to changes in thinking and behavior and prevents future offenses.")

3.4 Deterrence

In addition to fear of incarceration, monetary fines, or fear of losing civil liberties enjoyed in the U.S. (such as the right to carry a weapon), the restrictions associated with various types of probation are viewed as an actual deterrent. Typically, an offender on probation is required to regularly report to a supervisor (a probation officer) to ensure the probationer has not re-offended; is currently employed; and is otherwise in compliance with the court's conditions of release. These conditions often include items such as payment of fines and court costs, or service of volunteer community work.

Some members of society, however, characterize probation (also referred to as a "compliance program" by the American Bar Association[14]) as insufficiently onerous to deter future criminal activity. The threat of probation revocation, however, combined with other restrictions and/or punishment is generally sufficient in cases involving substance abuse. Probation revocation poses a very real risk of both easier apprehension and greater punishment than would otherwise be originally imposed. The key here is to consider both "special" deterrence as well as "general" deterrence to formulate an appropriate sentence for the defendant. To further explain, *special* deterrence includes conditions designed to deter the particular offender, while *general* deterrence is a broader concept focusing on punishment used to deter persons in general.

3.5 Retribution

Finally, in reference to retribution for damages caused by a criminal act, this factor can be accomplished without the need for incarceration. In fact, for most offenders, financial retribution can be more quickly produced if they are not incarcerated. This also provides the additional benefit of avoiding the real risk of being dismissed from the offender's job. Retributive justice may also be accomplished with volunteer community work, house-arrest, fines, and other alternatives. However, when dealing with this issue, each case must be determined upon its own facts.

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[14] American Bar Association Project on Standards for Criminal Justice, Standards Relating to Probation 1 (Approved Draft 1970); *Accord,* United States v. Lewis, 823 F.3d 1075 (7th Cir. 2016) (Supervised release is an important part of a federal criminal sentence, and, when managed well, can serve the complementary goals of protecting the public and rehabilitating an offender who is returning to free society.); State v. Le Veque, 426 P.3d 461 (2018) (Rehabilitation and public safety are dual goals of probation.).

There is a distinctly different (and perhaps much more effective) method related to the concept of fining the offender in some European countries. While the courts within the United States generally set fines for a certain type of offense to be within a certain range (*e.g.,* $50 to $2,500) without regard to one's actual income, some countries in the European Union (*e.g.,* Germany, Switzerland, and Finland) set fines for some crimes based on a percentage of the offender's income—arguably a much more equitable method of actual punishment for those with higher incomes.[15]

Furthermore, restitution to the victims is an important factor when sentencing these defendants. Surprisingly, most defendants feel the need to provide restitution to any party injured as a result of their actions. This allows a defendant to take responsibility and "forgive themselves" for their mistakes in judgment. In situations where a defendant is unable to make financial restitution, a court can easily sentence the offender to volunteer community work in an amount substantially equal to what they would have otherwise been able to earn have they been employed in their profession.

4 The Role of Defense Counsel, Prosecutors and Judges

Candidly, there is no one solution that fits every fact pattern. The burden to find a solution to the substance abuse problem our society currently faces rests in large part with the criminal justice system because those who suffer from a substance use disorder often find themselves as convicted offenders. Only rarely are they able to recognize and overcome this problem on their own. Accordingly, the lawyers involved as litigators, and ultimately the judge, must take on the role as problem-solvers to assist community efforts to address this epidemic within the boundaries of the criminal justice system. Let's briefly explore the obligations of each.

[15] *See generally:* Erasmus University Rotterdam, Should rich people pay a higher price for (traffic) violations? Retrieved from https://www.eur.nl/en/news/should-rich-people-pay-higher-price-traffic-violations (January 22, 2025); NBC News, Traffic fines based on wealth? Europe tries it. Retrieved from https://www.nbcnews.com/id/wbna34792272 (January 22, 2025).

4.1 Defense Counsel

Criminal defense lawyers in the United States must abide by their ethical obligations as dictated by each individual state. Generally speaking, however, the rules are at least loosely based on the Model Rules of Professional Conduct published by the American Bar Association.[16]

Unfortunately, some practitioners may believe that a client's potential substance use disorder may not play an important factor in the attorney's representation. In fact, some may argue that a defense lawyer's obligation to provide "zealous advocacy" trumps the necessity of identifying and addressing a substance use disorder. The Model Rules themselves, however, provide a more inclusive view. Interestingly, the rules do not compel counsel to provide a "zealous" representation. In fact, the words "zeal" or "zealous" do not even appear within the actual Model Rules of Professional Conduct themselves but are only included in the preamble and one comment (Harrington & Bennechi, 2021).[17] Additionally, in the Model Rules, an attorney's duty as "Counselor" (in Rule 2) precedes that of "Advocate" (Rule 3). Lawyers all too often narrow the focus of representation on their Rule 3 role as "Advocate," while failing to recognize the extent of the Rule 2 duty as "Counselor."

Model Rule 2.1: Advisor

Counselor

In representing a client, a lawyer shall exercise independent professional judgment and render candid advice. In rendering advice, a lawyer may refer not only to law but to other considerations such as moral, economic, social and political factors, that may be relevant to the client's situation.[18]

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[16] ABA, Model Rules of Professional Conduct - Table of Contents. Retrieved from https://www.americanbar.org/groups/professional_responsibility/publications/model_rules_of_professional_conduct/model_rules_of_professional_conduct_table_of_contents/ (January 22, 2025).

[17] *See also:* ABA Model Rules of Professional Conduct ("Model Rules"), Preamble, Paragraph 2, 8, and 9 Retrieved from https://www.americanbar.org/groups/professional_responsibility/publications/model_rules_of_professional_conduct/model_rules_of_professional_conduct_preamble_scope/ (January 22, 2025); Model Rule 1.3, Comment 1 Retrieved from https://www.americanbar.org/groups/professional_responsibility/publications/model_rules_of_professional_conduct/rule_1_3_diligence/ (January 22, 2025).

[18] ABA, Model Rules of Professional Conduct – Rule 2.1: Advisor. Retrieved from

It should be noted that this rule mandates that in addition to advising clients on the law as it relates to their case, defense attorneys are further obligated to render advice based upon other considerations to the client's situation, including "moral, economic, social and political factors."[19] Obviously, it is imperative that defense counsel learn as much as possible about the client's case in order to properly advise the client. This includes learning as much as possible about the client themselves.

A client's mental health condition (including SUD) may impact many facets of the case, including but not limited to:

- Hindering the client's ability to participate in their own defense. If a client suffers from SUD, the practitioner must be certain that the client is able to make voluntary and knowing decisions as it relates to his or her case at all relevant moments. Caution should be exercised to ensure that the client is not impaired when making critical decisions (*e.g.,* signing fee agreements, approving investigative expenses, signing plea agreements, waiving constitutional rights, etc.); and

- Impeding the client's ability to comply with orders of the court. One must know more than simply the facts of the case to be able to set a client up for success. Although some lawyers believe the greatest success may be an acquittal, defense lawyers do a disservice to their clients (and possibly violate their ethical duties) if they focus solely upon the ultimate result. Defense lawyers must take the time to understand their clients' limitations in relation to potential bond or probation conditions and seek alternative conditions when appropriate and possible.

    - The SUD may preclude the client's ability to comply with pre-trial court orders. For instance, these questions must be considered:
        - Was a bail bond condition ordered prohibiting consumption of alcohol?
        - Is a monitoring device required?

https://www.americanbar.org/groups/professional_responsibility/publications/model_rules_of_professional_conduct/rule_2_1_advisor/ (January 22, 2025).
[19] Ibid.

  - Will the client be able to comply?
  - If not, to avoid a bond violation, it may be necessary to have the client evaluated by a mental health professional to seek alternative solutions.
- The client's ability to satisfactorily complete conditions associated with a favorable plea agreement or with probation following a guilty verdict must also be addressed. A favorable plea reduction is not a successful result if your client is unable to mentally or physically comply with the conditions set by the court. Defense lawyers should also counsel their client about potential probation violation consequences.

So, how can criminal defense lawyers get to intimately know their clients and their backgrounds in practice? This requires asking questions not typically asked of clients. Such inquiries include, at a minimum, validated screens or assessments relating to general health, Alcohol and Other Drug Abuse (AODA), trauma, occupation history, medical history (including mental health), family dynamics, and/or general psychological issues. Such screening is available at a fairly low cost.[20] Defense lawyers should additionally investigate available treatment centers and consider sentencing options other than incarceration to fully mitigate their clients' punishment.

This author proposes that the ethical obligations of a criminal defense lawyer require a focus on both defending the allegations in court as well as rendering candid advice relating to the client's physical and psychological issues, if any. Many undiagnosed and untreated medical conditions can ultimately lead to serious physical harm—and a client suffering from SUD is no different. On a human level, criminal defense lawyers are generally known to care deeply about their clients, and should encourage those suffering from SUD to seek treatment and enter recovery. Lawyers should address a mental health condition arguably not only in terms of the personal well-being of their client, but for the ultimate well-being of the client's case. The argument, however, can be made that there is little distinction between the two.

[20] *See, e.g.*: Justice Story. Retrieved from https://www.justicestory.com/#overview (January 22, 2025); *see also,* Oberman, S., Taylor, L. §9.01[A] and Form 9-1.

Listening to clients and showing empathy goes a long way in helping a client overcome their disability. Note that intellectual clients tend to question everything asked or suggested by their attorney. This, however, is not a reason to avoid the conversation. At the very least, defense counsel should inquire, either verbally or via a questionnaire for the client to later complete, about their alcohol and/or drug use. Sample questions would include:

How much alcohol they consume daily/weekly?

Do they perceive that they have a problem with alcohol/drugs?

Have they ever consumed so much that they lost consciousness? and

Does their spouse, children, or extended family complain about their drinking?

The discussion between lawyer and client about mental health issues, and particularly SUD, can become uncomfortable for both—especially because lawyers are not trained mental health professionals. One approach to resolving this issue is having the client evaluated for substance abuse issues by a mental health professional. Too often, prosecutors not only immediately assume a client is guilty, but also assume that the client has committed crimes related to substance use many times before the current arrest. In fact, the United States Federal Bureau of Investigation reports that the average drunk driver has driven while under the influence more than 80 times before their first arrest.[21] Accordingly, it may be in the client's best interest to obtain an assessment early on in their representation so that an accurate depiction of the client may be presented to the prosecutor during plea negotiations when attempting to resolve the case prior to trial. Regardless of the assessment outcome, the results of the assessment may be used to provide an incentive to the prosecutor to agree to a compromise resolution that is favorable to the defendant. Furthermore, even if never shown to the prosecutor, the assessment itself may be sufficient to convince the client to undergo substance abuse treatment in order to ensure the client will comply with any pre-trial release conditions or probation requirements.

[21] *See, e.g.,* Fox 17, FBI: Average drunk driver has driven drunk more than 80 times before first arrest, Retrieved from https://fox17.com/news/local/fbi-average-drunk-driver-has-driven-drunk-more-than-80-times-before-first-arrest (January 22, 2025).

What about situations when the substance-abusing client appears for court while under the influence? At this point, defense lawyers must rely on their ethical obligations. The following ABA rule provides some guidance.

Model Rule 1.14: Client with Diminished Capacity

(a) When a client's capacity to make adequately considered decisions in connection with a representation is diminished, whether because of minority, mental impairment or for some other reason, the lawyer shall, as far as reasonably possible, maintain a normal client-lawyer relationship with the client.

(b) When the lawyer reasonably believes that the client has diminished capacity, is at risk of substantial physical, financial or other harm unless action is taken and cannot adequately act in the client's own interest, the lawyer may take reasonably necessary protective action, including consulting with individuals or entities that have the ability to take action to protect the client and, in appropriate cases, seeking the appointment of a guardian ad litem, conservator or guardian.

(c) Information relating to the representation of a client with diminished capacity is protected by Rule 1.6.[22] When taking protective action pursuant to paragraph (b), the lawyer is impliedly authorized under Rule 1.6(a) to reveal information about the client, but only to the extent reasonably necessary to protect the client's interests.

If the client is suffering from SUD to the extent that it negatively impacts their ability to make decisions and participate in their defense, counsel is ethically obligated to take special action to protect the client. The fact that SUD is a mental illness must not be overlooked, and when necessary, counsel must approach such clients with the special care required by our ethical rules. For instance, the substance abusing client may be exploiting the attorney-client relationship with numerous calls or visits to counsel when the client is under the influence. If the situation becomes overwhelming, defense counsel may need to terminate the relationship. In this

[22] ABA, Confidentiality of Information, Retrieved from https://www.americanbar.org/groups/professional_responsibility/publications/model_rules_of_professional_conduct/rule_1_6_confidentiality_of_information/ (January 22, 2025).

situation, practitioners may wish to review Model Rule 1.16[23] to reexamine one's duties as they relate to clients with diminished capacity.

4.2 Prosecutors

Prosecutors should also be open to alternatives to incarceration. From the perspective of both society in general, as well as from the defense, this means that when a plea offer is made, extra consideration should be given to those who agree to help themselves by undergoing a SUD assessment and/or treatment.

As American lawyers learn early on, the functions and duties of prosecutors in the United States are quite different from those of defense counsel. Perhaps it was best stated by the Tennessee Supreme Court in the case of *Foute v. State*,

[The prosecutor] is to judge between the people and the government; he is to be the safeguard of the one and the advocate for the rights of the other; he ought not to suffer the innocent to be oppressed or vexatiously harassed, any more than those who deserve prosecution to escape; he is to pursue guilt; he is to protect innocence; he is to judge of circumstances, and, according to their true complexion, to combine the public welfare and the saf[e]ty of the citizens, preserving both, and not impairing either; he is to decline the use of individual passions, and individual malevolence, when he can not [sic] use them for the advantage of the public; he is to lay hold of them where public justice, in sound discretion, requires it.[24]

This sentiment is also reflected in Standard 3-1.2 of the ABA "Criminal Justice Standards for the Prosecution Function."[25] Specifically, section (b) states,

(b) The primary duty of the prosecutor is to seek justice within the bounds of the law, not merely to convict. The prosecutor serves the public interest and should act with integrity and balanced judgment to increase public safety both by pursuing

[23] ABA, Declining or Terminating Representation. Retrieved from https://www.americanbar.org/groups/professional_responsibility/publications/model_rules_of_professional_conduct/rule_1_16_declining_or_terminating_representation/(January 22, 2025).
[24] Foute v. State, 4 Tenn. 98 (Tenn. 1916).
[25] ABA, Criminal Justice Standards: Prosecution Function. Retrieved from https://www.americanbar.org/groups/criminal_justice/standards/ProsecutionFunctionFourthEdition/ (January 22, 2025).

appropriate criminal charges of appropriate severity, and by exercising discretion to not pursue criminal charges in appropriate circumstances. The prosecutor should seek to protect the innocent and convict the guilty, consider the interests of victims and witnesses, and respect the constitutional and legal rights of all persons, including suspects and defendants.[26]

Section (e), however, is even more relevant to the topic of this article,

(e) The prosecutor should be knowledgeable about, consider, and where appropriate develop or assist in developing alternatives to prosecution or conviction that may be applicable in individual cases or classes of cases. The prosecutor's office should be available to assist community efforts addressing problems that lead to, or result from, criminal activity or perceived flaws in the criminal justice system.[27]

Accordingly, the prosecution should take measures to assist community efforts to address problems that lead to criminal activity. This may be accomplished by encouraging an assessment and treatment as outlined above for those suffering from SUD.

4.3 Judges

Finally, judges should be amenable to treatment options rather than limit sentencing choices to jail (*e.g.,* incapacitation) or deterrence (*e.g.,* probation). Monitoring alternative options will necessarily take more time and resources, but many of the time-consuming tasks can be primarily overseen by probation officers, or similar assistants to the courts. These treatment options can be made as a condition of probation, or as a sentencing option in lieu of jail. It is important for judges to participate in these programs. Judges hold a special role of authority not only in the criminal justice system, but in our society in general.

[26] Ibid.
[27] Ibid.

5 Treatment Options and Benefits of Treatment Courts

The treatment options available to the courts are numerous and diverse. They can be as simple and inexpensive (free) as Alcoholics Anonymous meetings,[28] which are available world-wide, or a similar alternative that can take place either in-person or online [29]; counseling by someone who is properly qualified and licensed to provide substance use disorder counseling;[30] intensive outpatient treatment;[31] inpatient treatment, which may provide safe detoxification treatment in addition to more frequent counseling over a period of weeks;[32] and/or treatment with the injectable drug, Vivitrol®, a long-acting (usually 30 days) form of naltrexone. While this drug is not appropriate for all individuals, many of the author's clients have had success with this drug, which works by blocking the euphoria that alcohol and opioids provide.[33]

There is, however, another treatment option that has been successfully implemented by some criminal justice systems in the United States. It is generically referred to as a "Treatment Court."[34] There are a number of variations of Treatment Courts, such as *Adult Drug Courts,*[35] "… the most carefully studied and well-proven intervention in [the United States] for leading people with substance use disorders out of the justice system and into lives of health and recovery";[36] *Veterans Court,* structured to address issues associated with those who have served or are currently serving in the

[28] *See, e.g.:* Alcoholics Anonymous, Have a problem with alcohol? There is a solution. Retrieved from https://www.aa.org/ (January 22, 2025).
[29] *See, e.g.:* Sober Recovery, 7 Popular Alternatives to Alcoholics Anonymous (AA). Retrieved from https://www.soberrecovery.com/addiction/5-popular-alternatives-to-alcoholics-anonymous-2/ (January 22, 2025).
[30] *See:* Treatment Improvement Protocol (TIP) Series, No. 65, Substance Abuse and Mental Health Services Administration, Chapter 4. Retrieved from https://www.ncbi.nlm.nih.gov/sites/books/NBK601481/ (January 22, 2025).
[31] American Addiction Centers, Intensive Outpatient Program (IOP): What is It & Find IOPs Near Me. Retrieved from https://americanaddictioncenters.org/intensive-outpatient-programs (January 22, 2025).
[32] Addiction Group, What is Inpatient Detox & How is It Different from Outpatient. Retrieved from https://www.addictiongroup.org/treatment/detox/inpatient/ (January 22, 2025).
[33] *See:* Drugs.com, Vivitrol. Retrieved from https://www.drugs.com/vivitrol.html (January 22, 2025).
[34] All Rise, About Treatment Courts. Retrieved from https://allrise.org/about/treatment-courts/ (January 22, 2025).
[35] *See generally:* ibid.; U.S. Department of Health and Human Services, What Are Drug Courts? Retrieved from https://www.hhs.gov/opioids/treatment/drug-courts/index.html (January 22, 2025); National Institute of Justice, Overview of Drug Courts. Retrieved from https://nij.ojp.gov/topics/articles/overview-drug-courts (January 22, 2025); National Treatment Court Resource Center, What Are Drug Courts? Retrieved from https://ntcrc.org/what-are-drug-courts/ (January 22, 2025); National Institute of Justice, Drug Treatment Courts. Retrieved from https://nij.ojp.gov/library/publications/drug-courts (January 22, 2025).
[36] All Rise, About Treatment Courts. Retrieved from https://allrise.org/about/treatment-courts/#adult-drug-court (January 22, 2025).

military;[37] *Impaired Driving Treatment Court,* which focuses on "… treating the underlying alcohol or polysubstance use disorders fueling dangerous behavior by repeat impaired drivers;"[38] *Family Treatment Court,* which "… provide[s] a pathway to reunification for parents who have lost or are at high risk for losing custody of their children due to child abuse or neglect related to substance use and/or mental health disorders;"[39] and others.[40]

There are in excess of 4,000 drug court programs currently operating within the United States, serving over 150,000 individuals each year.[41] It is estimated that this reduces crime by 58 percent, and US$6,000 are saved per participant by reducing recidivism.[42] Every state contains at least one drug court program.[43] While this may appear like a lot of programs and participants, consider that in 2018 and 2019, each, there were about one million arrests made in the United States for only the crime of driving under the influence of alcohol and/or drugs.[44]

Impaired Driving Treatment Courts estimate that 33 percent of drivers arrested for impaired driving have had a previous drunk driving arrest.[45] More disturbingly, over a half of drivers involved in serious/fatal crashes tested positive for at least one drug. The need to reduce recidivism is clearly apparent.

These treatment courts provide an "alternative to incarceration that combine[s] public health and public safety approaches to connect people involved in the justice system with individualized, evidence-based treatment and recovery support

[37] Ibid.
[38] Ibid.
[39] Ibid.
[40] Ibid.
[41] National Treatment Court Resource Center, What Are Drug Courts? Retrieved from https://ntcrc.org/what-are-drug-courts/ (January 22, 2025).
[42] All Rise, About Treatment Courts. Retrieved from https://allrise.org/about/treatment-courts/#adult-drug-court (January 22, 2025).
[43] National Treatment Court Resource Center, What Are Drug Courts? Retrieved from https://ntcrc.org/what-are-drug-courts/ (January 22, 2025).
[44] U.S. Centers for Disease Control and Prevention, Impaired Driving Facts. Retrieved from https://www.cdc.gov/impaired-driving/facts/index.html (January 22, 2025), citing Federal Bureau of Investigation "2018 Crime in the United States" and Federal Bureau of Investigation "2019 Crime in the United States."
[45] All Rise, Impaired Driving Solutions. Retrieved from https://allrise.org/about/division/impaired-driving-solutions/ (January 22, 2025).

services."[46] These treatment court programs can include many different conditions. Some of the more common conditions are:

a. Participation over a series of months (or longer) to establish and maintain long-term recovery strategies;
b. Frequent and random drug tests;
c. Clinical treatment for substance use disorders;
d. Individualized case management services, including finding low cost (or no-cost) treatment, connecting participants to employment opportunities, community service, pro-social activities, and education;
e. Required frequent appearances in court; and
f. Rewards for maintaining treatment plans and sanctions for failure to meet obligations.[47]

One of the tangential benefits of these Treatment Courts is that they allow participants to receive moral support from other offenders in the program. Participants remain in the program for a sufficiently long period of time to build relationships with others facing similar health and legal problems. Participants, as a group, encourage others to take the necessary steps to successfully complete the program with graduation ceremonies. Individual participants also provide encouragement before graduation by demonstrating to others that sobriety can be achieved and maintained. The author's informal discussions with treatment court participants indicate that this demonstration of long-term sobriety is as important, if not more important, than the graduation ceremony.

There is no universal model for drug court programs, but there are two common ways in which people enter drug court. In one model, defendants who meet eligibility requirements are diverted from traditional court proceedings into drug court prior to pleading [guilty] to a charge. This is commonly called pre-trial or deferred prosecution. In another model, defendants who meet eligibility requirements plead guilty to their charges, and their sentences are deferred or suspended while they participate in the drug court program. This model is referred to as [a] post-

[46] *See:* All Rise, About Treatment Courts. Retrieved from https://allrise.org/about/treatment-courts/#adult-drug-court (January 22, 2025).
[47] National Treatment Court Resource Center, What Are Drug Courts? Retrieved from https://ntcrc.org/what-are-drug-courts/ (January 22, 2025).

adjudication [deferral]."[48] Accordingly, whether pre-trial, a deferred prosecution (sometimes also referred to as a diversion), or post-trial adjudication, the benefit of successfully completing the treatment court program can be as beneficial to the participant as a dismissal, and often expungement (erasure from public record) of the charge.

However, in practice, dismissal or expungement is not always the case. Sometimes, a successful completion is a condition of a plea agreement to amend the charge to a different, usually less serious, charge before entry of a guilty plea. Completion may be required to amend the conditions of probation or to shorten the term of probation. Alternatively, it may simply be required as a condition of probation.

The drug [treatment] court programs are generally managed by a multidisciplinary team that may consist of a combination of judges, prosecutors, defense attorneys, substance use treatment providers, an evaluator, court coordinator, community supervision personnel, law enforcement officers, and social workers.[49] Support from others representing law enforcement, the family, and the community is encouraged through participation in hearings, programming, and events such as graduation from the program.

Extensive training is provided at little to no cost to those associated with the treatment court program. Some of the topics addressed in training include: Client Screening; Case Processing; Alcohol and Drug Testing; Incentives and Sanctions; Cultural Awareness; Improved Client Retention; Relapse Prevention; New Team Members; Team Building; Strategic Planning; Team Member Turnover; and Program Sustainability.[50] Other training topics include: Developing Eligibility Criteria; Performing Clinical Assessments; Developing a Treatment Plan; Supervising the Offender; Forging Community Partnerships; Judicial Considerations; Case Management Strategies; Addressing Transportation Issues; Evaluating the Program; and Ensuring the Program's Sustainability.[51]

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[48] Ibid.
[49] *See generally:* National Association of Drug Court Professionals. Retrieved from https://allrise.org/ (January 22, 2025).
[50] All Rise, DWI Court Technical Assistance. Retrieved from https://allrise.org/trainings/dwi-court-technical-assistance/ (January 22, 2025).
[51] National Center for DWI Courts, The 10 Guiding Principles of DWI Courts (2010). Retrieved from https://allrise.org/publications/the-10-guiding-principles-for-dwi-courts/ (January 22, 2025).

So, the next question is: how effective are these programs? Studies on this topic have focused on the drug court treatment programs.

The National Institute of Justice (NIJ) funds research on drug court processes, impact, and cost-efficiency. One evaluation tracked 10 years of cohorts in the Multnomah County [in the state of Oregon] Drug Court and found rearrests were lower five years or later for participants than for comparable individuals; however, reductions ranged from 17 to 26 percent across cohorts with changes in programming and judge assignments. NIJ's Multisite Adult Drug Court Evaluation found that programs significantly reduce drug use and criminal offending — both during and after program participation. Compared to traditional case processing and supervision, drug courts have higher investment costs, especially in treatment services. However, savings associated with victim and criminal justice system costs are more significant due to fewer crimes, rearrests, and incarcerations.[52]

Of course, treatment courts are not a panacea to prevent all recidivism. For instance,

Drug courts that target individuals with high criminogenic risk and high substance abuse treatment needs yield the most effective interventions and maximize return on investment. NIJ's Evaluation of Second Chance Act Adult Reentry Courts found mixed impact and cost results: one demonstrated reduced rearrests, reconvictions, and reincarcerations, meaning lower costs; whereas recidivism rates decreased but not significantly in two sites, and increased in the other sites, meaning higher costs. Also, program success may relate to consistent treatment resources for a target population with substance use disorders, wraparound services for multiple criminogenic needs, and judicial use of incentives and sanctions.[53]

However, even beyond the effectiveness issues, treatment courts require substantial funding, training, and personnel support. In the United States, a large majority of the funding is obtained from various governmental agencies.

[52] National Institute of Justice, Overview of Drug Courts. Retrieved from https://nij.ojp.gov/topics/articles/overview-drug-courts (January 22, 2025).
[53] *See* ibid.

Of course, legal challenges have also arisen. These include, among other issues, the right of participants to take their prescribed medications (including prescribed marijuana) while participating in a drug court program,[54] due process issues regarding the drug court procedures in terminating a participant,[55] and whether the imposition of sanctions by the treatment court constitutes double jeopardy or res judicata.[56] None of these legal challenges, however, seem to challenge the basic ideologies of the program or its effectiveness.

6 Conclusion

"Treatment courts demonstrate justice reform, they are on the front lines of the addiction and mental health epidemics, they help people overcome the odds and inspire the public, and they offer redemptive or human-interest stories as communities come together to support a graduate or hold a celebratory ceremony, and as families are reunited." (Deutsch & Neiberger-Miller, 2021, p. 4).

Despite relatively few challenges, treatment courts are making it clear that the team approach to formulating an individualized treatment plan for each participant combined with the accountability for the actions and long-term supervised treatment results in a reduction in recidivism. This option can ultimately save thousands of dollars for every enrolled participant. The savings can then be used by law enforcement to focus on violent criminals, or those who are not yet ready to become productive members of society. From the criminal defense/offenders' viewpoint, treatment courts provide an opportunity for offenses to be amended to lesser charges, reduce the conditions and/or terms of probation, and sometimes eradicate the offense from public record. Most importantly, though, the criminal justice system is taking measures to resolve the underlying problems of offenders instead

[54] *See* United States Attorney's Office Press Release, *U.S.* Attorney's Office Settles Disability Discrimination Allegations with the Massachusetts Trial Court Concerning Access to Medications for Opioid Use Disorder. Retrieved from https://www.justice.gov/usao-ma/pr/us-attorney-s-office-settles-disability-discrimination-allegations-massachusetts-trial (January 22, 2025); Gass v. 52nd Judicial District, Lebanon County, 232 A. 3d 706 (Penn. 2020)(permitting the use of medical marijuana by individuals under court supervision).

[55] Gross v. Maine, Case No. CR-11-4805 (Penobscot Sup. Ct. Feb. 26, 2013). (Participant has the right to notice of termination allegations and the evidence against him, right to call and cross-examine witnesses, a hearing at which he is present, a neutral magistrate, written factual findings and the right to counsel).

[56] Hickman v. State, 81 N.E. 3d 1083 (Ind. App. 2017) (Hickman not entitled to accrued time against his sentence for time spent in a halfway house as part of a reentry-court program); In re O.F., 773 N.W. 2d 206 (No. Dak. 2009)(Doctrine of double jeopardy did not prevent the juvenile court from punishing juvenile for committing delinquent act of mistreating an animal after he had already been sanctioned with additional community service by the juvenile drug court based on the same underlying conduct.)

of just sentencing offenders to jail. This solution frequently allows the offender to become more likely to re-offend in the future simply.

Case-law

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Povzetek v slovenskem jeziku

Globalni problem odvisnosti od drog in alkohola vodi v zagrešitve zločinov, zapravljanje življenj in nepotrebne smrti. Čeprav so pravosodni sistemi v vsaki državi postavljeni tako, da spodbujajo zdravljenje tega zdravstvenega stanja, je osredotočenost prevečkrat na zaporni kazni. Ena obetavna alternativa so t. i. 'zdravstvene oziroma terapevtske obravnave', ki predstavljajo relativno nov program v Združenih državah Amerike. Ta program spodbuja posameznike, ki so obsojeni storitve kaznivih dejanj, z zagotavljanjem nagrad za uspešen zaključek. Namesto da bi bili poslani v zapor so obravnavani v okviru sodnih sistemov, ki jim omogočajo dostop do zdravljenja, svetovanja in drugih podpornih storitev. Razen drugih koristi, ta program nudi tudi zmanjšano zaporno kazen, in v nekaterih primerih celo opustitev pregona. Članek raziskuje o sodiščih za zdravljenje in drugih novejših alternativah zaporne kazni v Ameriki.

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WRONGFUL BIRTH WITH SPECIAL REGARD TO HUNGARY

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Abstract Even though wrongful pregnancy and wrongful life claims are rejected by Hungarian courts, a wrongful birth action is permitted. According to the Curia's uniformity decision 2/2022, damages for wrongful birth are reduced to the costs of raising a disabled child minus the possible costs of rearing a healthy one. The disability rights critique is very strong from the US to the EU. Nevertheless, a violation of the parents' personal right to family planning requires compensation in the EU and in numerous US states. A wrongful birth claim does not discount the disabled child's human dignity.

Keywords
abortion rights,
damages,
human rights,
reproductive rights,
disability rights critique

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1 Introduction

The value of human life has always been a pivotal legal question. Legal scholars from centuries ago touched upon this topic in their writings (see, e.g. Montesquieu, 1995, p. 63). In previous centuries, the judiciary developed theories of the value of human life and applied those theories in criminal and civil law cases. The respiritualisation of the eastern part of the European Union brought new ideas into both legislation and judicial practice that largely differ from outdated state socialist reasoning. In Hungary, the human rights to life, health, family etc. were promulgated in the state socialist era; however, the judiciary rarely took them into consideration then. Human rights were merely ornaments of that legal system. The rule of law was also far from reality. At any rate, a variety of new human rights-based personal rights emerged both in legislation (Act IV of 1977 on Amending Act IV of 1959 on the Civil Code of the People's Republic of Hungary) and legal science (Sólyom, 1983). The development of personal rights in the 1970s was a remote cause of the paradigm shift in the late 1980s.

Presently, a wrongful birth stems from diagnostic negligence when the healthcare provider fails to timely recognise the foetus' genetic or teratological impairment, causing the parents to raise an impaired child. Since the child's wrongful life claim was likely to be rejected by United States (hereinafter: US) and United Kingdom (hereinafter: UK) courts as well as by European Union (hereinafter: EU) Member States' courts, a wrongful birth action remained the parents' last resort to obtain compensation for diagnostic negligence in obstetrics. In fact, the child's wrongful life claim represented by a guardian (usually the mother) mostly resulted in double compensation for damage suffered by the parents. In any case, the foetus has no right to be aborted; instead, abortion rights belong to the pregnant woman. Moreover, the child's existence does not constitute damage. These arguments extinguished the admissibility of a disabled child's wrongful life cause of action. The situation is similar in Hungary (see the Supreme Court's civil uniformity decision 1/2008) and in most other EU Member States. Although this kind of legal interpretation originates from the US, it is now an integral part of European legal culture.

In some lawsuits, it is difficult to differentiate wrongful birth from wrongful pregnancy (or wrongful conception). Wrongful pregnancy denotes the conception of a healthy child, while wrongful birth refers to a child with undesired disabilities.

If the conception of a foetus with disabilities is the outcome of a negligent genetic diagnosis of the parents and the child is finally born, the cause of action is a wrongful birth, not a wrongful pregnancy. During the legal history of medical negligence, wrongful pregnancy has also led to compensation. At present, in many countries, this claim is not accepted because a child does not represent damage either legally or ethically.

2 Historical Background

Even though we can find court decisions in the early 20th century that consider the value of an unwanted child's life *obiter dictum* (*Christensen v. Thornby*, 1934), wrongful birth lawsuits emerged from the advanced development of medical diagnostics, as shown by current medical malpractice litigation. When diagnostic options reached a high level of accuracy, the physicians' liability for diagnostic negligence arose. However, it would be many years before lawyers started to plead a lack of genetic diagnosis and until courts began to hold healthcare providers liable based on an act of omission. For many years prior to this time, medical negligence could only stem from a physician's active behaviour. The courts did not recognize a claim for medical negligence premised upon theories of either a misdiagnosis or the complete failure to diagnosis until the second half of the 20th century. Indeed, case law on medical negligence has evolved in parallel with advances in medical technology. Presently, the provider's civil liability is highly contingent on the diagnostic data contained in the healthcare documentation. The deficiencies of healthcare documentation can make it difficult, if not impossible, to exculpate the provider. This is the case because, based on the patient's "privileged case of inability to prove", conforming to §265 of Hungary's Code of Civil Procedure, the burden of proof is shifted to the defendant (see, e.g. Curia, 2019a). Döme (2022, p. 20), a Curia judge, held that the rule on the patient's "privileged case of inability to prove" should not automatically apply to all medical malpractice lawsuits.

In Hungary, the Curia (the name of the Supreme Court since 2012) did not begin to develop its practice tied to wrongful birth until the 21st century. The Curia's seminal decisions, legally binding for the entire Hungarian judiciary, consist of its decision of principle EBH 2015.P.11 (see *infra*) and its uniformity decision 2/2022 (see *infra*). Of course, Hungary had already recognized claims for wrongful birth much earlier. In state socialist Hungary in 1954–1956, abortion was completely prohibited by

Decree 1004 of 1953 issued by the Ministerial Council of the People's Republic of Hungary on "the protection of mother and child". From June 1956, abortion was legal under limited circumstances and when performed in public healthcare facilities. The limited circumstances included when the foetus was diagnosed as having probable disabilities, when medically indicated, among others (Tóth, 2022, p. 69). However, Hungary did not recognize wrongful birth lawsuits in those days. Instead, a large number of apparently impaired new-borns' lives were extinguished immediately after birth with or without the parents' knowledge. "Angel-making" was an illegal, though rarely prosecuted practice of infanticide in state socialist Hungary (Balogh, 2023, p. 34). Notwithstanding that the country's leaders were aware of this practice, no tangible countermeasures were taken. The litigation culture in Hungary at the time was doomed to perish, having been labelled as running counter to socialist morality. In such a legal environment, a wrongful birth action was unimaginable.

In the first wrongful birth case in the Federal Republic of Germany, the Landgericht originally recognized the parent's claim for wrongful birth stemming from a child born with disabilities because the mother had suffered from rubella in the first week of gestation, and which a negligent gynaecologist had failed to recognise. While the Oberlandesgericht rejected the parent's claim, in 1983 the Bundesgerichtshof ultimately ruled in favour of the couple (Bundesgerichtshof, 1983).

Schultz (2024, p. 189) states that, in the US, although neither the Constitution nor the Bill of Rights explicitly mentions or regulates abortion, as a result of the American Medical Association's activity, by the late nineteenth century abortion was illegal in most states. In the mid-1960s, a rubella epidemic advanced the cause of abortion in the US and as a result many states eased abortion restrictions (Heller & Ziyirova Abdijalilovna, 2024, p. 4). Arguably, abortion rights are a precondition of reproductive liberty and of derived rights, such as the right to indemnity for loss of the option to abort a foetus with disabilities. In the US, wrongful birth claims date back to the 1960s. At that time, abortion constituted a crime in most US states and could only be accessed if permitted by a therapeutic abortion review committee (Haqq, 2023, p. 303). In *Jacobs v. Theimer* (1975), the Texas Supreme Court held that the parents of a defective child had a cause of action for damages against a physician for alleged negligent failure to inform the mother during pregnancy that she had contracted rubella and therefore might have a defective child, thereby causing her to lose the opportunity to have an abortion. In Wisconsin too, wrongful birth claims

have been permitted since 1975 (*Dumer v. St. Michael's Hospital*, 1975). Both California's Supreme Court in *Turpin v. Sortini* (1982) and California's Second Court of Appeal in *Curlender v. Bio-Science Laboratories* (1980) recognised parents' right to damages for wrongful birth. In *Keel v. Banach* (1993), the Supreme Court of Alabama recognised parents' right to damages for wrongful birth. In *Tomlinson v. Metro. Pediatrics, LLC* (2018), the Oregon Supreme Court awarded damages to parents for wrongful birth. The situation is similar in New York (*B.F. v. Reproductive Medicine Assoc. of N.Y., LLP*, 2015), New Hampshire (*Smith v. Cote*, 1986), New Jersey (*Canesi v. Wilson*, 1999), Michigan (Mich. Comp. Laws Serv. §600.2971[4]), Nevada (*Greco v. United States*, 1995), Maryland (*Reed v. Campagnolo*, 1993), Louisiana (*Pitre v. Opelousas Gen. Hosp.*, 1988), Illinois (*Williams v. Rosner*, 2014), Florida (*Kush v. Lloyd*, 1992), District of Columbia (*Dyson v. Winfield*, 2001), Connecticut (*Chamberland v. Physicians for Women's Health, LLC*, 2006), Colorado (*Lininger v. Eisenbaum*, 1988), Arizona (*Walker by Pizano v. Mart*, 1990), Virginia (*Naccash v. Burger*, 1982), West Virginia (*James G. v. Caserta*, 1985), Washington (*Harbeson v. Parke-Davis, Inc.*, 1983), and Massachusetts (*Yanjun Li v. Davidson*, 2015) as well. In the US, Kiely (1990, p. 427) argued that, in the case of wrongful birth, parents who intended to have a child should only be compensated for the extraordinary costs of rearing a disabled child. In the US, Abrams (2022, p. 159) and in Hungary, Lábady (2006), share this opinion (see Budapest-Capital Regional Court, 2009).

In the UK, according to the Abortion Act 1967, Sec 1(1)(d), abortion may be performed until birth if "there is a substantial risk that if the child were born it would suffer from such physical or mental abnormalities as to be seriously handicapped".

3 Legal Attempts to Eliminate Wrongful Birth Claims

A number of legal essays have been published in which the authors advance arguments that wrongful birth claims should be disallowed on religious, ethical and political grounds. For example, in Austria in 2011, the Federal Minister of Justice submitted a bill to parliament to add a second paragraph to Allgemeines Bürgerliches Gesetzbuch, §1293, to stipulate that no one is entitled to compensation as a consequence of the circumstances of a child's birth, except if health damage was caused to the child during pregnancy or delivery (255/ME XXIV. GP – Ministerialentwurf). Ultimately, this amendment failed.

The "dignity" argument is advanced most frequently in support of the contention that parents should be denied the right to a wrongful birth claim. In the US, Valentine (2024, p. 215) contended that "A disabled person's life is no less dignified or worthy than a non-disabled person's life". In Hungary too, we find legal scholars opposing wrongful birth claims. For instance, Zakariás (2010, p. 668) contends that asserting a claim for damages on the basis of an increased burden for rearing a disabled child violates the disabled child's human right to dignity. Hámori (2018, p. 49-50) maintains that no damage arises from birth, even if the child is disabled and regardless of the extraordinary costs of child rearing; instead, not to be born constitutes damage. Navratyil (2023, p. 64) argues that court practice awarding damages for wrongful birth prioritises the parents' material interest over the interest of the child as a person with human dignity. The Hungarian Catholic Lexicon (2024) considers the killing of a foetus with disabilities as eugenics, a scientifically inaccurate theory formerly practised under National Socialism. The Lexicon asserts that the value of human life is precious even if the child is disabled. Nevertheless, the Hungarian judiciary still tends to award compensation to parents for wrongful birth (Budapest-Capital Regional Court of Appeal, 2022). Gombos (2012, p. 404–405), a Curia judge, argues that, in the case of wrongful birth, infringement of parents' personal right to family planning proceeds from the healthcare provider's omission to recognise the foetus' disabilities in due time to ensure the right to abortion.

In 2011, Mróz and Drozdowska (2011, p. 141) pointed out that the judiciary in Poland admitted parents' wrongful birth claims, while the disabled child's wrongful life claim was rejected. On 27 January 2021, the Constitutional Court of Poland practically eliminated this right when it cancelled the right to abortion on the basis of "a severe and irreversible foetal defect or incurable illness that threatens the foetus' life".

Interestingly, in Minnesota, the right to abortion has been upheld since *Dobbs v. Jackson* (2022), but, even so, a wrongful birth cause of action is prohibited by Sec 145.424, Minnesota Statutes (Haqq, 2023, p. 293). In Utah, as early as in 1983, a law was enacted prohibiting actions for wrongful birth *inter alia* (Roper, 2004, p. 894–895). In 2002, in *Wood v. University of Utah Medical Centre* (2002), Utah's Supreme Court found that the ban on wrongful birth claims (as well as on wrongful life claims) does not violate either the Utah or US Constitutions' Due Process or Equal Protection Clauses (Villafuerte, 2003). In Idaho, the wrongful birth cause of action

is proscribed by statute.[1] In Oklahoma, the wrongful birth cause of action is prohibited by 63 OK Stat §1-741.12. Missouri does not recognise parents' right to damages for wrongful birth.[2] The situation is similar in Ohio (*Schirmer v. Mt. Auburn Obstetrics & Gynecologic Assocs.*, 2006), Kentucky (*Grubbs v. Barbourville Family Health Ctr.*, 2003), Georgia (*Etkind v. Suarez*, 1999), Indiana[3], and North Carolina (*Azzolino v. Dingfelder*, 1985) as well. Harris (2014, p. 396) contends that "State prohibitions on wrongful birth claims diminish abortion rights and endanger the legal rights of parents to recover costs in a medical malpractice action. Instead of prohibiting wrongful birth claims, states should allow the claims to proceed at common law, permitting the judicial system to decide the merit of each claim." Yakren (2018, p. 584) opines that in wrongful birth lawsuits, the harm to mothers arises as loss of reproductive choice rather than as the birth of a disabled child.

Legal opinions against wrongful life claims show a cross-border tendency. Similar counterarguments have emerged from the US to the EU. However, legal attempts to eliminate wrongful birth claims have been more effective in the US than in the EU. In the US, we find states successfully eliminating wrongful birth actions, while, in EU Member States, the wrongful birth action has been upheld in a curtailed form.

4 Wrongful Birth and CEDAW-Related Human Rights in Hungary

When considering the human rights foundation of the right to a wrongful birth claim, I place the focus on three human rights documents: the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) (UNO, 1979), the Universal Declaration of Human Rights (UDHR) (UNO, 1948), and the European Convention on Human Rights (ECHR) (Council of Europe, 1950). Human rights, as quoted below, have constitutional and judicial support for wrongful birth claims in the Hungarian legal system. While numerous arguments have arisen in recent times against reproductive liberty in Hungary, both the parliament and the judiciary do not oppose a reduced form of wrongful birth action if adequately controlled by law. Essentially, wrongful birth is a civil law institution that is also reinforced by public law.

[1] Idaho Code Ann. §5-334(1).
[2] Mo. Rev. Stat. §188.130.
[3] Ind. Cod. Ann. §34-12-1-1.

Konnon et al. (2024, p. 70) argue as follows: "Although induced abortion is a worldwide intervention and is performed daily, its liberalisation is a subject of intense controversy." In countries where abortion is prohibited by law, wrongful birth claims are rejected because of the missing unlawfulness factor. In Hungary, abortion is an option. Consequently, the Hungarian judiciary admits the parents' claims for damages on wrongful birth grounds.

In Hungary, Act LXXIX of 1992 on the Protection of Foetal Life, §6(1)(b), permits abortion until the twelfth week if the medical probability of the foetus suffering from serious harm arises. In the event of a medical omission, this right is applicable until the eighteenth week. As stated in §6(3) of the law, abortion rights are applicable until the twenty-fourth week of pregnancy if there is at least a 50 percent risk of the foetus suffering from genetic or teratological harm and if the diagnostic procedure lasted longer than expected. Conforming to Act CLIV of 1997 on Health, §17(2)(a), the foetus enjoys protection by the state from the twenty-fourth completed week even if it has disabilities and even against the pregnant woman's will. If the pregnant woman's life is in danger, §6(4)(a) of Act LXXIX of 1992, noted above, permits abortion with no time limit. In Hungary, according to the Criminal Code, §163(4), an illegal abortion constitutes a crime, with both the physician and the woman being subject to punishment, although the woman's punishment is lighter.

Pursuant to §131(5)(a) of Hungary's Health Act, noted above, an obstetrician is authorised to refuse an abortion of a disabled foetus if this were to run counter to his or her personal morality, conscience or religious beliefs. Then, the objecting obstetrician is legally obliged to advise the pregnant woman to turn to another physician. On balance then, the pregnant woman's abortion rights are ensured by Hungarian law. If a wrongful birth still occurs as a result of the obstetrician refusing an abortion, the provider is therefore liable.

In line with CEDAW, arts. 12 and 16(1)(e), the right to abortion is considered a human right. Art. 12(1) declares that access to healthcare services, including those related to family planning, is a human right enjoyed by both men and women. Art. 16(1)(e) states that men and women have "the same rights to decide freely and responsibly on the number and spacing of their children". Wrongful birth claims are not permitted by the legislature or judiciary in all countries. However, as a general proposition, recognition of wrongful birth claims is not necessarily tied to liberal policy. For example, we find conservative governments in the EU, e.g., in Hungary,

that do not take measures against the judiciary accepting parents' wrongful birth claims.

Art II of Hungary's Fundamental Law (Constitution) states that foetal life shall be protected from the moment of conception. The right to damages for wrongful birth is not a constitutional right held by parents *expressis verbis*. It has been developed by the judiciary, in harmony with the Health Act and the Civil Code. The right to damages for wrongful birth is closely related to reproductive liberty, such as family planning, and the constitutional right to the protection of family life (Fundamental Law of Hungary, Art. VI [1]).

Nevertheless, the Fundamental Law, Art. Q(3), declares as follows: "Hungary shall accept the generally recognised rules of international law. Other sources of international law shall become part of the Hungarian legal system by promulgation in law." CEDAW (UNO, 1979) was promulgated in Hungary in legislative decree (*tvr.*) 10 of 1982. Consequently, it forms part of the Hungarian legal system and is therefore applicable in lawsuits. Even if not unanimously recognised by legal scholars, parents' right to damages for wrongful birth proves to be a human right protected by law in Hungary.

In Hungary, pursuant to the Curia's uniformity decision 2/2022, noted above, damages for wrongful birth are limited to the costs of raising a disabled child minus the possible costs of raising a healthy one. Judicial decisions prior to this were ambiguous. Previously, the Curia's decision of principle EBH 2015.P.11, also noted above, declared that, in the event of wrongful birth, all the costs of rearing a disabled child, including the costs of rearing a healthy one, should be covered by the negligent healthcare provider (Curia, 2015). In a recent case, the Curia (2022) applied its uniformity decision 2/2022 in a judicial review proceeding. This ruling was published as a precedent in 2024 (BH 2024.114.).

In Hungarian judicial practice, the existence of a disabled child, independently, is not considered damage. It is only the extra costs of rearing a disabled child that qualify as damage. As a result, there is no derogation from the child's constitutional right to human dignity in wrongful birth lawsuits. Compensation is technically for the extraordinary costs of child rearing. Indeed, the human rights to life and dignity are interrelated; there is thus no human life without dignity. Ultimately, it is both the

parents' and the state's responsibility to ensure a life with dignity for the disabled child.

The *pro* wrongful birth reasoning is, in substance, based both on human rights and constitutional rights. Although there is a strong legal foundation for claims of wrongful birth in Hungary, emerging counterarguments might in the future eradicate such claims. In my opinion, wrongful birth actions will be maintained until Western European judicial practice is *pro*. The present situation concerning wrongful birth actions in Hungary is the result of a compromise struck between reproductive liberty and protection of foetal life. Importantly, its permissibility is not purely a question of religion. Indeed, in many European countries, reproductive rights have shrunk to a minimum level. I believe this minimum level should be upheld. It ought only to be reshaped with legislative or judicial tools if the wrongful birth action is ultimately eliminated from the European litigation culture.

At present, there is no equality of arms in wrongful birth lawsuits. The healthcare provider and its insurance company are equipped with experienced lawyers and expert witness reports that most parents cannot afford. This kind of difficulty should be overcome both in Hungary and elsewhere. The human rights approach to wrongful birth provides the judiciary with further arguments to protect the weaker party, i.e. the parents, in a medical malpractice lawsuit, as mentioned above: the right to family planning, the right to decide on the number of children etc.

5 Wrongful birth and UDHR-related Human Rights in Hungary

Value pluralism puts various approaches to wrongful birth into relief. I think it is normal to consider centrist as well as extremist opinions, with the just perspective being found somewhere in the middle. Conservative values predominate in Europe today. They are based on law and ethics confirmed by a social contract concluded through parliamentary elections. Laxism has been pushed back somewhat; however, the large number of citizens that vote for conservative values generally do not desire the total abolition of abortion and wrongful birth action. The "benefits rule" arises, although this time not in wrongful conception, but in wrongful birth. That is, compensation awarded to parents should be reduced by the benefits of having a child. Of course, these benefits are related to the existence of the child, while damages are awarded to compensate the purely economic extraordinary costs of rearing a child with disabilities.

In practice, reproductive liberty and laxism go hand in hand. Alghrani and Harris (2006, p. 210) point out that "Law may make financial provision and arbitrate in disputes. It has no role or place in founding families or in determining who is better as a parent." Even though reproductive liberty is a right of all, its implementation is regulated by legislative tools. In a democratic state, the legislature respects the citizens' majority opinion, although it never disregards minority views. Further, the balance between the majority society and the dissenting minority is struck by regulatory and adjudicatory bodies, the latter of which are sometimes in conflict with each other. In Hungary, wrongful birth is the last legal institution of the triad of wrongful conception, wrongful life and wrongful birth that is still in effect. The legal and social motives of curtailing reproductive rights are clear. This tendency is legitimised by the social contract. Nonetheless, compensating parents as victims of diagnostic negligence is instrumental in maintaining a just and correct provider–patient relationship because it serves commutative justice on the basis of a contract for treatment. Arguably, maintaining institutional trust is a prerequisite for democracy and the rule of law, and the quality of institutional trust hinges on the national implementation of the human right to family *inter alia* because "the family is the natural and fundamental group unit of society and is entitled to protection by society and the State" (UDHR, art. 16[3]). Pursuant to art. L (1) of Hungary's Fundamental Law, "Family ties shall be based on marriage or the relationship between parents and children." That is, the only extramarital form of family in Hungary is the parent–child relationship. Thus, even if indirectly, parents' right to a wrongful birth claim is derived from and founded by human rights-based constitutional law.

The European Court of Human Rights argues that the rejection of wrongful birth claims by national courts violates art. 8 of the ECHR because "everyone has the right to respect for their family life" and, for this reason, parents have the right to give birth to a healthy child. The European Court of Human Rights made this argumentation clear e.g. in *Costa and Pavan v. Italy* (2013), *M.P. and others v. Romania* (2014), and *A.K. v. Latvia* (2014). In human rights issues, the Court of Justice of the European Union follows the practice of the European Court of Human Rights. As a consequence, damages should be awarded to parents for wrongful birth in all EU Member States.

As prospective parents, citizens might be exposed to wrongful birth even if they live in an EU Member State with a well-functioning healthcare system. Indeed,

diagnostic techniques are still not sufficiently developed to avoid all misdiagnoses, and the standard level of healthcare sometimes suffers a deficit from healthcare professionals fatigued by work overload. Wrongful birth may arise from both the technical and the human constituents of healthcare provision, and civil wrongs are strongly linked to the financing of healthcare facilities and workers. Certainly, there is a great difference between more and less affluent EU Member States. However, the right to be treated by well-rested healthcare professionals should be a statutory right of all even though this right is far from reality in some Eastern European countries.

6 Wrongful Birth in Tort and in Contract

Wrongful birth is mostly a tort in British and US law. In the EU, it is perceived as a breach of a contract for treatment, even if it was concluded verbally. Roughly half of US states grant parents the right to compensation for wrongful birth.

Wrongful birth is regarded as a breach of a contract for treatment in German and Dutch law because such a contract is incorporated into the Bürgerliches Gesetzbuch (*Behandlungsvertrag*) and Burgerlijk Wetboek (*behandelingsovereenkomst*), respectively. In many other European countries, the contract for treatment cannot be found in the national Civil Code *expressis verbis*. For instance, in Estonia, it was legal practice that developed the theory of contracts for treatment. As a result, a misdiagnosis leading to wrongful birth constitutes a breach of contract (*E. B. v. SA Põhja-Eesti Regionaalhaigla*, 2011; see Sõritsa, 2016, p. 108). In Hungary, wrongful birth is perceived by the courts as a breach of an atypical contract for treatment which, however, generates an extracontractual liability on the part of the healthcare provider. Hungarian lawmakers did not include a contract for treatment in the new Civil Code of 2013. Nonetheless, the Hungarian judiciary considers the provider–patient relationship a contract for treatment because both parties have rights and obligations with respect to each other based on the Health Act and the Civil Code. This contract is entered into when the patient agrees to the treatment plan offered by the provider. At any rate, in line with a cogent norm of the Health Act (§244[2]), the provider's liability remains extracontractual, thus leaving more room for exculpation by the provider. This norm was incorporated into the text of the Health Act on the day the new Civil Code went into effect (15 March 2014). This was inevitable because the Civil Code made contractual liability objective, narrowing the provider's legal chance for exculpation. Lawmakers did not intend to place the

burden of objective liability on healthcare providers who were already in a dire financial situation. At first sight, the question arises: Why is the contract for treatment not in the Hungarian statutes *expressis verbis*? I could enumerate arguments, such as the principle of *non-cumul* borrowed from French civil law and leaving no chance for extracontractual liability when a breach of contract arises.

In the Hungarian judicial practice of wrongful birth, the causality between a diagnostic failure, proven by the healthcare documentation, and the extraordinary costs of bringing up a disabled child is hard to challenge. Whether the physician abided by the professional rules is determined by the court based on expert testimony. Whether there was a lack of due diligence on the part of the physician is determined by the court based on the judge's opinion. In a wrongful birth case, it is unlikely that the provider will be exculpated. In Hungary, if a wrongful birth case is brought to court, it usually ends up with damages awarded to the parents. Certainly, the provider's lawyer normally makes attempts to reduce the sum of the damages. Although the provider's liability typically cannot be successfully challenged, the quantity of the damages awarded may be reduced through appropriate legal reasoning. The provider's lawyer endeavours to have the compensation diminished item by item. For example, they ask: Is a hygiene product or medicine truly tied to the disability of the child? Would the same not also be required for a healthy child? Finally, a list of hygiene products and medicines, each priced, emerges and the judge makes a calculation.

7 Damages for Wrongful Birth

The sums of compensation awarded to parents on the basis of wrongful birth vary from country to country. Both similar and disparate tendencies can be found in the judicial practice of different states. While the highest compensations are to be found in the US, damages have recently also been augmented in Hungary, with awards reaching over Ft 50,000,000 ($143,000) (Debrecen Regional Court of Appeal, 2024). This may be explained by inflation as well.

In the US, damages for wrongful birth are much higher: e.g. $14,500,000 in *Plowman v. Fort Madison Community Hospital* (2017) and a little over $10,000,000 in *Pacheco v. United States* (2022).

Besides material damages, immaterial damages may also be awarded to parents for wrongful birth. In countries where punitive damages (or exemplary damages) are constitutional, this type of damages also arises (e.g. in the UK and US). Baginska (2010, p. 171), a Polish author, specified three main grounds for immaterial damages in wrongful birth cases: personal injury, infringement of personal rights and loss of chance to abort. On 16 May 2023, the Supreme Court of the Czech Republic (2023) declared that immaterial damages should not be awarded to the mother for having to see her disabled child growing up if she had not opted for abortion, e.g. for religious reasons.

According to the Civil Code of Hungary, §2:52(2), the mere fact of infringement of a personal right supports parents' right to "grievance award" for non-material harm. Nevertheless, the Hungarian judiciary sometimes requires proof of concrete harm (see, e.g. Curia, 2019b). Lábady (2016, p. 43), a former judge of the Constitutional Court of Hungary, sides with it. This judicial practice might nuance the Civil Code; however, given respect for the rule of law in Hungary, judge-made law is widely observed. Judges not only apply the law, but also develop it. They likewise interpret the law in a broad sense. The aim of the codifiers of the new Hungarian Civil Code of 2013 was to ensure and fortify this judicial right. At the same time, the Hungarian judiciary refrains from punitive damages in civil law, as punitive (or exemplary) damages run counter to Hungary's *ordre public*.

Compensation for parents is certainly not sufficient to alleviate their suffering. The economic approach to wrongful birth can monetize economic damages, such as the extraordinary costs of raising a child with disabilities; however, the intangible distress can only partly be covered by non-economic damages. Parents' non-economic damages are mostly self-borne in the long run.

Moreover, parents are under obligation to prevent damage. This duty to mitigate means that, for example, if a pregnant woman is informed of her foetus' disabilities and does not have her foetus legally aborted, the damage (the extraordinary costs of child rearing) will rest with the parents.

8 The Legal and Social Risks of Promoting Wrongful Birth Claims

An increasing number of wrongful birth claims is not without risks as they can lead physicians to adopt defensive medicine. Therefore, in diagnostically ambiguous cases, physicians might direct pregnant women towards abortion to avoid a possible wrongful birth lawsuit. Although the objective of abortion is to protect the rights of the prospective parents, abortion would thus protect the provider's interests. As a result, defensive medicine runs counter to the protection of foetal life.

At first sight, judicial practice that favours parents is just and legal in wrongful birth lawsuits because the violation of parents' personal rights by a negligent provider interferes with their daily lives and because they are often disadvantaged by poor legal representation. Nevertheless, this legal practice can reinforce inequality in litigation. Providers might place emphasis on effective legal protection in lieu of a medical approach. Indeed, more money is spent on lawyers than on developing medical skills, which is counterproductive. A judicial remedy should be an *ultima ratio* in the event of medical negligence. Instead, I stress the significance of an extrajudicial dispute settlement (Radolovic, 2023), such as mediation (Julesz, 2014).

The disability rights critique of prenatal genetic testing points out that "selective abortion expresses negative or discriminatory attitudes" and that it signals "an intolerance of diversity not merely in the society but in the family, and ultimately it could harm parental attitudes toward children" *inter alia* (Parens & Asch, 1999, p. S2). Valentine (2024, p. 206) expresses her criticism as follows: "The liberal position reinforces the person pursuing the abortion as an isolated, autonomous individual. It limits the possibilities of a potentially disabled child as anything *but* a burden." In Denmark, a pregnant woman may request an abortion without any specific reason in the first trimester of pregnancy. After the first trimester, abortion committees are authorised to decide to permit an abortion when the danger arises that the foetus has a serious mental or physical disability (Heinsen, 2024, p. 1). Heinsen (2024, p. 2) notes that permission is granted automatically in the case of Down's syndrome, neural tube defects, sex-chromosome anomalies, and many genetic diseases and malformations (e.g. missing or shortened limbs). Still, Heinsen (2024, p. 19) concludes that "it is not eugenics"; rather, abortion committee members do not intend to stand "in the way of prospective parents' autonomous choices". Arguably, disability-selective abortion can pose a genuine risk. However, for a lot of parents, abortion is ethically correct when the foetus' disabilities would truly make the life of

the child and parents unbearable. For a great many parents, their child's slight health impairment, one that does not place a heavy financial, physical or mental burden on the child and parents, does not justify abortion and thus cannot amount to a wrongful birth claim. Overall, I do not think a pregnant woman deciding to have a disabled foetus aborted within the boundaries of the law is indeed tantamount to eugenics. In a democratic state, the law safeguards society from such phenomena. This kind of risk strengthens the need to maintain an abortion regulation supported by checks and balances. The statutory background of and the judicial practice in wrongful birth are supposed to impede the corruption of this civil law institution.

One can easily conceive negative criticisms of the wrongful birth action, although positive law usually provides society with an unequivocal answer. Meanwhile, the "slippery slope" problem remains a philosophical one. In reality, legislation and relevant court rulings normally transcend the social divide. According to the law, autonomous patients are entitled to self-determination in healthcare. Cutting the Gordian knot by prohibiting abortion is certainly not an adequate response to the problem of wrongful birth claims. Moreover, eradicating a healthcare provider's civil liability in this area would be detrimental to both institutional and social trust.

A wrongful birth claim should never serve to unjustly enrich parents. For that reason, compensation must be restricted to the costs that truly derive from a child's disability. All excessive compensations are contrary to the spirit of the legal institution of compensatory damages. Damages awarded to parents should provide them with the wealth and comfort that they would enjoy had their child been born without disabilities. Certainly, a child represents neither pecuniary gain nor pecuniary loss on the part of his or her parents. Indeed, a child has no monetary value.

In most countries, different moral values exist in parallel. These values are largely dependent on religious and political trends there. It would be a mistake to disregard leading trends because they express the will of the people. However, the will of the people is not necessarily identical to the *voluntas aegroti* in specific cases. For instance, it is possible that a pregnant woman wants to abort a foetus whose disabilities came to light too late in legal terms. Being against the law, abortion is not permitted in this case. Nevertheless, parents will be entitled to damages. If we strictly abide by abortion laws, we might cause damage to parents and place a heavy financial burden on a negligent healthcare provider. The question arises whether the law in a particular country may be overwritten by economic, moral or any other kind of

considerations. The answer is certainly no. Wrongful birth must not be prevented by an illegal act. There might be a divide between legal and ethical responses to the same problem. Arguably, the law involves ethical norms. However, a merely ethical consideration should not contradict a legal norm, even if the avoidance of wrongful birth were in the best interest of both contracting parties (i.e. the patient and the provider). The eternal dilemma of "ethics or law" surfaces in wrongful birth cases as well. Certainly, the prevention of wrongful birth is not paramount.

9 Conclusion

The institution of the wrongful birth action forms part of parents' reproductive liberty. Although it is widely disputed by legal scholars, this institution is upheld in the EU and in a great many US States.

Wrongful birth has been criticised from both legal and ethical perspectives. The human rights arguments for the wrongful birth action are based on the CEDAW, the UDHR, and the ECHR.

Reproductive liberty is not exclusively a liberal value. A large number of conservative governments accept it. However, there is a tendency to reduce the extension of reproductive liberty with legislative and judicial tools in numerous affluent countries.

Presently, wrongful birth claimants may only obtain compensation for the extraordinary costs of rearing a disabled child, that is, the costs of raising a disabled child minus the possible costs of raising a healthy one. A child does not constitute damage, so the negligent provider is only liable for the economic burden caused by misdiagnosis or omission of diagnosis resulting in the lost chance to abort.

If we consider the pros and cons of the wrongful birth claim, the pros prevail. However, the counterarguments should also be taken into consideration.

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Povzetek v slovenskem jeziku

Čeprav so tožbe glede neupravičene nosečnosti in neupravičenega življenja zavrnjene na madžarskih sodiščih, je tožba glede neupravičenega rojstva dovoljena. Skladno z enotno odločitvijo Sodišča EU v zadevi 2/2022, se odškodnina zaradi neupravičenega rojstva zmanjša na stroške vzgoje invalidnega otroka, od česar se odštejejo možni stroški vzgoje zdravega otroka. Kritika pravic invalidov je zelo močna, od ZDA do EU. Kljub temu pa kršitev osebne pravice staršev do načrtovanja družine zahteva odškodnino v EU in številnih zveznih državah ZDA. Tožba zaradi neupravičenega rojstva ne diskreditira dostojnosti invalidnega otroka.

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THE RIGHT TO ATTENTION IN THE INFORMATION ECONOMY: A TOOL TO PROTECT INDIVIDUALS AGAINST FUNCTIONAL ILLITERACY

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Abstract In a technological reality increasingly dominated by screen devices, there has been a decline in peoples' ability to use written and spoken language in a way that enables us to function effectively in society (functional illiteracy). Every seventh 15-year-old does not have sufficient reading skills and can only decode the text. From the perspective of education, one of the crucial causes of the threat of functional illiteracy are the significant distractions resulting from the improper use of screen devices. Thus, the modern economy, based on the exploitation of attention, appears to excessively strain individuals' ability to concentrate, leading to a decline in cognitive autonomy and the growing problem of functional illiteracy. The aim of this article is to analyse the right to attention as a tool to protect individuals in the context of the impact of digital technologies on education and cognitive development. The article examines the relationship between the right to attention, mental integrity, educational challenges, and the necessity of regulating mechanisms within the information economy. The article highlights the particular harm that attention economy poses to vulnerable groups, especially children.

Keywords
functional illiteracy,
right to attention,
technological revolution,
technologically inclusive education,
information economy

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1 Introduction

We are witnessing the Fourth Industrial Revolution (as defined by Rifkin) (Schwab, 2018, p. 5; Kraljić, 2024, p. 141), and are faced with entirely new challenges. Previously, humans developed tools and subdued the earth. Now, we are increasingly mastering control over our own bodies and continually expanding our physical, intellectual, and cognitive capabilities. People are becoming progressively connected to technology. Our thinking systems are increasingly dependent on mechanical, nonbiological circuits. We integrate with smartphones and other devices that support our life processes in many areas. Living in the modern world without adopting some form of technology is practically impossible, and certainly significantly limited and impoverished. Virtual reality appears as a parallel dimension in which human activities are organised. Some suggest that the digital world is the natural living environment for a new species of human, sometimes referred to as homo electronicus or digital native (Selwyn, 2009, p. 367).

Modern digital technologies play a crucial role in education and social communication. However, their uncontrolled use leads to the disintegration of cognitive abilities, exacerbating the problem of functional illiteracy. Increasing research indicates that students who spend excessive amounts of time on screen devices struggle with reading comprehension, critical text analysis, and maintaining sustained attention.

Technical advancements, beneficial as they are, nonetheless are fraying ethical, legal, and educational frameworks. Addressing these emerging issues requires thorough investigation and the development of pertinent questions. Consequently, this article seeks to examine how the technological revolution influences the need to safeguard the right to attention, particularly with respect to the educational challenges posed by a world dominated by screens. It aims to pinpoint significant problems and challenges while outlining essential areas for reform. The research problem is encapsulated in the following question: Do we need to protect the right to attention in a reality dominated by screen devices? The study analysed relevant literature and research reports from sociology, pedagogy, psychology, and psychiatry, combined with the results of the author's own research. Achieving this goal required an introduction to the issue, presentation of analysis, and reflections on digital illiteracy and the problem of attention deficits (deep attention vs. hyperattention). This

allowed me to demonstrate the interrelationships between the technological revolution and the need to protect the right to attention.

This work is theoretical in nature and interventionist in nature, aiming to pose important questions regarding the future of education in an evolving technological reality. I assume that clearly articulating the issues is a crucial step toward finding solutions to problems such as the development of functional illiteracy, the right to attention in the digital world, and the increasing social polarisation due to technological advancements.

2 Functional Illiteracy

The ability to read and write is considered a crucial skill for humanity. However, more than a billion people in developing countries still lack these abilities. In developed countries, this problem is not prevalent, but many individuals, although they can read and write, do not understand the messages they receive and do not know how to apply them practically. Additionally, a significant portion of these people struggle to construct written texts. People are spending more time online, communicating through social networks and messaging apps. As a result, they write increasingly shorter messages, rely on smart dictionaries, and often neglect diacritical marks and punctuation. They are integrating more rapidly with artificial intelligence and are eager to utilise the power of machine learning-based language models. A notable example is the currently popular chat GPT (Generative Pre-trained Transformer), which enables the creation of texts, answers questions, generates creative content, and supports many other language tasks (see Franczyk & Rajchel, 2024, pp. 89-101). UNESCO, which recognises the right to literacy as a fundamental right, emphasises that the definition of literacy is continuously evolving under the influence of technology. Consequently, there is an increasing emphasis on the need for a new understanding of what literacy is and what skills it encompasses (Ciepielak & Krzykawski, 2023).

Illiteracy is defined as the condition where adults, as per UNESCO's standard, aged over 15, do not possess the skills to read, write, or carry out fundamental mathematical tasks. An adult who is illiterate: 1) is unable to read or write; 2) is metaphorically ignorant in a specific area; essentially, an ignoramus. A semiliterate person, therefore, refers to someone lacking literacy skills (Furmanek, 2017, p. 22).

Functional illiteracy is a phenomenon that involves the inability to use written and spoken language in a way that enables one to function effectively in society. Although these people may know the letters and be able to read them, they have difficulty understanding, analysing, and using the information contained in the texts. An illiterate functionalist can put letters together in words and words in sentences. They can decode a written message at a basic level but struggle to interpret and comprehend the message. Functional illiteracy is measured through tests that assess the ability to understand and use texts in the context of everyday tasks. An example is the Programme for the International Assessment of Adult Competencies (PIAAC), which examines adults' competences in reading, numeracy, and problem-solving.

Functional illiteracy is a growing problem that affects not only developing countries but also wealthy societies, such as the Netherlands. This crisis has a significant negative impact on participation in the labour market, health, and political stability. The inability to understand complex texts and critically evaluate information leads to difficulties in professional development and access to well-paying jobs. Furthermore, functional illiteracy is correlated with poorer health outcomes, as individuals with limited reading skills struggle to comprehend medical instructions and health-related information. Politically, it can contribute to social polarisation, as people who cannot analyse and verify information are more susceptible to misinformation and populist narratives (Marry & Melik, 2024, p. 6-7).

The causes of functional illiteracy are numerous and complex. For the purpose of this article, it is essential to highlight the lack of adequate access to primary education, poor quality of teaching, limited access to educational resources, and the absence of a stimulating environment. Individual factors also play a role, such as health problems, including dyslexia, and emotional and behavioural difficulties.

Research on the origins of functional illiteracy identifies 'five forms of poverty' linked to this issue. These include economic poverty (experiencing poverty during upbringing and adulthood), social poverty (lack of support and understanding in one's living environment), communication poverty (absence of family discussions), educational poverty (teachers' low competence, inability to support students, and a lack of programmes tailored to the needs of students with low academic achievements), and political poverty (ineffective reforms in school and teacher

professional development systems, and the absence of effective political initiatives to support children from socially disadvantaged backgrounds) (Przybylska, 2014, p. 109; Przybylska & Nuissl, 2015, p. 101-107).

The 2018 PISA study (2024) already showed that one in seven 15-year-olds lacks sufficient reading skills to understand a text, even if they are able to decode it. Notably, an increasing number of researchers, such as Justyna Januszewska, point out that functional illiterates are unable to name the emotions they experience. They have a limited vocabulary and poor understanding of abstract concepts. Since they cannot name what they feel, they cannot distinguish between frustration and sadness, making it harder for them to cope. Therefore, we are dealing with a significant deficiency which, although not directly caused by a lack of reading comprehension skills, is related to it (Januszewska, 2021).

The causes of this situation are complex, but the culprits can be identified as: the shift in communication methods driven by social media and messaging apps, the so-called infoxication (information overload) that forces us to process content superficially, and the culture of nanoseconds that relies on headlines, leads, and short texts. Additionally, the modern education system contributes to this by favouring knowledge tests over longer written responses. To function effectively in modern society, which is based on knowledge, it is necessary not only to have reading and writing skills but also the ability to apply them practically in everyday life. Therefore, a high level of literacy is needed, including the ability to think, interpret, reason, criticise, and remember. For contemporary and future education, the aspect of functional literacy clearly emerges, with a particular emphasis on developing students' ability to maintain attention.

3 The Battle for Attention

In the digital, information-cluttered market, attention has become a resource that is easy to exploit and fiercely contested. Digital information sources and social media are designed to engage our attention to the maximum extent. Meanwhile, short, intensely stimulating foods that affect the dopaminergic system result in deeper attention deficits. This problem has become a widespread health problem, significantly contributing to the rise of depression and behavioural disorders, which predominantly affect the younger generation today (Wilmer & Chein, 2016).

Advocates for the right to attention, Anna Cieplak and Michał Krzykawski cite alarming data presented by Michel Desmurget regarding the screen time of children and adolescents living in Western societies. Children at the aged of two spend three hours a day on electronic devices, children aged eight to twelve spend about five hours, and teenagers aged thirteen to eighteen spend nearly seven hours a day. Annually, this amounts to 1000 hours for preschoolers (more than one school year), 1700 hours for middle school children (two school years), and 2400 hours for high school youth (two and a half school years) (Ciepielak & Krzykawski, 2023).

The brain activity of people using the Internet explains why concentration becomes difficult in the digital world. Having to select links and simultaneously process a huge amount of stimuli requires constant mental coordination, which distracts the brain from analysing information in depth. As a result, we lose the ability to understand and remember. When browsing information, we fall into the trap of mindlessly clicking, instead of reading with understanding. Often we do not even remember what we read before. Research shows that readers of traditional texts remember and learn more than those who use linked texts. The reader's attention is directed to the 'hypertext mechanism' and its functions, not to acquiring knowledge. The medium of communication 'blurs' the meaning of words. Disorientation and cognitive overload when reading hypertext disrupt the reading and comprehension processes. Processing excess visual stimuli reduces the level of understanding compared to linear text. The Internet combines hypertext technology with multimedia, and divided attention further weakens human cognitive abilities (Szumera, 2016, pp. 519-521).

Katherine Hayles posits that, in an era of omnipresent, technologically generated information, we are witnessing a significant transformation in how our attention is allocated. Traditionally, what is known as deep attention was understood as the capacity to focus on a single task or object for an extended period, such as reading a novel or critically analysing an extensive text. This mode is characterised by persistence, systematic involvement, and the ability to ignore extraneous stimuli, thereby facilitating deep understanding and rigorous analysis. Such an approach is indispensable in educational settings, scholarly research, and solving complex problems. As daily life becomes increasingly dominated by digital technologies – ranging from social media and smartphones to continuous notifications and a multiplicity of information stream – an alternative model of concentration emerges,

referred to as hyperattention. Hyperattention is defined as rapid switching between different tasks or streams of information. In this mode, numerous stimuli are processed almost instantaneously, yet the tolerance for boredom is considerably lower. When an activity fails to provide immediate stimulation or reward, an individual operating under hyperattention quickly loses interest and transitions to another source of stimulation (Hayles, 2007, pp. 189-191).

In practice, this implies that people who exhibit hyperattention tend to forego in-depth analysis of singular content in favour of superficial browsing, scanning, and fragmentary synthesis of information. This mode of 'reading' is an adaptation to an environment where information is not only abundant but also dynamically changing. On the one hand, hyperattention enables the reader to rapidly extract the most pertinent data; on the other hand, it can lead to fragmented content processing, potentially resulting in a diluted understanding of the underlying message. The implications of this cognitive shift are multifaceted. In the educational arena, traditional pedagogical methods rely heavily on deep attention, such as prolonged reading and textual analysis. If students, conditioned by constant digital stimulation and rapid task switching, fail to cultivate the capacity for sustained focus, their ability to engage in critical thinking and thorough analysis may be compromised (Hayles, 1999, p. 59). Nevertheless, Hayles does not advocate for the complete abandonment of hyperattention; rather, she contends that both modes have their distinct roles in contemporary society. The key challenge is to achieve a balance: harnessing the benefits of rapid switching in scenarios that demand immediate responsiveness while simultaneously fostering the capacity for sustained concentration necessary for deep information processing.

From a broader sociocultural perspective, this trend may lead to a transformation in cognitive paradigms. Younger generations, constantly exposed to incessant streams of information, are developing cognitive habits that differ markedly from those typical of the analogue era. This evolution forces educational and cultural institutions to adapt their communicative strategies and create environments that support both hyperattention and deep attention. For example, educators might integrate courses that combine immediate interactivity and stimulation with activities that require prolonged, focused engagement, thereby better-preparing students for a world inundated with information (Leer & Williams, 2020).

In summary, the shift from deep attention to hyperattention, as delineated by Katherine Hayles, is an adaptive response to an information-saturated environment. Although hyperattention facilitates a rapid response and efficient extraction of critical information, it simultaneously carries the risk of superficial content processing. Therefore, the contemporary challenge is to integrate these dual modes of attention in a manner that takes advantage of their respective strengths while mitigating potential deficiencies.

The results presented in the recently published OECD report Students (OECD, 2024), digital devices, and success, which concerns the impact of smartphones and other screen devices on learning outcomes among children and adolescents are noteworthy. The concerning trend of difficulties in concentration is noticeable in educational systems worldwide. Research shows that:

- 59 percent of students in OECD countries report being distracted by screens during maths lessons.
- Students exposed to excessive use of technology achieve lower scores on reading comprehension and literacy tests.

Based on the conclusions of the cited report, the first observation that comes to mind is that excessive or inappropriate use of screens (phones, tablets, laptops) at school causes significant distraction of the entire group (class) of students and negatively affects their mental well-being. Particular attention is paid to the problem of using screen devices for entertainment outside of educational purposes and without supervision. Therefore, we can conclude that the issue of using screen devices is becoming a significant problem and requires regulation. However, what its scope should be is a matter of debate and requires thorough consideration. It does not seem that a simple ban on the use of screens will be an effective solution here. One argument against an absolute ban on the use of technology is the risk of digital exclusion of children from families with low cultural capital, who therefore have limited access to technology and school or other educational institutions may be the only place where they can catch up on these arrears. Some students, despite using technology, do not have the competence to search and verify data, which in a world based on information and data results in deepening educational inequalities. For this reason, it is essential to implementing educational programmes that support deep reading and concentration.

4 Towards Technologically Inclusive Education

In a world dominated by screens and integrated with technology to such an extent that we are now testing the possibilities of transferring the mind to a computer, the Cartesian vision of separating body and mind is becoming increasingly real. In this technological reality, the cyber student, as the youngest and most defenceless source of social subversion, represents all ethical and social dilemmas and therefore has unique educational needs. Teachers and educators, as well as education and education systems, remain unprepared for them for various reasons. We are witnessing a technological revolution for which we, as a society, simply have not had time to prepare. Today, we face the challenges brought by technologies completely by surprise, just as our ethical, social, and legal systems remain unready. Today, probably like never before, system limitations and the resulting negligence and backwardness will manifest themselves in unwanted ways. As noted in the introduction, the first step to change is to identify and name it.

As mentioned earlier, every seventh 15-year-old does not have sufficient reading skills and can only decode the text. We as a society are therefore at risk of functional illiteracy, and accordingly schools and other educational units should intensify efforts to develop socially important skills, such as searching for information and its interpretation, analysing data, distinguishing facts from opinions, and critical thinking. Counteracting the loss of ability to interpret and understand reading text cannot be achieved without developing programmes to counteract the loss of attention. As Anna Cieplak and Michał Krzykawski (Ciepielak & Krzykawski, 2023) point out, the distinction between close reading and hyperreading is crucial to understanding the current educational situation. The ability to read carefully, as a cognitive strategy associated with deep attention, is indispensable not only when interpreting literary or cultural texts that we usually associate with humanities subjects, but also when analysing mathematical theorems. We may conclude that a person who cannot read carefully will not be a good mathematician, and a humanist without the ability to think mathematically will lose an important tool to interpret the world, often without realising it.

Therefore, in the queue for attention, schools and educational institutions should take a leading place, trying to overtake technological giants who, in pursuit of profit, completely outside our awareness, rob us, especially the young generation, of our

cognitive abilities. Attractive, interactive content that engages attention not only weakens the ability to read deeply but also has a profound impact on our mental well-being. It is enough to point out the fear or anxiety associated with withdrawal from the phone (FOMO - fear of missing out), which resembles withdrawal symptoms in addictions. Using popular applications such as TikTok can cause impatience and difficulty in delaying gratification. These apps condition users to getting reinforcement easily and quickly, making them (especially but not only, young people) easily lose interest in anything that requires time and effort. People with depression or other mental difficulties can receive content directly related to their condition. The application may also lead to a specific craving for dopamine and develop addiction. In the information civilisation, there has been a loss of trust in human judgment and subjective assessments. We trust computer analyses more, which leads to the decline of individual responsibility, as it is difficult to be accountable for „computer decisions". Computer technology fosters the belief that technological innovations are synonymous with human progress (Szumera, 2016, p. 519).

Therefore, a young person needs to support the use of technology, which cannot be limited to classes that are not necessarily attractive to digital hygiene. It is important to raise awareness of the importance of interpersonal interactions and the impact of consumed content on cognitive abilities and the psyche. It is, therefore, important, as Cieplak & Krzykawski underline, to create cooperation programmes between cultural institutions, libraries, research institutions, and public health entities (Ciepielak & Krzykawski, 2023).

Published research reports (UNESCO, PISA, OECD) suggest an obvious conclusion: the problem of screen devices at school should be regulated. Schools should be completely free from them, or their presence in lessons or activities should be extremely limited. It does not seem that a simple ban on screen use will be an effective solution here. The digital environment offers educational opportunities, but they are not without challenges and risks. In the context of threats, responsible use of technology requires awareness of the content consumed and its impact on the psyche, and the ability to distinguish real content from the so-called fake news, awareness of the threats related to cyberbullying and issues related to loss of privacy. The ban on the use of technology will not necessarily make young people use it more safely and securely.

There are interesting studies that highlight the beneficial impact of technology on memory and learning, provided that it is used appropriately. The aspect of creativity stimulated and generated by technology is particularly under-recognised in the context of the educational and emotional development of the younger generation. We have become accustomed to thinking of young people as users of screen technology who passively and often mindlessly consume content. However, they can also use technology creatively and innovatively. This presents an important area for development within technologically inclusive education (Ching-Ting & Ming-Chaun & Chin-Chung, 2014, p. 89).

5 Do We Need a Right to Attention?

Modern digital technologies play a crucial role in education (Kraljić, 2024) and social communication. However, their uncontrolled use leads to the disintegration of cognitive abilities, exacerbating the problem of functional illiteracy. As demonstrated in the earlier section of this article, an increasing number of studies indicate that students who spend excessive amounts of time on screen devices struggle with reading comprehension, critical text analysis, and maintaining sustained attention.

In an educational context, a significant issue is the superficial processing of information and the difficulty of distinguishing facts from opinions. The studies presented above indicate that hyperattention, characterised by rapid switching between stimuli, limits the ability to focus on a single text for an extended period. A reader who is unable to engage in deep reading will struggle to interpret both mathematical proofs and complex humanities texts. The lack of clarity and brevity of digital content contributes to the erosion of language skills, reduced vocabulary, and difficulties in logical analysis.

Similarly to physical harm, manipulative attention engagement - for instance, through content-personalising algorithms – can lead to the degradation of cognitive abilities, increasing an individual's susceptibility to misinformation, and hindering the development of reading and analytical skills (Januszewska, 2021).

Attention has become an economic resource subject to manipulation and exploitation, particularly in the technology and advertising sectors. In the academic literature, attention is often compared to currency, emphasising its measurable

economic value and vulnerability to exploitation. Consequently, there is a growing need for legal protection of attention against unwanted use, manipulation, and forced transmission of information (Tran, 2023, pp. 1035-1037).

The attention economy, based on advertising models and algorithmic content selection systems, turns the ability to concentrate into an object of manipulation and exploitation. For example, an excessive number of unwanted messages leads to wasted time and reduced efficiency. Telemarketing and online advertisements often exploit human attention in unethical ways, causing financial and psychological harm. In some cases, individuals are forced into the compulsory sharing of various data and information. All of this contributes to the modern individual's loss of mental autonomy. In response to this challenge, the question arises: Should the right to attention be recognised as a distinct legal category?

The literature emphasises that attention is a crucial cognitive resource and its excessive exploitation affects an individual's ability to make decisions and pursue personal goals (Ocklenburg & Güntürkün, 2024, pp. 211–239).

According to Kantian political philosophy, the state has an obligation to protect citizens from harms that restrict their capacity for self-realisation. The right to attention can be understood both as a right to liberty and a right to claim. This means that individuals should have the right to direct their attention freely while also being protected from the imposition of distracting stimuli without their consent (Kärki & Kurki, 2023, pp. 6-8). In the context of education, this means the necessity of regulating digital technologies to ensure the protection of attention.

Tran (2023, pp. 1041-1043) proposes that the right to attention should include:

1. the right to refuse attention, ensuring protection against excessive advertisements and digital content;
2. the right to protection from spam and algorithms that manipulate attention;
3. the right to informed consent, granting users full control over the content they consume.

Bartomiej Chomański argues that the right to attention can be seen as an extension of the right to mental integrity, which originates from the right to bodily integrity. His justification is based on the assumption that since attention is a key element of cognitive processes, its violation may lead to the weakening of an individual's autonomy. Similarly to bodily violations, forced or manipulative engagement in attention can be a form of interference with an individual's cognitive sovereignty. Therefore, in the attention economy, excessive exposure to hyperstimuli, addictive mechanisms, and forced transmission of information can be perceived as a threat to psychological autonomy (Chomański, 2023, pp. 4-5).

The modern attention economy, driven by digital advertising, social networks, and personalised algorithms, often exploits users' attention without considering their rights. As a result, users are exposed to constant competition for their attention, which can weaken their ability to manage time and cognitive resources independently. This raises the question of whether attention can be regarded as a form of property. In a broad sense, attention shares characteristics with other resources subject to legal regulation, such as information, labour, or intellectual goods.

It is widely accepted that international law protects human autonomy, the freedom to shape one's own life, expressed through the right to self-determination and personal decision making, physical and mental integrity, personality development, and the right to live according to one's own will. However, without legally defined criteria for permissible interference in the brain and mind, the right to autonomy and self-determination remains fundamentally at risk as technologies capable of influencing human mental processes become a reality. It is difficult to deny that the ability to recognise mental states, including hidden intentions, dreams, or thoughts, through technological methods has the potential to deeply disrupt personal development and influence an individual's behaviour and decision-making, particularly when these processes occur below the threshold of consciousness. Consequently, in light of the technological revolution, the protection of mental integrity must be ensured at a level at least equivalent to the current protection of physical integrity.

Social and technological evolution has led to a growing need for the protection of attention, which now permeates many aspects of human life and requires specific legal safeguards. Although the right to attention may currently be regarded as a derivative right, dependent on the violation of other rights, particularly the right to privacy, it is worth considering whether, in the future, it could be recognised as an autonomous right.

The right to attention, understood as the right to maintain concentration ability, cognitive integrity, and protection against informational manipulation, can currently be derived from existing human rights guarantees, particularly Article 8 of the ECHR, which broadly protects various aspects of private life. As technologies capable of reading mental processes at the neuronal level continue to develop, this protection must be expanded to include safeguards regarding access to neurological data and unauthorised interference with the mind. Concepts such as neuroprivacy, psychological privacy, and emerging neurorights represent attempts to incorporate the challenges of protecting cognitive freedom and personal identity into legal frameworks. In practice, this means that the state should not only refrain from interfering in the mental sphere, but should also actively support programmes that enable individuals to protect their mental integrity.

The modern economy, based on the exploitation of attention, appears to excessively strain individuals' ability to concentrate, leading to a decline in cognitive autonomy and the growing issue of functional illiteracy. In this context, protecting the right to attention could lead to the following:

1. new regulations regarding internet law and protecting the weaker party in legal relationships;
2. developing mechanisms that grant users control over content selection algorithms;
3. protecting vulnerable populations, including children and adolescents, from excessive exploitation of attention.

The right to attention is a crucial element in protecting individuals from excessive exploitation of cognitive abilities and the rise of functional illiteracy. In the face of growing digital challenges, the following measures are essential:

1. legal regulations protecting individual attention in education and the information economy;
2. educational programmes supporting the development of deep reading and text analysis skills;
3. social campaigns promoting conscious use of digital technologies.

Legal regulations should be complemented by cultural changes and educational initiatives that help people better manage their attention in the digital environment. Collective social efforts can counteract the negative effects of the attention economy and ensure that technology serves to enhance rather than limit individual freedom.

6 Conclusion

Modern reality, dominated by screen devices, presents society with challenges related both to access to technology and its impact on cognitive functions. On the one hand, technology fosters creativity, innovation, and rapid information exchange. On the other hand, excessive and uncontrolled use of screens contributes to deepening attention deficits. Research indicates that young people are changing from traditional deep attention to hyperattention, characterised by rapid switching between stimuli and superficial information processing. This shift affects not only the quality of content processing, but also the development of skills essential for effective functioning in society, particularly in educational and professional contexts.

The analyses presented in this article show that human attention has become a scarce and highly valuable resource in the digital economy. At the same time, attention is a crucial element of cognitive functioning and disrupting it can weaken individual autonomy. Despite its fundamental role in modern education and the economy, there are no sufficiently clear legal frameworks that recognise attention as a legally protected asset. This regulatory gap results in ineffective attention protection, which is particularly significant in the context of technology companies that exploit user engagement mechanisms without oversight.

The concept of the right to attention raises the question of whether individuals should have legal rights regarding how their attention is directed, utilised, and protected from interference. The discussion surrounding the right to attention encompasses legal, ethical, psychological and social dimensions, highlighting its

connection to individual autonomy, mental integrity, and the impact of technology on cognitive functions.

The technological revolution, which is reshaping both cognitive processes and educational models, presents contemporary society with a variety of challenges. The right to attention, understood as the protection of concentration, deep information processing, and cognitive integrity, is becoming an essential element of modern human rights guarantees. Its protection requires an integrated approach that combines educational system reforms, legal safeguards – such as those within the framework of neuro-rights – and developing social awareness regarding responsible technology use. Only through such measures will it be possible to counteract the growing inequalities and risks associated with the digital era while ensuring individuals full autonomy and freedom in shaping their own identity.

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Povzetek v slovenskem jeziku

V tehnološki realnosti, v kateri vse bolj dominirajo zaslonske naprave, se je zmanjšala sposobnost ljudi pri uporabi pisanega in rabljenega jezika na način, ki nam omogoča učinkovito delovanje v družbi (funkcionalna nepismenost). Vsak sedmi petnajstletnik nima zadostnih bralnih spretnosti in zna besedilo le dekodirati. Z vidika izobraževanja so eden ključnih vzrokov za grožnjo funkcionalne nepismenosti velike motnje, ki so posledica nepravilne uporabe zaslonskih naprav. Tako se zdi, da sodobno gospodarstvo, ki temelji na izkoriščanju pozornosti, pretirano obremenjuje posameznikovo sposobnost koncentracije, kar vodi v upad kognitivne avtonomije in vse večji problem funkcionalne nepismenosti. Namen članka je analizirati pravico do pozornosti kot orodje za zaščito posameznikov v luči vpliva digitalnih tehnologij na izobraževanje in kognitivni razvoj. Članek preučuje razmerje med pravico do pozornosti, duševno celovitostjo, izzivi izobraževanja in potrebo po regulativnih mehanizmih v informacijskem gospodarstvu. Članek poudarja posebno škodo, ki jo ekonomija pozornosti povzroča ranljivim skupinam, zlasti otrokom.

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NAVIGATING CRIMINAL LIABILITY IN AN ERA OF AI-ASSISTED MEDICINE

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Abstract This paper explores the interplay between artificial intelligence (AI) and criminal liability within the healthcare sector, particularly in the context of medical malpractice. Adopting a multidisciplinary approach, the study evaluates current legal frameworks and their adequacy in addressing liability for errors involving AI-driven medical systems. Through an analysis of legal theory, case studies, and technological integration, the research highlights the complexities of assigning liability when errors arise from AI-assisted medical decision-making. The methodology includes a comparative legal analysis and a detailed examination of a real-world case involving AI-related treatment errors. Findings reveal that while existing legal frameworks are sufficient for holding humans accountable under the standard of care, they struggle with the unique challenges posed by AI's "black-box" nature. The study argues that further refinement of liability models is necessary, especially as AI systems gain greater autonomy. The paper concludes by offering a roadmap for balancing innovation in AI with the imperative to protect patient rights, emphasizing that liability frameworks must evolve in tandem with technological advancements.

Keywords
AI-assisted medicine,
criminal,
liability,
standard of care,
accountability

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1 Introduction

The modern period can be marked as an era of the evolution of advanced technologies. The process of automation and the powerful incursion of technologies based on AI are gradually becoming a part of everyday life. Medicine is one of the fields in which this phenomenon has taken on particular importance. In specific fields of medicine, robotic technology has gradually been introduced during the last thirty years, with the aim of reducing the risk of mistakes and improving the quality of medical treatment (Camarillo, Krummel & Salisbury, 2004). In surgery, for instance, AI technology is used in various procedures to facilitate the surgeon's work and occasionally aid in diagnosis, selecting appropriate procedures, and determining their execution methods (Kinoshita & Komatsu, 2023). In some branches of medicine, such as radiology, there is even a prediction that AI will soon replace humans entirely. However, these forms of AI are currently still in the initial experimental stages. In medicine, AI technology is currently employed as an aid to human doctors, who still retain the role of making the final decisions (Syed, Zoga & Musculoskelet Radiol, 2018).

However, the human's "dominant" position in the interaction with AI here requires deeper understanding. Specifically, the final decision made by the human doctor is based on specific inputs provided by AI. This can be vividly illustrated in the context of neurosurgical practice. Consider a robot-assisted brain tumor operation where AI autonomously determines (maps) coordinates for the entry of a biopsy needle. In particular, the system utilizes specialized software to navigate the direction of the biopsy needle's entry, significantly reducing the procedure and patient recovery time. Therefore, the neurosurgeon places complete reliance on this prior assessment by the AI system (Rotim, Splavski & Vrban, 2021).

Advancements in the interaction between AI and humans can complicate criminal liability in the event of a treatment error. Specifically, if a human error is based on a prior incorrect input provided by AI, it may raise difficulties regarding determination (establishing) the necessary standards of criminal responsibility. This may become even more complex if a certain legal system does not regulate the criminal liability of legal entities, automatically eliminating the criminal responsibility for companies that produced, programmed, or put a particular AI system into circulation. In other words, the interactive involvement of humans and AI in this scenario can complicate criminal liability, highlighting the need to clearly define appropriate standards that

will enable criminal protection of people's health and patients' rights. As it is already noted in literature, „AI-enabled surgical robot lawsuits are also on the rise“ (Griffin, 2021).

It is important to note that the purpose of this paper is not to engage in a debate about the pros or cons of criminalizing medical errors, since other authors have already engaged in such debate (Dekker, 2007). On the contrary, it starts from the assumption that this standard is generally accepted, despite potential adverse effects such as defensive medicine.

Here, we first outline the current state and modern trend of the integration of AI into patient treatment processes. Additionally, we present some predictions from the scientific literature about the direction of this development in the future. The second part of this paper discusses criminal liability for malpractice from the perspective of using AI systems for inpatient treatment. The thesis advocated is that the existing standard of care criterion still emphasizes human decision-making, thus precluding the exclusion of criminal liability by invoking the contribution of an AI system that would have a significant impact on guilt (culpability). This study employs a multidisciplinary approach, combining legal analysis, case study examination, and a review of existing literature on AI in healthcare. The legal analysis focuses on comparative frameworks for criminal liability in medical malpractice, particularly in cases involving AI-assisted decision-making. A case study of a real-world incident involving an AI-driven medical device provides practical insights into how liability issues arise in practice. The literature review encompasses legal, technological, and ethical perspectives, highlighting the challenges posed by AI's opacity and evolving role in medical decision-making. By integrating these methods, the research aims to assess the adequacy of current legal standards and propose avenues for adapting liability frameworks to the growing presence of AI in healthcare.

2 AI in Healthcare: Current State

In order to better understand the role of new technology in medicine, it is necessary to first differentiate between related but distinct concepts: AI, machine learning (ML), and deep learning (DL). AI refers to the broader concept of machines or systems being able to perform tasks that would typically require human intelligence. This can include tasks such as problem-solving, learning, perception, language understanding, and decision-making. AI encompasses a wide range of techniques,

algorithms, and approaches aimed at creating intelligent systems that can mimic or simulate human cognitive abilities (Janiesch, Zschech & Heinrich, 2021).

ML is a subset of AI that focuses on developing algorithms and techniques that allow computers to learn and make predictions or decisions based on data. Instead of being explicitly programmed to perform a specific task, ML algorithms learn from examples and experience, adjusting their parameters automatically to improve performance over time. In essence, ML algorithms enable computers to recognize patterns in data and make decisions or predictions without being explicitly programmed for every scenario (Janiesch, Zschech & Heinrich, 2021).

DL is a subset of ML that uses neural networks with many layers (hence the term "deep") to learn from sustantial amounts of data. These neural networks are inspired by the structure and function of the human brain, with interconnected nodes (neurons) organized in layers. DL algorithms are particularly effective at automatically extracting features from raw data, which makes them well-suited for tasks such as image recognition, natural language processing, and speech recognition (Janiesch, Zschech & Heinrich, 2021).

While all three technologies are essential in healthcare, DL, with its ability to handle complex, unstructured data and its remarkable performance in tasks such as medical imaging analysis, has gained significant prominence in recent years (Castiglioni et al., 2021). However, the choice of technology depends on the specific needs and requirements of each healthcare application, and often a combination of AI, ML, and DL techniques is used to address diverse challenges in healthcare delivery, diagnosis, treatment, and research (Ahmed et al., 2020).

In medicine, there is an increasing presence of ML and DL forms known as AI foundation models. They are capable of predicting what comes next from existing data (Moor et al., 2023). One example of such software is the Mount Sinai healthcare research system, which enables the early detection of COVID-19 (see more bmeiiadmin, 2020). Additionally, AI is present in the healthcare sector through the concept of digital health, aiming to implement models that enhance the medical decision-making process and thus improve human decision-making (Bennett & Hauser, 2013).

Currently, various forms of AI, ML, and DP in medicine are being utilized in the following five areas: 1) patient messaging and communication; 2) prediction models; 3) summarization of patient data and medical history; 4) virtual scribes; and 5) radiology imaging (Naik et al., 2024). These areas facilitate and expedite the handling and treatment process but simultaneously pose certain risks of compromising personal data privacy, misuse of personal data, and discrimination. For example, researchers at the University of Chicago found that computer programs trained to recognize cancer from large sets of data can also identify where the data came from.[1] These programs learn to spot patterns in cancer images to make predictions about patients' outcomes. However, they sometimes take a shortcut by grouping patients based on where the data was submitted from, rather than looking at each patient's unique biology. This could create problems because it might overlook the needs of patients from minority groups who are more likely to go to certain medical centers. They might not get the right treatment because the program assumes they are similar to other patients from the same location (Hoffman & Podgurski, 2019).

Here, a critical distinction must be drawn between AI as a tool requiring human oversight and fully autonomous AI systems, as this differentiation significantly impacts the attribution of liability. Presently, most AI systems in healthcare function as advanced tools that assist medical professionals by providing data-driven insights, diagnostic suggestions, or procedural guidance. In such cases, the standard of care and responsibility remain firmly grounded in human oversight. Healthcare providers retain full accountability for decisions and outcomes, as they are expected to validate AI-generated recommendations and ensure that AI systems operate correctly and within their intended scope (Gerke, Minssen & Cohen, 2020).

In contrast, the emergence of fully autonomous AI systems—capable of making independent decisions without human intervention—presents a paradigm shift in liability frameworks. Such systems raise questions about the sufficiency of existing legal models, which are predominantly human-centered. In scenarios involving autonomous AI, liability may need to be redistributed across a broader spectrum, including AI developers, manufacturers, and regulatory bodies. This shift would require revisiting the traditional standard of care to accommodate the unique operational capabilities and risks associated with autonomous AI. The current research underscores the importance of preemptively addressing these distinctions

[1] For further information see University of Chichago Medical Center (2021).

to ensure legal clarity and maintain patient safety as AI technologies continue to evolve (Schweikart, 2021).

It is crucial to note that currently in medicine, however, there are no models that would completely usurp the role of humans, meaning that medical practice remains predominantly human-oriented, and the standard of care is still the responsibility of humans and healthcare institutions.

3 Criminal Liability for Malpractice in AI Context

We will divide the following discussion into two parts. The first part will briefly explain the theoretical framework of thinking. It encompasses the main features of existing concepts of criminal liability for medical malpractice. Understanding these features is important to assess the hypothesis of this paper that the existing criminal malpractice law is sufficient to provide effective protection in AI-involved cases. The second part will describe the facts of a recent healthcare practice case in the USA and will evaluate the hypothesis of this paper against those facts.

3.1.1 Theoretical Framework

First, it is important to note that some authors have already examined how the use of AI in medicine is reshaping medical malpractice and tort law. This literature highlights AI's potential to enhance healthcare, specifically through ML learning algorithms that analyzes vast datasets to inform clinical decisions. This literature also underscores challenges in assigning liability due to AI's "black-box" nature, which obscures its decision-making processes. Traditional tort paradigms—such as negligence, product liability, and informed consent—struggle to address AI's complexities. The other studies explores how evolving legal frameworks might address these issues, proposing solutions like recognizing AI as a legal entity, establishing joint liability for developers, and adapting the standard of care to include AI usage. Ultimately, these scholars stress the need to balance promoting AI's benefits with safeguarding patient rights, as liability frameworks evolve to accommodate this transformative technology (Schweikart, 2021). Other scholars emphasize the necessity for specialized legislation in this domain, arguing that traditional legal frameworks are insufficient to address the complexities of AI in healthcare. The unique nature of AI, particularly its reliance on "black-box" algorithms, creates significant challenges in attributing liability when harm occurs.

These scholars contend that current legal doctrines, such as negligence and product liability, are often inadequate for evaluating cases involving AI, as they rely on the ability to trace decision-making processes—a requirement that is frequently impossible with opaque AI systems.

Additionally, questions arise about who should be held responsible in scenarios where AI systems malfunction or provide incorrect recommendations. Liability could potentially rest individually or jointly on developers, healthcare providers, or even manufacturers of the hardware used to support AI systems. However, traditional tort law struggles to accommodate the distributed nature of AI development, which often involves multiple entities contributing to different components of the system. This lack of clear accountability could result in significant gaps in patient protection and compensation. Some scholars propose frameworks that incorporate elements of joint or shared liability to address these gaps. For example, theories of common enterprise liability suggest holding all entities involved in the development and deployment of AI jointly responsible for any harm caused (Almemari, Al-Enizi & Madi, 2024). Others advocate for the establishment of new legal standards that consider the unique capabilities and limitations of AI, such as requiring physicians to validate AI recommendations or ensuring that developers adhere to rigorous data quality and transparency standards during the design phase (Park, Choi & Byeon, 2021). Moreover, ethical considerations intersect with these legal challenges, particularly in ensuring that AI technologies do not exacerbate existing inequalities in healthcare. Poorly designed algorithms, developed using non-representative data, risk introducing biases that disproportionately harm certain populations. Legal reforms must therefore include mechanisms to ensure fairness, transparency, and accountability in AI deployment. A growing consensus highlights the need for a specialized regulatory framework that goes beyond traditional tort law to govern the use of AI in healthcare. Such frameworks could mandate independent validation of AI systems, establish more precise guidelines for informed consent when AI is used, and create liability insurance requirements for developers. These measures would help balance innovation with patient safety, ensuring that the benefits of AI can be realized without compromising ethical or legal standards.

The basis for further elaborations can be found in the concept of medical error in terms of criminal law and it needs to be clearly defined and classified separately from the concept of complication. A medical error in the descriptive sense is considered to be every procedure (act or omission) by a medical professional that deviates from

the accepted rules of the medical profession, and which leads to unwanted health consequences for the patient. In contrast, a complication is considered to be an unwanted consequence of a medical procedure which, however, is performed in accordance with the rules of the profession and the necessary degree of care (Korošec, 2016). Thus, the constitutive premise for criminal liability is to establish breach of the rules of a specific medical profession (standard of care), whether written or unwritten. This means establishing the starting point for proving the guilt of the perpetrator. Another assumption is determining the causality between such omission and the consequences. After both objective elements have been established, it is necessary to prove the subjective element, which consists of the existence of a suitable form of guilt (Mrčela & Vuletić, 2017).

Criminalization of medical error is typical for continental Europe's legal system. This approach differs from the approach in the US, where malpractice cases are usually addressed within the framework of civil liability. However, it is important to note that in the US, healthcare is largely part of the private sector. Conversely, in Europe, healthcare is a significant pillar of the public sector, which influences a different approach to malpractice. Therefore, it is not uncommon in European countries for criminal proceedings to be pursued alongside civil litigation in cases of medical errors. While there are different approaches from legislation to legislation, it is common to consider criminal liability through the criterion of the standard of care, i.e., the violation of such a standard by a physician, which then results in unwanted consequences for the patient's health.

Some authors also examine the integration of robotics and AI into healthcare, emphasizing the legal challenges surrounding medical malpractice within the European regulatory framework. These authors advocate for the development of specialized legislation to address the complexities introduced by AI-mediated decision-making in medical practice. They argue that current European legal systems, while offering some degree of standardization, remain insufficient in clarifying the allocation of liability when autonomous AI systems contribute to adverse medical outcomes. Specifically, the authors highlight the potential for inequitable attribution of responsibility among healthcare professionals, institutions, and AI developers, given the opaque nature of AI operations and decision-making processes. To mitigate these issues, the authors propose a legal framework tailored to the distinct characteristics of robotics and AI in healthcare, including clear guidelines on liability distribution, the recognition of AI's unique operational risks,

and mechanisms to protect patients' rights. By advocating for this legislative evolution, the authors aim to foster legal certainty and accountability while promoting the ethical and effective deployment of AI technologies in modern medicine (De Micco, et al., 2024).

This paper focuses specifically on criminal liability, which will be discussed below. In England, the most severe cases of medical errors are criminally prosecuted under the legal qualification of gross negligence manslaughter. The aspect of culpability in gross negligence implies that the accused significantly breached their duty of care required. The assessment criteria were established in the case of *R v Adomako* in 1994 (R v Adomako, [1995] 1 AC 171 (HL))[2], where an anesthesiologist was accused of failing to notice the disconnection of one of the tubes regulating the patient's airflow during surgery, resulting in a fatal outcome. According to these standards, criminal liability requires the cumulative fulfillment of the following elements: a serious breach of duty (standard of care), conduct significantly departing from that of a reasonable doctor with the same competencies and experience, and the commission of one of four possible types of professional errors (Hubbeling, 2010).

A somewhat different model is employed by legal systems that include a specific criminal offense (often referred to as medical malpractice or similar). For example, the Croatian Criminal Code regulates this area within a specialized section (offenses against human health) and a specific criminal act called "unconscious medical treatment" (Croat. Nesavjesno liječenje; Article 181 CC). Such an approach is typical for countries in the former Yugoslavia and can also be found, for instance, in the criminal laws of Slovenia (Jakulin, 2020) and Serbia (Ćirić & Pajtić, 2019). According to Croatian law, to establish criminal liability, it is necessary to prove that a medical professional acted in an evidently unconscious manner, meaning they committed a particularly severe violation of professional standards (standard of care) significantly deviating from the norms of certain medical field. As forms of such breaches of professional standards, the law lists the application of obviously unsuitable means or methods of treatment, another obvious failure to adhere to professional rules, or, in general, evidently unconscious conduct. Furthermore, it is essential to demonstrate that such a violation led to a foreseeable consequence, resulting in harm to health, aggravation of an illness, and in the most severe cases, the death of the patient (Vuletić, 2019).

[2] Available on: https://vlex.co.uk/vid/r-v-adomako-793554125 (30 January, 2025).

Therefore, we may conclude that, although different legal systems regulate this issue differently, the common denominator is the criterion of breaching the standard of care as a necessary prerequisite for criminal liability. The standard of care is based on the conduct and diligence of an average person, or the conduct of an average professional with the same characteristics as the perpetrator in the same or comparable situation. In other words, the standard of care criterion is human-centered, not machine-centered. AI software is legally considered only as a tool under the control of the health professional (Gerke, Minssen & Cohen, 2020).

3.1.2. A Case Study: How AI Can Affect Criminal Liability for Malpractice

An incident which occurred at Evanston Hospital in Illinois, is illustrative of a situation where technology involved in treatment led to errors in treatment and negative consequences for the patient's health. It should be noted here that ultimately the case did not end up in the judicial system as no charges were filed nor was a lawsuit initiated. However, the facts are remarkably interesting in the context of the discussion in this text, so we will use them to test the thesis.

Two patients experienced overdoses due to a malfunction in a medical device called a linear accelerator, used for a treatment called stereotactic radiosurgery (SRS). SRS is a type of radiation therapy designed to precisely target small tumors or abnormalities in the brain or spinal cord while minimizing damage to surrounding tissue. The device, manufactured by Varian Medical Systems, has been modified to perform SRS in addition to its standard radiation therapy function. However, these modifications led to communication problems between electronic components, causing serious safety issues (more Bogdanich & Rebelo, 2010).

In both incidents at Evanston, the linear accelerator allowed radiation to leak outside a protective cone attachment meant to focus the radiation beam. This leakage occurred because the beam was four times larger than it should have been, resulting in healthy tissue being irradiated along with the targeted area. The device's design concealed the error from operators, as the settings were not clearly displayed on the computer screen, and the metal tray covering the cone's jaws prevented visual inspection. The errors stemmed from the complex nature of adapting linear accelerators for SRS, where the beam can be shaped using either computer-controlled leaves or a cone attachment. In this case, the cone attachment failed to

contain the beam within its circumference, causing radiation to escape through the corners of the jaws and affect unintended areas. Despite efforts to ensure accuracy in SRS, the lack of necessary safety features and communication failures between components led to these dangerous incidents (Bogdanich & Rebelo, 2010). Overall, the accidents highlight the importance of thorough safety protocols and communication in medical device design and operation, especially when dealing with highly concentrated and intense forms of radiation therapy like SRS. Such incidents underscore the need for ongoing vigilance and improvements in technology to minimize the risk to patients undergoing these treatments.

Determining whether this case constitutes a breach of the standard of care, or malpractice, would require a thorough investigation and assessment by legal and medical experts. However, based on the information provided, there are elements that could suggest a potential breach of the standard of care. The fact that the linear accelerator malfunctioned allowing radiation to leak outside of the intended treatment area, indicates a failure in the proper functioning of the medical device. Additionally, the lack of necessary safety features, such as those that could have prevented radiation leakage, raises questions about the adequacy of the equipment and its maintenance.

Furthermore, the inability of operators to detect the error due to the design of the machine suggests a failure in the system for monitoring and ensuring treatment accuracy. Considering that the machine had been modified to perform SRS, several decisive facts should be established at various levels for the potential liability of individuals managing the machine. First, whether they knew or should have known that the machine was modified. If the answer is affirmative, whether they were or should have been aware of the modification, especially whether they ensured that even with that modification, the machine could operate without danger to the patient. For instance, whether they checked or tested the machine before use. If they knew about the modification but took no action to ensure beforehand that the machine was fit for use without harm to the patient, then their criminal liability could be discussed. This is particularly true if it was their first time using such a modified machine, as it is a reasonable assumption that they should have checked settings that were not visible on the computer screen. The mere fact that settings were not visible should have been a cause for alarm because without visible (safety) settings, the operator should not operate the modified machine.

If it can be shown that these issues resulted from negligence, oversight, or failure to follow established protocols, it could be argued that the healthcare providers involved did not meet the standard of care expected in their field. Ultimately, whether this constitutes malpractice would depend on various factors, including the specific circumstances of the case, the applicable legal standards, and any evidence of negligence or deviation from accepted medical practices. An in-depth analysis by legal and medical professionals would be necessary to make a definitive determination. However, what needs to be emphasized here is that this concerns the misapplication of the standard of care from a human perspective, as, ultimately, humans remain responsible for the proper functioning of the system. This individual cannot be absolved of criminal liability based on AI system interference because they are responsible for maintaining the proper functioning of that system at all times. Every AI is „only good as the humans programming it and the system in which it operates" (Kocher & Emanuel, 2019). In this sense, we agree with the assertion that only „once ML diagnosticians…are shown to be superior, existing medical malpractice law will require superior ML-generated medical diagnostics as the standard of care in clinical settings" (Froomkin et al., 2019).

4 Conclusion

This paper addresse current criminal law trends regarding the integration of AI into healthcare, with a focus on the issue of criminal liability for medical malpractice. We conclude that existing models of such liability currently meet the needs of practice because current AI, ML, and DP systems used in healthcare have not yet dominated human decision-making. Accordingly, the standard of care, as a key and arguably universal criterion for assessing criminal liability, still implies a standard of care applied by humans (rather than machines). It seems that there will not be significant changes in the criminal liability paradigm in the near future. Therefore, the role of AI is to assist and facilitate but not to subsume treatment (or responsibility for treatment). The fundamental issue lies in the fact that medical procedures are still perceived as distinctly human skills.

Changes in the need for a new system of criminal liability can only arise if healthcare becomes AI or ML-centered in the future. In that case, it will be necessary to seek new models of liability. We believe that, in such cases, it would be crucial to distinguish between medical procedures where AI is engaged because it performs actions beyond human capability (such as requiring precision or speed unachievable by a human) and cases where AI is used to expedite processes, reduce costs, and enhance efficiency. In the former, AI engagement serves the interest of patients' health, and the responsibility of individuals behind the AI system should cease once the AI is properly tested and approved by the relevant authorities. However, in the latter scenario, human health becomes secondary, with profit or cost reduction being primary objectives. Therefore, in such instances, through new acts of abstract endangerment, liability should be introduced for merely deploying AI into use (even if duly certified), with an additional objective criterion for penalization: the AI made an error and endangered or harmed the health or life of a patient. In this sense, it would represent a specific form of prior culpability or culpability due to assuming a risk that was not assumed solely in the interest of safeguarding public goods. In our view, only such a model would be optimal in preventing criminal responsibility from becoming entirely unprovable in practice. This becomes even more pertinent if in the future AI gains more authority and a higher degree of autonomy in performing routine medical treatments and procedures.

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Povzetek v slovenskem jeziku

Članek obravnava prepletanje umetne inteligence (UI) in kazenske odgovornosti v zdravstvenem sektorju, zlasti v smislu zdravniških napak. Študija z multidisciplinarnim pristopom ocenjuje sedanje pravne okvire in njihovo ustreznost pri obravnavi odgovornosti za napake, ki vključujejo na umetni inteligenci temelječe medicinske sisteme. Skozi analizo pravne teorije, študije primerov in tehnološko integracijo, raziskava izpostavlja kompleksnost določanja odgovornosti pri napakah, ki nastanejo pri medicinskem odločanju s pomočjo UI. Metodologija vključuje primerjalno pravno analizo in podroben pregled dejanskega primera, ki vključuje napake nastale pri zdravljenju z UI. Ugotovitve razkrivajo, da so obstoječi pravni okviri sicer zadostni za uveljavljanje odgovornosti ljudi v skladu s standardom oskrbe, da pa se vendarle spopadajo z edinstvenimi izzivi, ki jih predstavlja „črna škatla" UI. Študija trdi, da je treba modele odgovornosti še dodatno izpopolniti, zlasti ker sistemi UI pridobivajo vse večjo avtonomijo. Dokument se zaključi s predlogom načrta za uravnoteženje inovacij na področju UI z nujno obveznostjo zaščite pacientovih pravic, pri čemer je poudarjeno, da se morajo okviri odgovornosti razvijati vzporedno s tehnološkim napredkom.

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ARTIFICIAL INTELLIGENCE APPLICATION THROUGH ELECTRIC POWER AND CLIMATE CHANGE

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Abstract Assessing and directing the implications of artificial intelligence (AI) and machine learning (ML) continues to be embedded in our daily lives and involves a united effort across academics, policy, and industry with ambiguity for impacting the present and the future. AI has the potential to improve outcomes, boost productivity, and improve the precision and effectiveness of the numerous facets of society that depend on probabilities and forecasts. In summary, its applications with the greatest potential might arise from those exceptionally complicated technological challenges that lie beyond the reach of human capability rather than from uses that impact civil freedoms and the social fabric of our society. One such complicated issue is climate change, which calls for significant adjustments to the building, energy, transportation, and agricultural sectors. In order to provide more accurate forecasts of impending weather phenomena, particularly extreme events, it can also expand on the discoveries made on climate links. The article critically examines the growing application of artificial intelligence through the Electric Power Sector in India.

Keywords
artificial intelligence, electricity generation, power industry, global warming, mitigation, adaptation

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1 Introduction

Regarding climate change, the electric power industry and other industries that are the leading producers of greenhouse gases are in a special position. It is expected that climate change will present significant new challenges for this industry (McAllister, 2011). Changing climatic conditions can have a variety of positive and negative effects on the energy sector. Climate change can have direct effects on the supply and demand for energy, but it can also have indirect consequences through other economic sectors or disrupt energy-related transportation and infrastructure. Studies on how climate change affects energy are being generated in greater numbers (Pryor & Barthelmie, 2010). Among all economic sectors, the energy sector is one of the most resilient, but climate change is expected to present significant new problems for it (Bull et al., 2007). The industry will have to adjust to the shifting supply and demand brought on by climate change. The main obstacle facing the electrical industry is probably going to be the rise in demand for air conditioning brought on by warmer weather.

Furthermore, a growing portion of electricity comes from renewable energy sources, which are especially susceptible to climate change (Vine, 2012). The planning and operation of energy systems depend on making decisions in the face of uncertainty, and one of the many variables in uncertainty is climatic variability. A range of models are used in energy systems planning and operation to assess how climate change affects these processes. Conventional energy analysis, on the other hand, assumes that climatic variables are stationary, which may actually lead to more uncertainty when making decisions within a framework for climate change (Kopytko & Perkins, 2011). Assumedly, those renewable sources will be more heavily impacted by climate change than fossil ones (Schaeffer et al., 2012). It is anticipated that future climate change will differ significantly amongst locations. Changes in the local temperature and precipitation patterns may significantly impact the architecture of our current and future electricity systems. All significant facets of the electric power industry, such as power generation, transmission and distribution networks and end-user demand are susceptible to weather and climatic fluctuations (CEEESA, 2019). (Figure 1)

The climate will suffer if we continue to build fossil fuel power plants to accommodate our expanding need for electricity. However, if we push AI to become more efficient—that is, to do more with less energy—and use the increased demand

for electricity as a spur to shift our focus toward renewable energy and other low-carbon power sources, we may continue to gradually clean up the grid even as AI continues to permeate every aspect of our lives (Crownhart, 2024). While ML and other forms of AI are becoming more popular in supporting climate change estimates and impacts, there has been little research on the application of AI to climate change adaptation (Cheong et al., 2022). Adopting methods and technology that promote both climate change adaptation and mitigation is possible during this transformational process (EPA, 2011). The complexity of adapting to climate change derives from the need to balance trade-offs and synergies arising from the interdependencies between social-ecological systems and the sectors involved in adaptation. As the process of adjusting to current or anticipated climate change, adaptation is usually sector- or local-specific (Field et al., 2014), and it may ignore the transfer of climate hazards across regions and sectors (Challinor et al., 2018). AI technologies are not meant to replace human decision-makers. Instead, they contribute to raising human productivity (Sharma, 2023). The research community must create a comprehensive and operational understanding of the various ways that ML can influence mitigation and adaptation plans for climate change in order to explicitly and consistently account for ML in long-term climate and energy projections and the design of appropriate policies (Kaack et al., 2022). The majority of experts concur that concentrating on just four sectors—electricity, transportation, agriculture, and buildings—can have a significant impact on decarbonizing society. Only one is covered in this article: electricity. It is not meant to be a comprehensive analysis of AI's uses in the energy sector. While the article advocates using AI to reduce some of the low-hanging fruit that contributes to the issue of widespread greenhouse gas (GHG) emissions, it does not propose that AI can address climate change.

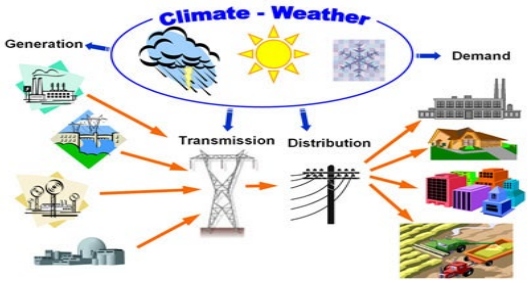

Figure 1: Climate impacts on power system Center for Energy, Environmental, and Economic Systems Analysis (CEEESA)

2 Climate Change

One of the biggest problems (most significant ecological and social challenges) facing humanity in the twenty-first century is climate change. Numerous direct and indirect effects are caused by climate change. The consequences of climate change are becoming more apparent. The intensity and frequency of storms, droughts, fires, and flooding have increased. Other consequences follow from these acute impacts of climate change. Water scarcity and shortages brought on by drought have an impact on different industries and vital infrastructures. The production of energy in power plants will be adversely affected, for example, by a shortage of water for cooling reasons (Rübbelke & Vögele, 2011). As a result of human activity, the US National Climate Assessment found that the "earth's climate is changing faster than at any point in the history of modern civilization" (Reidmiller et al., 2017). Global ecosystems are changing, affecting agriculture and natural resources that are essential to human survival. The worst of its effects are probably yet to come; in the meantime, more pressing issues that fall into an election cycle tend to occupy center stage in politics. Experts in behaviour even point out that, as a kind of self-defense, people tend to downplay the worst threats facing society (Stein, 2020). It became evident by the end of the nineteenth century that changes in GHG concentrations in the atmosphere might alter the temperature of entire planets (Weart, 2008). Human activity has raised atmospheric concentrations of GHGs such as CO_2, methane, nitrous oxides, and chlorofluorocarbons since the Industrial Revolution, particularly from the mid-1900s. At the same time, Earth's surface reflectivity, or albedo, has decreased. Long-term weather patterns, encompassing temperature, precipitation, and storm frequency, are referred to as the climate. Long-term averages are changing as a result of modern climate change, and there is also increasing volatility around these averages, leading to an increase in the frequency of extreme events. Although the temperature on Earth has always fluctuated, the current changes are so significant and quick that they may exceed the planet's ability to adapt and force the climate and biosphere into radically unsettling patterns (Roesch et al., 2020). Mitigation, or cutting emissions, and adaptation, or becoming ready for inevitable effects, are two parts of addressing climate change. Both are complex problems. Modifications to land use, industry, buildings, transportation, and energy infrastructure are necessary to mitigate greenhouse gas emissions. Given our knowledge of the climate and catastrophic occurrences, adaptation necessitates preparation for resilience and disaster management. One can view the wide range of issues as a chance because there are numerous methods to make a difference

(Rolnick et al., 2022). Since the middle of the 20th century, human influence on the climate has dominated the observed warming, and "human influence has become a principal agent of change on the planet."

Along with changes in many other aspects of climate, the average temperature change is accompanied by sea level rise, ocean acidification, and other changes. These processes are interdependent with other global environmental changes (GECs) that negatively affect ecosystems and interfere with services that humans depend on, such as the loss of biodiversity, changes to biogeochemical cycles, and the broad dissemination of materials and chemicals (Steffen et al., 2018). There have been suggestions to name the current geological epoch the Anthropocene due to the magnitude of these changes, which means they will probably be seen in the geological record millions of years from now. From the local to the global, GECs and our responses to them will probably have a revolutionary impact on people and societies (IPBES, 2019). Research already conducted indicates that communities based on identity may have different goals and attitudes about climate change. It is also evident that the people who have contributed the least to global warming have the least sway over international policy and stand to lose the most from the effects of climate change. The sociology of climate change gains a normative component as a result of these realities, which raise moral and ethical concerns regarding how climate justice ought to be implemented (Harlan et al., 2015). Critical infrastructures are not the only ones that climate change directly threatens; downstream infrastructures may also suffer as a result of their aftereffects (Rübbelke & Vögele, 2011).

3 Electric Power Sector

One of the most important aspects of infrastructure is power, which is essential for national welfare and economic progress. The global energy system is significantly impacted by climate change, particularly the power sector, which is especially vulnerable and sensitive to climate change (Perera et al., 2020). All facets of the electricity system are immediately impacted by the physical concerns associated with climate change. Systems for the transmission and distribution of electricity may be impacted by changes in the potential and demand for power generation brought on by global warming. Severe weather phenomena like heat waves and floods will also physically harm energy assets (Vafadarnikjoo et al., 2022). The evolution of the electric power industry is thus indirectly impacted by the transition risks connected

to climate policy. One of the main pillars of climate policy is the electric power industry, which has great potential for emission reduction (Sen et al., 2020). Given its ability to completely change sectors, artificial intelligence has been dubbed the "new electricity". Interestingly, one of the businesses that AI is expected to disrupt is the electrical sector. Data is permeating many electrical networks, and the sector is starting to imagine next-generation systems (smart grids) (Ng, 2017). A quarter of all GHG emissions that humans generate annually are caused by electricity systems. Furthermore, the need for low-carbon electricity will increase as structures, transportation, and other industries look to replace fuels that release greenhouse gases. In order to lower emissions from electrical systems, people must:

- Make a swift switch from carbon-emitting energy sources (including coal, natural gas, and other fossil fuels) to low-carbon sources (like solar, wind, hydro, and nuclear).
- Lower greenhouse gas emissions from the infrastructure are now in place for fossil fuels and energy, as the switch to low-carbon power happens gradually.
- These adjustments should be put into practice in all nations and situations because electrical systems are present everywhere (Change, 2014).

Using renewable electricity sources is crucial to combating global warming. There are two types of these sources: controlled and variable. Variable sources change according to outside conditions; for example, solar panels only generate electricity when the sun is shining, and wind turbines only generate electricity when the wind is blowing. Conversely, controlled sources such as nuclear or geothermal power facilities can be turned on and off (though not instantly) (Lokhov, 2011).

3.1 Variable sources

The majority of electricity is distributed to customers via a physical network known as the electric grid, in which the amount of power produced and consumed must always be equal (Aneke & Wang, 2016). This means that natural gas plants, storage, or other controllable sources are used to support solar panels, wind turbines, and other variable electricity generators so that they can withstand fluctuations in their output, such as sudden cloud cover or less wind than expected (Hittinger & Jaramillo, 2019). These days, natural gas and coal-fired power facilities that operate

in a CO_2-emitting standby mode known as spinning reserve frequently supply this buffer. Future energy storage technologies, including batteries, pumped hydro, and power-to-gas, are anticipated to fill this function (Evans et al., 2012). Variable generation and demand for energy are both erratic. Thus, forecasting them in advance is necessary to guide both long-term system planning and real-time electricity scheduling. Improved short-term projections can help system operators manage the growing number of variable sources proactively and lessen their dependency on dirty standby plants. Improved long-term projections can assist investors and system operators in deciding where and when to build variable plants (Anderson et al., 2018).

3.2 Controllable Sources

Since today's fossil fuel power plants are also controllable, achieving climate change targets with controlled low-carbon electricity sources can be accomplished with little adjustments to the electric system. Numerous regulated low-carbon technologies, such as nuclear fission, geothermal, and (in certain situations) dam-based hydropower, are already offered for sale. Methane may be created by dam-based hydropower, mostly from biomass that breaks down during a hydro reservoir flood, though the quantity produced differs throughout power facilities (Steinhurst et al., 2012). Multi-objective optimization has also been utilized in earlier research to locate hydropower dams in a way that meets ecological and energy objectives. Lastly, by anticipatorily identifying problems from high-dimensional sensor and simulation data, or by finding cracks and anomalies from image and video data, ML can aid in maintaining nuclear fission reactors or nuclear power plants (Wu et al., 2018). With an almost infinite supply of hydrogen fuel, nuclear fusion reactors have the potential to generate safe, carbon-free electricity; yet, at the moment, their energy consumption exceeds their energy output (Cowley, 2016). Even if there is still a great deal of research to be done in science and engineering, ML can assist in accelerating this process by, for example, directing experimental design and tracking physical processes. Fusion reactors have many tunable characteristics thus their experimental design needs to be carefully considered (Humphreys, 2020).

4 Electric Power Sector in India

India has one of the world's most diverse electricity industries. For the Indian economy to grow steadily, sufficient electrical infrastructure must exist and be further developed. The provision of reasonably priced power to all people in an environmentally sustainable manner has been the cornerstone of India's power sector. Over the last few years, the Ministry of Power has worked hard to achieve universal household electrification, strengthen the distribution network, and create a unified national grid in order to transform the nation from one experiencing a power deficit to one experiencing a surplus (Central Electricity Authority, 2024). Power generation can come from a variety of sources, including feasible non-conventional sources like wind, solar, agricultural, and household waste, as well as conventional sources like coal, lignite, natural gas, oil, hydro, and nuclear power. The nation's need for electricity has grown quickly, and this trend is predicted to continue in the years to come. Massive additions to the installed production capacity are needed to keep up with the nation's growing demand for electricity (Power Industry Report, May 2024). As of January 31, 2024, India ranked third in the world both in terms of electricity production and consumption, with an installed power capacity of 429.96 GW. India had 182.05 GW of installed renewable energy capacity (including hydro) as of January 31, 2024, accounting for 42.3 percent of the country's total installed power capacity. Solar energy accounted for 82.63 GW of total energy as of April 30, 2024. Wind power accounted for 46.16 GW, biomass for 10.35 GW, small hydropower for 5.00 GW, waste to energy for 0.59 GW, and hydropower for 46.93 GW. The increase in non-hydro renewable energy capacity was 15.27 GW in FY23 compared to 14.07 GW in FY22. In FY23, India's power generation saw its fastest growth rate in more than 30 years. By January 2024, India's power generation has grown by 6.80 percent to 1,452.43 billion kWh. India consumed 1,503.65 BU of power in April 2023, according to data from the Ministry of Power. January 2024 had a peak power consumption of 243.27 GW nationwide. For the first nine months of FY23, the coal plants had a PLF of 73.7 percent up from 68.5 percent during the same period in FY22. The load on thermal power plants is predicted to increase by 63 percent in FY24, driven by both robust demand growth and moderate capacity addition in the industry (Power Industry Report, May 2024).

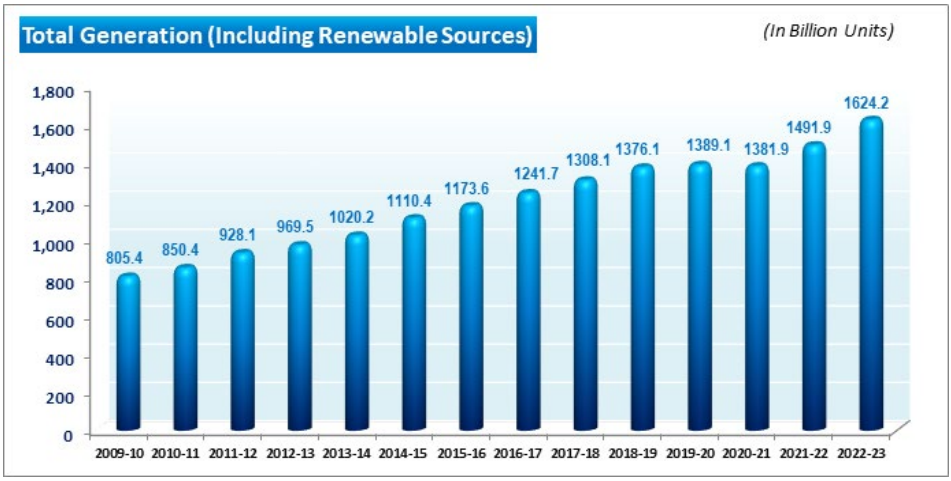

Figure 2
Source: Government of India: Ministry of Power

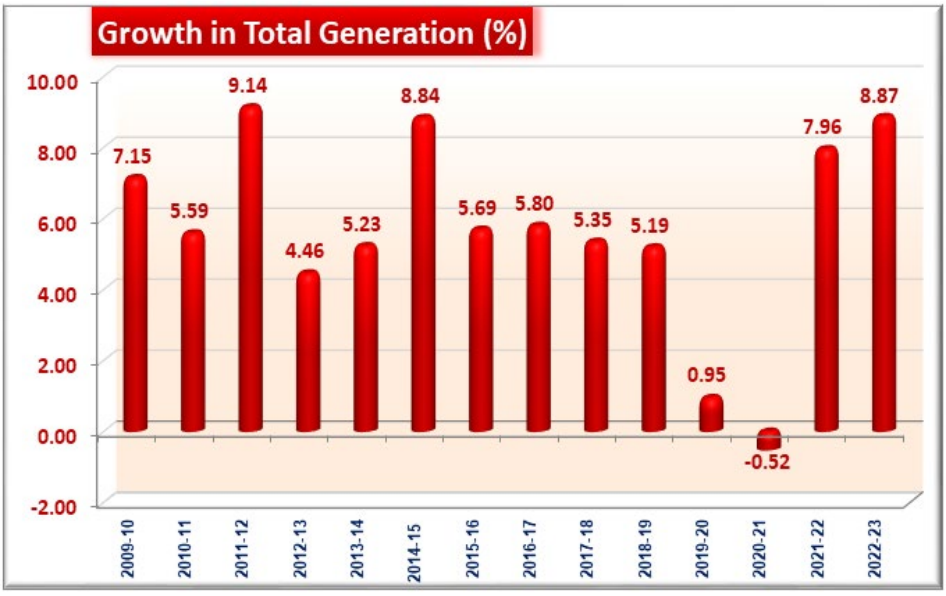

Figure 3
Source: Government of India: Ministry of Power

4.1 Electricity generation by the electric power sector in India

- Installed Capacity: As of April 30, 2024, India's installed power capacity stands at 442.85 GW.
- Renewable Energy: As of January 31, 2024, India's installed renewable energy capacity (including hydro) was 182.05 GW, accounting for 42.3 percent of the overall installed power capacity.
- Non-Hydro Renewable Energy: The addition of non-hydro renewable energy capacity stood at 15.27 GW in FY23, up from 14.07 GW in FY22.
- Thermal Power: Thermal power plants registered a Plant Load Factor (PLF) of 73.7 percent for the first nine months of FY23, compared to 68.5 percent in FY22 for the same period.
- Hydro Power: Hydro power generation capacity stood at 46.16 GW as of April 30, 2024.
- Nuclear Power: India's nuclear power capacity is expected to rise from 7,480 MW to 22,480 MW by 2031.
- Coal Crisis: The recent coal crisis has raised concerns, as over 60 percent of electricity produced in India is derived from thermal power plants, which rely on coal. In 2021, the industrial sector accounted for the largest share of electricity consumption (43.9 percent).
- Electricity Generation Targets: The government has set a target of 1750 BU (billion units) for electricity generation in 2023-24, comprising:
    - 1324.110 BU Thermal;
    - 156.700 BU Hydro;
    - 46.190 Nuclear;
    - 8 BU Import from Bhutan;
    - 215 BU RES (excluding hydro).
- Growth Rate: Electricity generation in India has grown steadily over the past decades, with a growth rate of around 7.2 percent over the previous year (2022-23).
- State-wise Capacity: As of October 31, 2023, the state-wise installed power generation capacity in India is:
    - Dadra and Nagar Haveli and Daman and Diu: 46.47 MW (100 percent renewable)
    - Jammu and Kashmir: 3751.41 MW (95.33 percent renewable)

  - Andaman and Nicobar Islands: 127.87 MW (27.50 percent renewable)
- Foreign Direct Investment (FDI) in the Power Sector:
  - Total FDI inflows in the power sector: US$ 18.28 billion (April 2000-March 2024).
  - Renewable energy sector: US$ 6.1 billion (April 2020-September 2023).
  - Solar energy sector: US$ 3.8 billion (April 2020-September 2023).

5 Electric Power Sector and Climate

For human existence, well-being, and sustainable development, electricity is necessary. The zones of prosperity—those with access to electricity—are depicted in night-time images of the planet. About 20 percent of people on the planet, however, still live in the dark and lack access to running water, computers, lighting, refrigerators, and quality education (Berga, 2016). As one of the largest industrial systems in the world, the electric power industry need a particular operational strategy to be run effectively: a dedication to highly structured, interconnected, authoritarian systems. This makes it an embodiment of a unique sociotechnical structure that is likely to attract, reward, and retain energy professionals whose character traits enhance and support these underlying systems (Kahsar, 2019). Climate change can have direct implications on energy supply and demand, but it can also have indirect consequences through other economic sectors or affect several other components of the energy sector, like energy transportation and infrastructure (Schaeffer et al., 2012). Extreme weather events' frequency, severity, and duration have a major impact on human life and productivity. The electric power industry is the backbone of the economy and a major contributor to climate change adaptation and mitigation. Thus, in light of climate change, it is imperative that the stable power sector manage various climate change risks and enhance their climate change resilience. The risk management framework should incorporate climate change risks in order to improve the ability of electric power to respond to changing climate conditions (Sun et al., 2023). To provide certain energy services, energy resources must be transformed into final energy sources. Climate change can have a range of effects on energy transformation facilities, which can impact the system's ability to provide consumers with energy. Since the effects of global climate change are expected to manifest themselves in the mid to long-term, climate impact analyses need to factor in the likelihood that a significant portion of the current energy

system, including those being built now or in the near future will continue to function when the new climate conditions materialize (Schaeffer et al., 2012). In addition to the existing generation capacity, the variability of water inflows to the power plants' reservoirs determines how much electricity can be produced by hydropower plants. The design and functioning of hydropower systems are already significantly impacted by natural climatic variability. Climate change may have an impact on how well the current hydroelectric system functions and might jeopardize the feasibility of future business ventures (De Lucena et al., 2009). The effects of climate change on the energy system are not limited to the supply side because changes in temperature and precipitation patterns can also have an impact on final energy consumption. In the upcoming ten years, climate risk will continue to be the most significant worldwide risk, making it imperative to mitigate and adapt to global climate change (WEF, 2022). Reaching the new Sustainable Development Goals (SDGs) by 2030 is a challenge facing humanity today. To direct development efforts, these objectives form a sustainable development agenda.

6 Mitigation and Adaptation

Among the most complicated challenges of our day is climate change. This crucial topic is centered on mitigating and adapting to climate change in electrical power infrastructure and energy systems (Arabnya, 2024). There are two different kinds of responses to climate change: adaptation and mitigation. Regarding climate change mitigation, the electric power industry has received a lot of attention, but not when it comes to climate change adaptation. The industry is accountable for over one-third of the nation's greenhouse gas emissions; nevertheless, there are numerous options for mitigating its impact. The adaptation-related characteristics of these mitigation options differ significantly, including their reliance on water resources that are anticipated to become scarcer due to climate change, their susceptibility to disasters linked to climate change, and their effects on the environment outside of climate change (Ebinger & Vergara, 2011). The goal of mitigation is to reduce greenhouse gas emissions and atmospheric concentrations of these gases. The goal of adaptation is to help natural and human systems adapt to a world with a changing climate. Both mitigation and adaptation aim to lessen the impact of climate change by lowering the rate at which the climate changes and the amount of harm that results from it. Climate change policy has frequently treated adaptation and mitigation separately despite the fact that they are interconnected (McAllister, 2011). Mitigation and adaptation have often inhabited various policy areas and followed

different policy trajectories for a wide range of causes. All things considered, mitigation has received far more attention than adaptation. Proponents of climate change policy believed that mitigation was a better response than adaptation and that, with careful consideration, adaption could be avoided (Arabnya et al., 2024).

7 Artificial Intelligence / Machine Learning

AI is available in a wide variety of formats and AI is a more general term that includes ML. The most widely used type is ML, a prediction-making technique that works best with enormous volumes of data and processing power (Stein, 2020). There has been a spike in interest in discovering how ML, and specifically AI, may affect climate action as ML is increasingly used in society (Zhang et al., 2021). The research community must create a comprehensive and operational understanding of the various ways that ML can influence mitigation and adaptation plans for climate change, both positively and negatively, in order to explicitly and consistently account for ML in long-term climate and energy projections and the design of appropriate policies. Specifically, the effects that are most likely not to have the most significant consequences are probably not the easiest to assess. This may make it challenging to estimate macro-scale effects, identify underlying dynamics and trends, and prioritize activities that will best integrate ML with climate policies (Kaack et al., 2022). By assisting in the advancement of critical technologies (forecasting, scheduling, and control) and in the creation of sophisticated electricity markets that can handle both variable electricity and flexible demand, ML can help both lower emissions from today's standby generators and facilitate the switch to carbon-free systems (Ahmed et al., 2020). Although a lot of system operators still rely on simple forecasting methods, in order to serve these use cases, predictions will need to be more precise, cover a broader range of time and space, and more accurately measure uncertainty (Das et al., 2018). ML is helpful in each of these aspects. Numerous ML techniques have been used to the supply and demand of energy to date. In order to produce short- to medium-term forecasts of solar power, wind power, "run-of-the-river" hydropower, demand, or more than one of these at aggregate spatial scales, these methods have utilized historical data, physical model outputs, pictures, and even video data (Perera et al., 2014). These techniques cover fuzzy logic, hybrid physical models, and supervised ML techniques of all kinds. They also differ in how they quantify—or do not quantify—uncertainty. Some studies have sought to understand certain categories of demand at a more spatially granular level, for example, by utilizing game theory, optimization, regression, and/or online learning to

disaggregate electricity signals or cluster households (Elkin & Witherspoon, 2019). Future ML algorithms will need to account for domain-specific knowledge. For example, as weather is a primary driver of both variable generation and energy consumption, ML algorithms that estimate these quantities should leverage advances in hybrid physics-plus-ML modeling techniques, weather forecasting, and climate modeling. Since weather distributions change over time, these methods can help short- to medium-term forecasts and are also essential for ML to contribute to longer-term (e.g., year-scale) forecasts (Voyant et al., 2017). ML has the potential to enhance the current centralized scheduling and dispatch process by increasing the speed at which power system optimization issues are resolved and the caliber of optimization solutions. For example, ML can be used to discover redundant restrictions, uncover excellent starting points for optimization, identify current optimization problems and/or simplify them, learn from the actions of power system control experts, or a combination of these (Fioretto et al. 2020). Recent research has examined ways to (at least partially) decentralize scheduling and dispatch utilizing energy storage, flexible demand, low-carbon generators, and other grid-connected resources, even though many modern electrical systems are centrally controlled (Dobbe et al., 2019). Variable power generation can be advanced by machine learning in numerous other ways. As an example, it is critical to ensure that variable low-carbon generators generate energy as profitably and efficiently as feasible (Reisi et al., 2013).

7.1 Artificial Intelligence and Climate Change

ML has gained popularity recently as a widely effective method for advancing technology. The need for a concentrated effort to determine how these technologies may be most effectively used to address climate change persists, despite the expansion of movements using ML and AI to solve issues of social and global benefit. Many ML practitioners want to take action but do not know how. Conversely, numerous domains have initiated proactive efforts to obtain feedback from the ML community (Berendt, 2019). The usefulness and applicability of ML approaches to advance our comprehension of local and global settings have been hotly debated in the scientific community. Predictive and probability-based computations are made possible by ML, and these are helpful tools for assessing the advantages and disadvantages of our current course of action. Understanding the benefits and drawbacks of contemporary ML methods helps anyone working in climate research to better comprehend and critique published data and conclusions

(Beardmore, 2022). Microsoft's AI for Earth Programme is one emerging commercial platform that uses ML to address climate change. It was established in 2017 with the goal of awarding 200 research grants totaling $50 million to initiatives that use AI to mitigate environmental damage (Geoff, 2018). Researchers and scientists can directly allow for enhanced transparency and critical analysis by sharing data, techniques, and results using Microsoft's platform and interface. The idea is to draw specialists together to establish a collaborative environment that will lessen the effects of climate change. Additional projects are the Climate Science for Service Partnership China and Climate Change AI, which are cooperative science projects between academic institutions (Scaife et al., 2021). AI technologies have demonstrated their efficacy in improving legacy systems and simplifying intricate business processes. AI has the potential to change a number of "clean tech" domains, including the efficiency of freight transportation, the design of environmentally friendly structures, and sustainable supply chains (Demianchuk, 2019).

7.2 Electric Power Sector Mitigates Climate Change Through AI

The Electric Power Sector can play a significant role in mitigating climate change through the application of AI. Here are some ways AI can help:

- **Predictive Maintenance**: AI-powered predictive maintenance can help reduce energy losses and emissions by identifying potential issues before they occur, allowing for proactive maintenance and reducing the need for backup fossil fuel-powered plants (Moulin, 2018).
- **Smart Grids**: AI can optimize the smart grid by analyzing energy demand and supply in real-time, enabling utilities to manage energy distribution more efficiently and reducing the likelihood of blackouts. AI-enabled smart grids can monitor and control energy distribution in real-time, allowing utilities to respond quickly to changes in demand and supply, reducing waste and minimizing emissions (Sumeet, 2022).
- **Energy Efficiency**: AI can help optimize energy consumption by analyzing energy usage patterns and providing personalized recommendations to consumers, reducing energy waste and emissions (Kamya Choudhary, 2022).
- **Renewable Energy Integration**: AI can help integrate renewable energy sources into the grid by predicting energy demand and supply, ensuring a stable

and efficient energy supply. AI can optimize the integration of renewable energy sources, such as solar and wind power, into the grid, providing a stable and reliable supply of clean energy (Sumeet Singh, 2022).

- **Climate Modeling**: AI can help improve climate modeling by analyzing large datasets and identifying patterns and trends, enabling more accurate predictions and better decision-making (Moulin, 2018).
- **Energy Storage**: AI can help optimize energy storage systems, enabling utilities to store excess renewable energy for later use, reducing the need for fossil fuels, and decreasing emissions (Anjali Raja, 2022).
- **Demand Response**: AI-driven demand response systems can adjust energy consumption in real-time to match supply, reducing the need for peaker plants and associated emissions (Anjali Raja, 2022).
- **Grid Optimization**: AI can optimize grid operations to reduce energy waste, lower peak demand, and increase the integration of renewable energy sources, thereby decreasing emissions (Moulin, 2018).

7.3 Challenges and Concerns

- **Energy Consumption**: AI-powered data centers and equipment require significant amounts of energy to operate, which can lead to increased emissions and energy consumption, which can offset the environmental benefits of AI applications in the Electric Power Sector.
- **Carbon Footprint**: The production and disposal of AI-powered devices and infrastructure can have a significant carbon footprint. The production and transportation of AI systems and equipment also contribute to emissions.
- **Climate Misinformation**: AI can be used to spread misinformation about climate change, which can undermine efforts to mitigate its effects.
- **Misinformation and Bias**: AI can perpetuate or amplify climate misinformation and biases, hindering effective climate change mitigation efforts.
- **Climate Change Risks**: The Electric Power Sector is vulnerable to climate-related risks such as extreme weather events, droughts, and heat waves, which can impact operations and infrastructure.
- **Economic Opportunities:** The transition to a low-carbon economy presents significant economic opportunities for the Electric Power Sector, including job creation, investment, and growth.

- **Policy and Regulation:** Strong policy and regulatory frameworks are necessary to support the transition to a low-carbon economy and ensure a level playing field for all stakeholders.
- **Finance:** Availability of project finance (India, Climate Action Taker, 2023).

7.4 Indian Government Initiatives

- PM-Surya Ghar: Muft (Free) Bijli Yojana – aims to install rooftop solar systems and offer complimentary electricity to one crore (ten million) households.
- Loan approval from the World Bank to improve electricity supply efficiency and reliability.
- Increased funding for domestic solar cells and module manufacturing under the PLI scheme.
- Building Energy Efficiency Programme (BEEP) by Energy Efficiency Services Limited (EESL) (Nidhi Bhardwaj, 2022).

7.4.1 Future Outlook

India's power sector is expected to continue its transition towards cleaner energy sources, with a focus on renewable energy and energy efficiency. The government's initiatives and policies will play a crucial role in achieving this transition. The sector will need to address the challenges mentioned above to ensure a smooth and sustainable growth trajectory. To address these challenges, the Electric Power Sector must prioritize transparency, energy efficiency, and responsible AI development and deployment practices. By doing so, AI can become a valuable tool in the fight against climate change, rather than a hindrance. While AI has the potential to play a significant role in mitigating climate change in the Electric Power Sector, it is essential to consider the challenges and concerns associated with implementing it. By addressing these challenges and ensuring that AI is developed and used responsibly and sustainably, the Electric Power Sector can help reduce its carbon footprint and contribute to a more sustainable future.

8 Conclusion

The problem of climate change will continue to impact civilization dramatically. Although people are becoming more conscious of the issue, we have not yet, as a species, taken the extreme measures required to reduce our carbon emissions. Over the next few decades, there will be significant changes in the electric power industry. The industry is likely to face regulatory pressure to reduce its emissions because it is a significant generator of greenhouse gases. The substantial effects of climate change will also become more evident over time, prompting a variety of adaptation strategies. AI is anticipated to be the smart grid's brain in the future. For the purpose of making prompt judgments about the most effective use of energy resources, the system will continuously gather and combine massive volumes of data from millions of smart sensors across the country.

Additionally, the supply and demand sides of the energy economy will undergo a revolution because of the developments made in "deep learning" algorithms, a method in which computers learn by identifying patterns and anomalies in massive data sets. Large regional networks will, therefore be replaced by specialized microgrids that can more precisely handle local energy needs. When combined with innovative battery technologies, these provide uninterrupted power supply to and from nearby areas, even in the event of severe weather or other power system disruptions. We find it challenging to act on climate change because it is a cognitively daunting phenomenon. As it happens, our environment and genes have hardwired us to continue with business as usual and to respond to threats that are both more tangible and more pressing than this intangible, abstract being. In an effort to encourage people to take action and have an influence, we are using current advancements in artificial intelligence to make the effects of climate change more tangible and relatable. The main advantage of ML is that it makes it possible for us to classify, simplify, and forecast using incredibly complicated datasets. Global monitoring and mobilization are made possible by the ability to analyze data at bigger spatial and temporal scales in order to make observations on intricate processes. Looking ahead, cloud computing's efficiency are driving down the cost of processing power and data storage, making ML an increasingly attractive tool for data analysis.

Furthermore, the increasing application of ML techniques to address climate change is made possible by a significant rise in data availability, which is driven by many resources like the Internet of Things and crowdsourcing methods. The final effects

of ML on the climate are not set in stone, and society's choices will have a significant influence on how it plays out. In order to mitigate the effects of use cases that can run counter to climate change aims and encourage the use of ML in support of climate change strategies, a comprehensive portfolio of techniques spanning policy, industry, and academia will be needed. Above all, society needs to take action immediately since there is a unique opportunity to influence ML's effects for many years to come. This is because ML is becoming increasingly common, and climate change is becoming a more pressing issue. The limitations of AI must be recognized and moderated. AI and ML have shown to have great promise for changing our society, including the ways in which we work, live, and consume. These potent instruments will undoubtedly play a critical role in the international effort to stop catastrophic climate change in the years to come. AI must be incorporated into the plan. We want to be clear that ML is not a panacea. Though the applications we showcase are significant, there no single solution that can "cure" climate change. Ultimately, technology cannot address climate change on its own or take the place of other components of climate action, like policy. Although many helpful technology techniques for combating climate change have been around for a while, society has not yet embraced them widely. Although we expect ML can help expedite successful climate action initiatives, mankind must still decide to take action.

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End Notes

With major ramifications for energy efficiency, grid optimization, and carbon footprint reduction, the use of AI in the electric power industry is developing quickly. These applications are examined in this research within the framework of mitigation methods for climate change. Using insights from recent developments in AI, such as machine learning, predictive analytics, and automated decision-making systems, the study highlights the relationship between technology and sustainability. The legitimacy and validity of the results are guaranteed by the fact that the data and case studies used in this research were taken from peer-reviewed, publically accessible sources. This study's reliance on data availability and the variation in AI adoption across businesses and geographical areas are two major limitations.

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Povzetek v slovenskem jeziku

Ocenjevanje in usmerjanje posledic umetne inteligence (UI) in strojnega učenja (SU) ostaja prisotno v našem vsakdanjem življenju in vključuje skupna prizadevanja akademikov, politikov in industrije z nedvoumnim vplivom na sedanjost in prihodnost. UI ima sposobnost izboljšati rezultate, povečati produktivnost ter izboljšati natančnost in učinkovitost številnih plati družbe, ki so odvisne od verjetnosti in napovedi. V povzetku, njena uporabnost z največjim potencialom bi se lahko pokazala pri tistih izjemno zapletenih tehnoloških izzivih, ki so zunaj dosega človeških zmožnosti, in ne pri takšnih uporabah, ki vplivajo na civilne svoboščine in socialno strukturo naše družbe. Eden izmed takih zapletenih problemov so denimo podnebne spremembe, ki zahtevajo znatne prilagoditve v gradbenem, energetskem, prometnem in kmetijskem sektorju. Da bi zagotovili natančnejše napovedi prihajajočih vremenskih pojavov, zlasti ekstremnih razmer, lahko tudi razširi odkritja o podnebnih povezavah. Članek kritično obravnava vse večjo uporabo umetne inteligence prek sektorja električne energije v Indiji.

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FAMILY PLANNING: LEGAL REGULATIONS AND PRACTICE IN SLOVENIA

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Abstract Family planning allows individuals to achieve their desired number of children, and to control the timing of their pregnancies. This can be accomplished through contraception, with reducing the need for abortion, and infertility treatments. Pregnancy and childbirth are related to maternal mortality, which can be reduced with the prevention of unintended pregnancies. Access to contraception and safe abortion is crucial. At the 1968 International Conference on Human Rights in Teheran, family planning was declared a basic human right. In 1974, Yugoslavia was the first country in the world declaring the constitutional right to freedom of choice in childbearing. The safety of artificial pregnancy termination has been greatly enhanced by the improvements of vacuum aspiration technique, developed by Slovenian doctors in 1964. In Slovenia, abortion rates are constantly decreasing since 1980 due to available contraception and established contraceptive service. The history of family planning in Slovenia and actual situation are presented.

Keywords
abortion,
human rights,
reproductive rights,
contraception,
infertility

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1 Introduction

Family planning allows individuals to achieve their desired number of children, and to control the timing of their pregnancies. This can be accomplished through contraceptive methods and infertility treatments. Providing access to information about contraception, and to contraceptive methods and services, is crucial for the health and human rights of everyone. Reducing unintended pregnancies and the need for abortion helps lower the incidence of maternal health problems and pregnancy-related deaths, e.g., maternal mortality. Family planning also offers health advantages by delaying pregnancies in young girls, who are at higher risk for health issues from early childbearing, and by preventing pregnancies in older women, who also face increased health risks (World Health Organization [WHO], 2019).

When considering the timing between births, children born within two years of an older sibling have a 60 percent higher risk of infant mortality, while those born within 2-3 years have a 10 percent higher risk compared with those born after a 3-year interval or longer. Contraception also provides various non-health benefits, such as greater educational opportunities and empowerment for women, as well as sustainable population growth and economic development for countries (WHO, 2023).

Over the last two decades, the number of women wanting to use family planning has significantly increased, rising from 900 million in 2000 to nearly 1.1 billion in 2021. During the period from 2000 to 2020, the number of women utilizing modern contraceptive methods grew from 663 million to 851 million. By 2030, an additional 70 million women are expected to adopt modern contraception (WHO, 2023).

1.1 Maternal Mortality

Key indicators of reproductive health include maternal mortality and morbidity. The World Health Organization (WHO) describes maternal mortality as "the death of a woman during pregnancy or within 42 days following the end of pregnancy, regardless of the duration or location of the pregnancy, from any cause linked to or worsened by the pregnancy or its management, excluding accidental causes. Maternal mortality is expressed as the number of maternal deaths per 100,000 live births." Maternal morbidity lacks a standard definition, but it is typically described as "the health complications of a pregnant woman, from any cause exacerbated by

pregnancy or its management, excluding accidental causes." Maternal mortality rates remain alarmingly high. In 2020, approximately 287,000 women lost their lives during or following pregnancy and childbirth. Nearly 95 percent of these deaths occurred in low and lower-middle income countries, and many could have been prevented (WHO, 2024a).

Complications arising from pregnancy and childbirth are the primary causes of maternal mortality. Most of these complications emerge during pregnancy and are largely preventable or treatable. Some conditions may pre-exist pregnancy but can be exacerbated during gestation if not properly managed as part of comprehensive maternal care. The leading causes of maternal deaths, constituting nearly 75 percent of cases, include severe bleeding (mainly postpartum haemorrhage), infections (typically post-childbirth), high blood pressure disorders such as pre-eclampsia and eclampsia, complications during delivery, and unsafe abortion practices (WHO, 2024a).

1.2 Safe Abortion

To reduce maternal mortality, it is imperative to prevent unintended pregnancies. Access to contraception and safe abortion services is crucial for all women, including adolescents. Furthermore, ensuring high-quality post-abortion care is essential to safeguarding maternal health (WHO, 2024b).

There are approximately 210 million pregnancies worldwide annually, with 4 out of 10 being unintended. Approximately 73 million induced abortions are performed globally each year. Six out of 10 unintended pregnancies (61 percent; or approximately 24 percent of all pregnancies) and three out of 10 pregnancies overall (about 29 percent) result in induced abortion. Abortion is an essential healthcare procedure that is safe when performed using methods recommended by the WHO, appropriate to the stage of pregnancy, and administered by skilled professionals. It is estimated that more than 21 million women undergo unsafe abortions each year, with 9 out of 10 of these occurring in developing countries (International Federation of Gynecology and Obstetrics [FIGO], n.d.; WHO, 2024b). However, about 45 percent of abortions are unsafe, posing a significant and preventable risk to maternal health. Unsafe abortion is a leading cause of maternal deaths and complications, contributing to physical and mental health issues, as well as placing social and financial burdens on women, communities, and health systems. The lack of

accessible, timely, affordable, and respectful abortion care represents a critical public health and human rights challenge (WHO, 2024b).

The increasing adoption of contraceptive methods globally has resulted in reduced maternal and infant mortality rates, improvements in socio-economic conditions, and increased educational opportunities for girls and women. In countries where less than 10 percent of women use contraception, the infant mortality rate is 100 per 1,000 live births. This rate is halved when contraceptive use increases by 30 percent It has been projected that contraceptive use has nearly halved maternal mortality rates (FIGO, n.d.).

In Slovenia, abortion is permitted upon a request up to 10 gestational weeks, and after 10th week with the approval of commission. In 2022, there were 5,229 foetal deaths recorded in Slovenia, which equates to 12.4 cases of foetal deaths per 1,000 women of reproductive age. Of these, 57 percent were legal abortions, others foetal deaths were miscarriages, pathological and extrauterine pregnancies. The rate of legal abortions has decreased from 18.8 per 1,000 women in 1997 to 7.1 per 1,000 women in 2022 (Nacionalni inštitut za javno zdravje [NIJZ], n.d.-a).

The professional requirements in our country include written consent by the woman, pre-abortion consultation, pre-abortion laboratory tests (e.g. RhD status), pre-abortion gynaecological and ultrasound examination, post-abortion consultation and gynaecological examination, along with counselling on contraception (Abort Report, 2024).

Abortion methods practiced in Slovenia include medical and surgical procedures, both available in every hospital. For medical abortion, mifepristone and misoprostol are used. The majority of Slovenian hospitals allow medical abortion to be performed at home up to nine weeks and 0 days of gestation. Surgical abortion methods include vacuum aspiration or exceptionally dilation and curettage (hereinafter: D&C). Most abortions in Slovenia in 2022 were medical abortions, accounting for 84 percent, while surgical abortions made up only 16 percent of cases (Abort Report, 2024).

2 Historical View on Family Planning

2.1 Planning is a Basic Human Right

Throughout human history, the task of planning, avoiding, or postponing pregnancy had traditionally been a private burden borne by women and girls. However, at the 1968 International Conference on Human Rights, held in Teheran, family planning was established as a human rights imperative for all countries, governments, and policymakers. The conference's resulting document, known as the Teheran Proclamation, clearly affirmed: *"Parents have a fundamental human right to freely and responsibly determine the number and timing of their children.*" (United nations population fund [UNFPA], 2018).

2.2 Yugoslavia and Family Planning

In our region, prof. Pavel Lunaček, a member of the Federal Assembly of the Federal People's Republic of Yugoslavia, fought to liberalize attitudes towards abortion by proposing a new Penal Code in 1951. This code stipulated that only the individual performing the abortion would face punishment, while the woman undergoing or consenting to the illegal procedure would not be penalized (Lukanović, 2019).

Due to demographic pressures, the Yugoslav Congress of Gynaecologists and Obstetricians in 1953 initially prohibited abortion, citing it as a socially harmful phenomenon. However, by 1960, the Decree on the Conditions and Procedure for the Authorization of Abortion was enacted, permitting abortion in Slovenia on social grounds. In 1961, the Health Council of the Socialist Republic of Slovenia established a specialized unit within the Clinical Hospital for Obstetrics and Gynaecology, overseen by prof. Lidija Andolšek-Jeras. Renamed the Family Planning Institute in 1967 under the leadership of prof. Andolšek-Jeras, this institution aimed to protect women's reproductive health in Slovenia (Lukanović, 2019).

Prof. Andolšek-Jeras was instrumental in the adoption of the Resolution on Family Planning at the Federal Assembly of the Federal People's Republic of Yugoslavia in April 1969. That same year, the General Act on Pregnancy Termination was passed, outlining the conditions under which pregnancy could be artificially terminated. According to the Act, abortion was permissible if there was scientific belief that

severe physical or mental defects could occur due to parental illness. The Act also allowed termination upon the pregnant woman's request if she faced challenging personal, familial, financial, or other circumstances during pregnancy or after childbirth (Lukanović, 2019).

The constitutional right to freedom of choice in childbearing was established through the amendment of Article 191 in the Constitution of the Socialist Federal Republic of Yugoslavia in 1974. The Article 191 stated: *"It is a human right to freely decide on family planning. This right may only be restricted for reasons of health."* Article 233 in the constitution of the Socialist Republic of Slovenia from 1974 stated that society ensures the necessary education, appropriate social protection, and healthcare assistance in relation to the exercise of this right (Đurović, 1974; IUS-INFO, n.d.; Lukanović, 2019).

After three years of deliberation, the Health Measures in Exercising Freedom of Choice in Childbearing Act was finally adopted on April 26, 1977 (Lukanović, 2019).

2.3 Development of contraceptive methods in Slovenia

The beginning of contraception in Slovenia can be traced back to 1955 when, at the initiative of prof. Franc Novak, the then Council for Health and Social Policy of the LRS discussed the introduction of modern contraception and concurrently proposed the development of domestic contraceptives. Based on the knowledge and possibilities of the time, the most suitable methods to prevent unwanted pregnancies were diaphragms with protective creams and/or condoms. Consequently, the Sava factory in Kranj started producing diaphragms (Genofragma), while the pharmaceutical factory Lek produced contraceptive paste (Genosan). Gradually, a network of specialized clinics and counselling centres for contraception was established throughout the country – the first contraception clinic within the entire Yugoslavia was opened at the Central Gynaecological Dispensary in Ljubljana on December 1, 1955, under the leadership of gynaecologist Bogdan Tekavčič. In 1957, a contraception clinic was also established at the Gynaecological Clinic in Ljubljana. Similarly, two clinics started operating in Maribor in January 1957. By the end of 1958, there were already 41 KC clinics in Slovenia. This development can also be attributed to the resolution adopted at the 3rd Congress of Yugoslav Gynaecologists held in Ljubljana in 1956, which stated that principles for managing conception

through contraception should be adopted to protect women from unwanted pregnancies and abortions (Borko, 2012).

In April 1961, the Council for Health of the SR Slovenia established the Scientific Research Department for Abortion and Contraception Issues as a special unit of the Gynaecological Clinic, organized and led by prof. Andolšek-Jeras, tasked with guiding the development of contraception in Slovenia. Contraceptive clinics and 14 medical commissions, including a social worker to address unfavourable social conditions and provide advice on contraceptive use, were responsible for the introduction and expansion. In counselling, they primarily used the booklet "Conception by Our Will or Contraception" by prof. Franc Novak, first published in 1957 and again in 1959 (Borko, 2012).

To educate women on the benefits of contraception over abortion, systematic examinations including cytological smears and colposcopy, along with contraception lectures, were used in some places such as Maribor. They emphasized the advantages of contraception during counselling sessions. Despite these efforts, the number of induced abortions increased after 1960, prompting Maribor and other gynaecological departments to prepare specific written instructions on contraception in 1962 for women who had undergone abortions. In 1960, prof. Novak published the first Slovenian textbook "Gynaecology," with a chapter on "Contraception" written by Bogdan Tekavčič. This chapter described the procedures in the contraception clinic and biannual check-ups, as long as the diaphragm remained undamaged. Besides the diaphragm as the preferred contraceptive, doctors also recommended local chemical contraceptives (spermicides), although these often ran out on pharmacy shelves (Borko, 2012).

During this period, the Laboratory of the Abortion Prevention Department at the Gynaecological Clinic in Ljubljana evaluated the spermicidal effectiveness of various contraceptives available, including Genosan gel and Patentex gel. One of the well-known contraceptives was the EMKO foam donated to our country by the American Red Cross. Prescribing local chemical contraceptives was similar to prescribing other medications. This period concluded with prof. Novak's booklet "Motherhood to be Conscious" in 1964, describing social changes worldwide and in Slovenia, and including a new chapter on oral contraception (Borko, 2012).

The era of hormonal contraception began with the first professional contribution by prof. Andolšek-Jeras and Hren, published in 1964 in issues 1 and 2 of "Yugoslav Gynaecology and Obstetrics," reporting on a 12-month trial of Anovlar, Lyndiol, Norlutate, and Provera. This enabled the prescription of new hormonal pills starting in 1966, initially in Maribor and subsequently throughout Slovenia, beginning with Anovlar and Lyndiol, followed by Euginon and Stediril, and later Anacyclin 101, all of which contained high-dose active ingredients, with initial instructions to take a two to three-month break after nine months of use (Borko, 2012).

Almost simultaneously, intrauterine contraception began to gain acceptance. The first intrauterine device was inserted in Slovenia on September 1, 1964, at the Abortion Prevention Department of the Gynaecological Clinic, expanding across Slovenia after 1966. The number of users of modern hormonal and intrauterine contraception increased, leading to a decline in induced abortions (Borko, 2012).

In 1967, the Department for prevention of abortion [*slov.* Oddelek za prevencijo splava] was renamed into the Institute for family planning [*slov.* Inštitut za načrtovanje družine] (IND). The independence of the IND accelerated and expanded research in the broader field of human reproduction. Prof. Andolšek-Jeras also involved other centres in Slovenia in these efforts, including Koper, Celje, and Maribor. One of the first signs of this collaboration was the booklet "How to Protect Ourselves from Pregnancy [*slov.* Kako se zavarujemo pred nosečnostjo]", authored by prof. Andolšek-Jeras and prof. Borko. This booklet was distributed to women who had undergone abortion and was intended to promote the use of contraception. This motivational approach to contraception proved effective, as it began to reduce the number of abortions (Borko, 2012).

The advancement of medicine in all aspects of family planning necessitated new materials suitable for contraception counselling. Thus, in 2002, we received the booklet "Family planning [*slov.* Načrtujmo družino]", describing all significant changes essential to explaining and advising a broader circle of users. Even more important were the advisory project for biology teachers, and the brochure for high school students prepared by prof. Bojana Pinter and colleagues in 2004, "About you two: safe choice for responsible pregnancy [*slov.* O vama: varna izbira za odgovorno spolnost]", a well-illustrated and highly didactic publication for teachers and a brochure distributed annually to high school students (Borko, 2012).

2.4 Improvement of Vacuum Aspiration Technique

The safety of artificial pregnancy termination has been greatly enhanced by the introduction of vacuum aspiration. Slovenian doctors are largely credited with expanding this safer method of early pregnancy termination worldwide.

The technique of vacuum aspiration originated in Russia in twenties of previous century. Russian researchers reported that compared to traditional abortion methods (using forceps or curettage), this new method was faster, less painful, and associated with less blood loss. The concept of this new abortion method was brought to Ljubljana in 1963 by Prof. Franc Novak, as it was not accessible outside the Soviet Union. In 1964, based on Russian texts and under the mentorship of Prof. Draško Vilfan, Slovenia constructed its own vacuum aspiration device (Tomaževič, 2004).

The Institute of Electronics and Vacuum Technology developed and began serial production of a new type of vacuum aspirator, eliminating the major risk associated with the new method – the danger of air embolism. Within a few years, all Slovenian gynaecologists became familiar with this new abortion technique. By the late 1960s, vacuum aspiration completely replaced dilation and curettage (hereinafter: D&C) for pregnancies up to 12 weeks (Tomaževič, 2004).

In the late 1960s, Slovenian doctors shared their positive experiences with this new, safer technique with the Western world. In 1968, Prof. Franc Novak personally educated American doctors on the technique and advantages of vacuum pregnancy termination. His presentation and a film highlighting the simplicity and safety of vacuum aspiration over D&C were enthusiastically received by American doctors. This paved the way for vacuum aspiration technology to spread to the Western world. By the early 1970s, safe abortion technology was adopted worldwide and further simplified. The film, which prof. Novak had created in 1964 in collaboration with prof. Draško Vilfan and Vlastja Simončič, later went missing at a congress; prof. Novak subsequently saw it being presented under a foreign title at another congress (Tomaževič, 2004).

Many authors emphasized the advantages of vacuum aspiration over dilation and curettage, but until 1973, there was no prospective analysis comparing the two methods in literature. Such an analysis, conducted in collaboration with American and Yugoslav experts, was published in 1973 by prof. Novak and prof. Andolšek-

Jeras, and their colleagues. This study conclusively confirmed the scientific benefits of the new method: greater simplicity, higher safety, reduced blood loss, fewer inflammatory complications, and shorter hospital stays (Tomaževič, 2004).

2.5 History of "In-vitro Fertilization" in Slovenia

In Ljubljana, a group of experts conducted their first extracorporeal fertilization on May 25, 1983. By October 5, 1984, after four developmental periods, they reported the birth of the first twins conceived using this new method, making them the second centre in the former Yugoslavia to successfully introduce "in vitro fertilization" (hereinafter: IVF). Meanwhile, at the Gynaecological Department of Maribor General Hospital, the first embryo transfer was performed on December 24, 1983, but it did not result in pregnancy. Due to significant challenges with facilities, equipment, and experience, the Maribor group of experts reported the birth of IVF-conceived twins only in 1989, thereby becoming the third centre in the former Yugoslavia to achieve this (Borko, Radovan, & Vlaisavljević, 2011).

By 1990, both centres had gained recognition in the broader European expertise arena and had agreed to establish a unified national registry for children born using the new method (Borko, Radovan, & Vlaisavljević, 2011).

3 Family Planning in Slovenia

3.1 Fertility and Abortion Rates

The general fertility rate is the ratio between the number of live births in a calendar year and the number of women of childbearing age (15–49 years) in the middle of the same year, multiplied by 1,000 (NIJZ, n.d.-b). The highest fertility rate is characteristic of women aged 25 to 34 years. In 2022, women from the mentioned age groups gave birth to two-thirds of all children (NIJZ, n.d.-c). The permitted abortion rate per 1,000 women of childbearing age is the ratio between the number of permitted abortions and the number of women of childbearing age (15–49 years) in the middle of the same year, multiplied by 1,000 (NIJZ, n.d.-d). The abortion rates in Slovenia are decreasing since 1980 and fertility rates are stable in the last two decades (Figure 1).

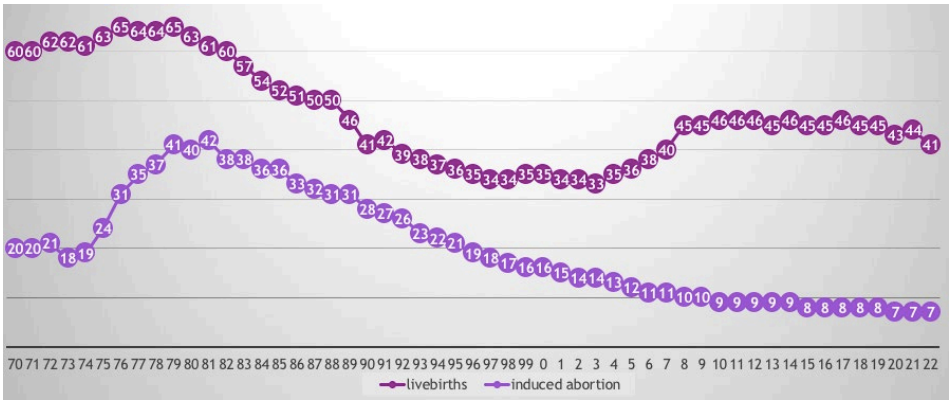

Figure 1: Fertility and abortion rates per 1000 women aged 15 to 49 between 1970 and 2022 in Slovenia.

Source: National Institute of Public Health (NIJZ, n.d.-a; NIJZ, n.d.-c)

3.2 Law on Family Planning

In the Republic of Slovenia, there are two laws directly regulating the implementation of the constitutionally guaranteed freedom to decide on childbirth:

1. Zakon o zdravstvenih ukrepih pri uresničevanju pravice do svobodnega odločanja o rojstvih otrok (en. Act on health measures in the exercise of the right to decide freely on the birth of children; hereinafter: ZZUUP), enacted in 1977, which roughly translates to the "Law on Health Measures in Exercising Freedom of Choice in Childbearing". This law focuses on ensuring health measures and procedures related to exercising the right to freely decide on childbirth.
2. Zakon o zdravljenju neplodnosti in postopkih oploditve z biomedicinsko pomočjo (en. Act on Infertility Treatment and Assisted Reproductive Techniques; hereinafter: ZZNPOB) was enacted in 2000. This law specifically addresses treatments for infertility and procedures involving biomedical assistance in reproduction, ensuring regulation and standards in assisted reproduction technologies.

These laws collectively safeguard and regulate various aspects of reproductive health and rights, ensuring that individuals have the freedom to make informed decisions about childbirth in accordance with Slovenian constitutional principles (Borko, 2012; ZZUPP; ZZNPOB).

3.2.1 Health Measures in Exercising Freedom of Choice in Childbearing Act (ZZUUP, 1977)

According to the ZZUUP, individuals possess the right to freely decide on childbearing. It is imperative that both women and men have access to all available means within the healthcare system to facilitate the exercise of this right. This statute delineates the healthcare measures necessary for the realisation of this right and specifies the limitations imposed by medical considerations.

The right to freely decide on childbearing encompasses the right to education, counselling, and comprehensive information regarding the procedures, processes, and consequences of employing modern methods and means for birth regulation. Healthcare organizations, as well as healthcare, social, and other professional personnel involved in the execution of this right, are obligated to undertake all necessary measures to ensure that women and men can exercise this right (for more see ZZUUP, 1977).

The healthcare measures prescribed by this law for birth regulation include contraception, artificial termination of pregnancy, and the diagnosis and treatment of reduced fertility. Professionals in healthcare, social services, and other relevant fields are mandated to uphold professional confidentiality throughout these procedures. Additionally, any healthcare organization that conducts sterilization, artificial termination of pregnancy, completes an initiated termination of pregnancy, or performs artificial insemination must report the procedure to the health statistics authority within thirty days (ZZUUP, 1977).

According to the ZZUUP, artificial pregnancy termination is now recognized as the individual right of the woman rather than the right of the (married) couple. The decision considers medical circumstances, criminal legislation, and social factors related to pregnancy termination. The ZZUUP dedicates 13 articles (Articles 17 to 30) specifically to artificial pregnancy termination. According to Article 17, termination can be performed at the request of a pregnant woman who is less than ten weeks pregnant. Artificial termination of pregnancy that exceeds ten weeks can be performed at the request of the pregnant woman only if the risk to her life, health, and future maternity is less than the risk posed by continuing the pregnancy and childbirth. The procedure for artificial termination of pregnancy after the tenth week of pregnancy is overseen and decided upon by first and second-stage commissions

for artificial termination of pregnancy. Slovenia has 14 first-stage commissions established under Article 21 of the ZZUUP, each serving specific municipalities or areas, depending on healthcare organization coverage. The composition of these commissions is approved by municipal administrative bodies and consists of a social worker and two doctors. One of the doctors must be a specialist in gynaecology and obstetrics, and this specialist also serves as the chair of the commission. There is one second-stage commission established in Slovenia, approved by the Ministry of Health. The second-stage commission is composed of a social worker and three physicians specialising in relevant fields, with the commission's chair being a specialist in obstetrics and gynaecology. Members of the First and Second Stage Commissions have deputies (ZZUUP, 1977).

Article 55 of the Constitution of the Republic of Slovenia upholds freedom of choice in childbearing. This constitutional provision guarantees individuals the right to decide on parenthood while ensuring state support for this freedom and the conditions necessary for informed decision-making (Lukanović, 2019; ZZUUP, 2000). Under the constitution, the decision to bear children is recognized as a fundamental human right and liberty. This freedom grants everyone the right to contraception, the right to terminate a pregnancy, and the right to diagnose and treat infertility. The state is obligated to create conditions that facilitate the exercise of these rights. Accordingly, every individual has the opportunity to consult with an appropriate specialist for pregnancy prevention, termination, and infertility treatment within the comprehensive network of healthcare centres and hospitals in Slovenia. The right to freely decide on childbearing can thus be divided into positive and negative freedoms. Negative freedom pertains to the limitation of births, while positive freedom facilitates childbirth. In both cases, the matter concerns progeny and the act of childbearing, which is always a matter of free choice by two individuals – a man and a woman (ZZUUP, 1977).

3.2.2 Law on the Treatment of Infertility and Procedures of Biomedical Assistance in Reproduction (ZZNPOB, 1977)

This law regulates healthcare measures aimed at assisting women and men in conceiving a child, thereby enabling them to exercise their freedom to decide on the births of their children. Everyone has the right to infertility treatment under the terms and conditions specified by this law. Treatment under this law includes

identifying the causes of infertility or reduced fertility and addressing these causes through expert counselling, medication, or surgical procedures (ZZNPOB, 2000).

Treatment also encompasses the retrieval and storage of a man's semen or a woman's oocytes, when there is a risk, based on medical science findings and experience, of them becoming infertile (ZZNPOB, 2000).

Assisted Reproductive Techniques (ART) are procedures involving the use of biomedical science to achieve pregnancy through methods other than sexual intercourse. The ART procedures specified by this law include intrauterine insemination procedures and in vitro fertilization procedures (ZZNPOB, 2000).

3.3 Abortion – Minors

The ZZUUP and the Law Enforcement Guidelines establish that both women and men have the right to receive advice on pregnancy prevention methods, and their doctors must recommend or prescribe the most appropriate contraceptive measures regardless of age. Additionally, a woman has the right to request an abortion if she is within the first 10 weeks of pregnancy and meets the decision-making capacity criteria, irrespective of her age (Lukanović, 2019; ZZUUP, 1977).

Under the Patients' Rights Act (sl. Zakon o pacientovih pravicah; hereinafter: ZPacP), adolescents deemed capable of decision-making are not restricted in their rights. According to Article 35 of the ZPacP (2008), a child under 15 is generally considered unable to give consent unless the physician assesses their maturity as sufficient to do so, in which case consultation with parents or guardians is customary. A child aged 15 or older is presumed capable of giving consent unless the physician determines otherwise due to immaturity, while consultation with parents or guardians remains standard. Parental consent is required for surgical procedures or medical interventions carrying higher risks or significant consequences for the child. Article 45 of the ZPacP (2008) also ensures the confidentiality of health professionals regarding patient information (Lukanović, 2019).

However, these regulations under the ZPacP (2008) do not apply to decisions regarding childbirth, as constitutional rights regarding pregnancy prevention or termination are governed by the special law of the ZZUUP (1977). This special law

takes precedence over the more general ZPacP in such matters, establishing specific guidelines for decision-making (Lukanović, 2019).

Therefore, a minor with decision-making capacity can independently decide on contraception or abortion without parental involvement, as required by this legal framework. This legal framework acknowledges the personal nature of decisions concerning reproductive health, which are considered significant medical interventions affecting one's body and personal experiences. The constitutional right to decide on childbearing is inherently individual, and the minor, if capable of making informed decisions, independently of age, should exercise this right autonomously (Lukanović, 2019).

The latest comparable data for 2022 shows that Slovenia has one of the lowest pregnancy rates in adolescents in the European Union (Figure 2) (Sedgh et al., 2015).

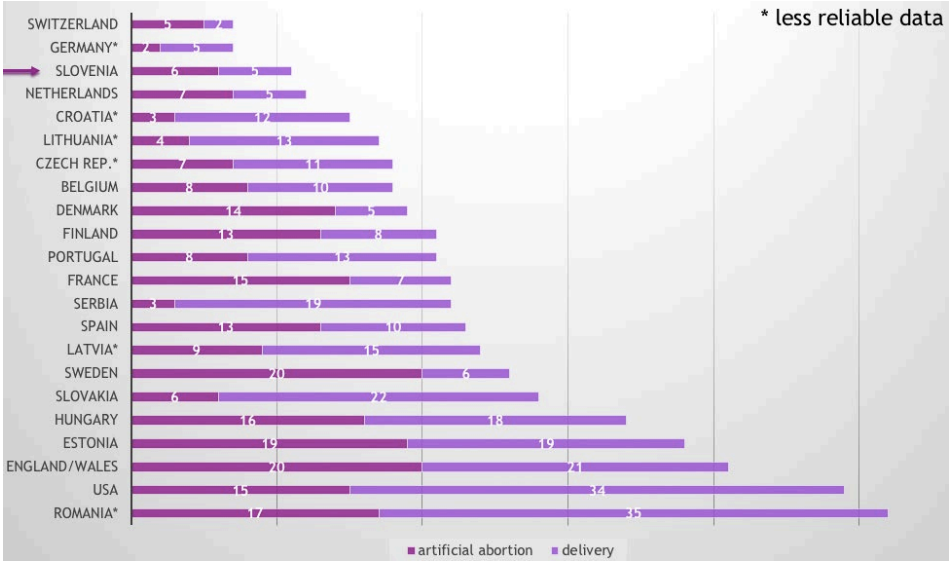

Figure 2: Adolescent pregnancies
(abortions and deliveries per 1000 women, aged 15 to 19, in 2011)
Source: (Sedgh et al., 2015)

3.4 Contraceptive Use and Sterilization

3.4.1 Contraceptive Use

In Slovenia, the utilization of hormonal contraception (hereinafter: HC) increased markedly at the end of the 20th century and the beginning of the 21st century, making it the predominant method of pregnancy prevention among women of reproductive age. However, there has been a notable decline in its use over the past decade. The prevalence of HC users, calculated based on the number of HC packs issued per 1,000 women of reproductive age (15–49 years), was 110 in 1992, increased to 182 in 2008, and decreased to 113 in 2021. From 2011 to 2021, the overall number of HC users decreased by one-third. This decline was observed across all age groups except those aged 45 to 49 years. The highest prevalence of HC use is among women aged 20 to 24 years, with one in three women in this age group using HC in 2011, compared to slightly less than one in four in 2021. Among adolescent girls (15 to 19 years), nearly one in five used hormonal contraception in 2011, whereas only one in eight did so in 2021 (NIJZ, 2024a).

In 2021, most HC users (88.7 percent) were using contraceptive pills, followed by 10.1 percent using the vaginal delivery system, and 1.2 percent using the patch. Since 2014, there has been a gradual increase in the proportion of women using the vaginal delivery system and the patch, while the proportion using contraceptive pills has slightly declined (NIJZ, 2024a).

The number of intrauterine device (hereinafter: IUD) insertions, including both initial and repeat insertions, has gradually increased over the past 20 years, rising by more than 40 percent from 2006 to 2015. From 2016 to 2020, the number remained relatively stable, with a slight decline observed in 2020 (15.7 insertions per 1,000 women of reproductive age), likely attributable to the COVID-19 pandemic. In 2021, the number of IUD insertions increased slightly to 16.9 insertions per 1,000 women of reproductive age, although it remained lower than in 2019 (18.3 insertions per 1,000 women of reproductive age). The use of IUDs as a method of contraception is generally more prevalent among women aged 30 to 49 (NIJZ, 2024a).

3.4.2 Sterilization

Sterilization is a procedure that permanently resolves the issue of contraception and is considered one of the most reliable methods of preventing pregnancy. It is more commonly chosen by women, although the sterilization procedure for men (called a vasectomy) is simpler and easier. Sterilization in women generally requires general anaesthesia and hospitalization for approximately two days, while a vasectomy is typically performed on an outpatient basis with local anaesthesia. The legal framework governing these procedures is provided by the ZZUUP (1977) (NIJZ, n.d.-d).

The legal requirements for both procedures are the same. The statutory age limit is 35 years, except in exceptional health cases. Only a competent individual for whom the procedure is intended may request it, and approval must be granted by a first or second-stage commission for artificial pregnancy termination and sterilization. Typically, the procedure can be performed only six months after approval (NIJZ, n.d.-d).

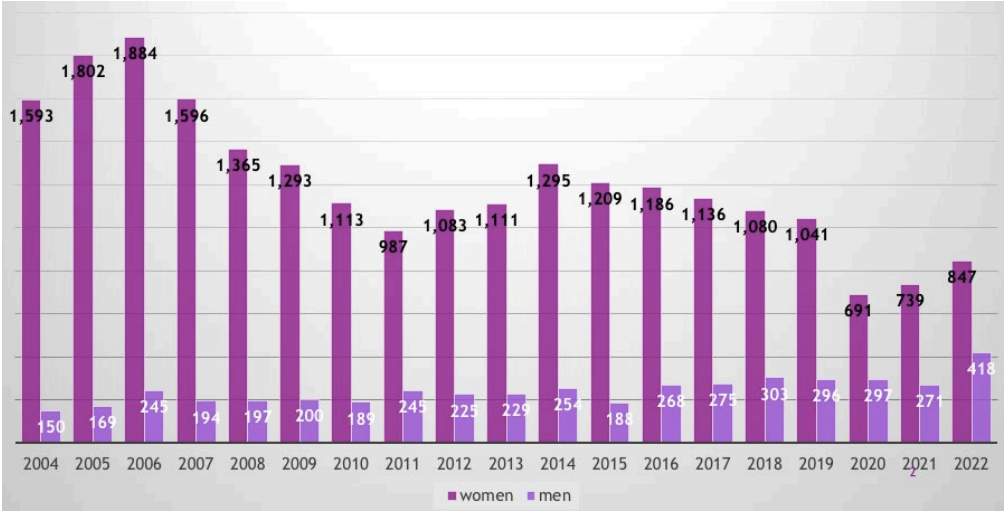

Figure 3: Sterilizations in women and men (number of procedures) in years 2004 to 2022, Slovenia

Source: (NIJZ, n.d.-d)

In 2022, there were 1,265 sterilizations performed, with a higher number of procedures being carried out on women. The annual sterilization rate is 2.0 per 1,000 women aged 15-49, compared to 0.9 per 1,000 men in the same age group (Figure 3) (NIJZ, n.d.-d).

The numbers of sterilization of women are decreasing due to more popular long-term contraception, but the numbers of sterilization of men are slowly increasing.

3.5 Conscientious Objection

The fundamental conflict revolves around the tension between the right to freely control one's body and the right to life. Conscientious objection is, according to the Article 46 of the Constitution of the Republic of Slovenia, a universal human right. Physicians have the right to conscientiously object, except in the case of a medical emergency. On the other hand, the Article 55 URS provides freedom of choice regarding childbearing (The Human Rights Ombudsman of the Republic of Slovenia, n.d.). According to the register of active doctors at the Medical Chamber of Slovenia, as of May 8, 2023, there were eight doctors in the field of gynaecology and obstetrics who had registered a conscientious objection (Lukanović, 2023). It would account for around one percent of active gynaecologists.

Considering the right to abortion, availability of safe abortion is one of the key factors in reproductive healthcare and reproductive rights, in addition to contraception in infertility treatments. Performing abortions, prescribing contraception and the like are among the duties of gynaecologists - anyone who cannot do this for reasons of conscience should be fair enough to choose another specialization.

4 Conclusions

In summary, Slovenia has made significant advancements in family planning, transitioning from traditional methods to a comprehensive system that maintains reproductive rights and provides access to healthcare services. The nation’s dedication to reproductive health is reflected in its legislative framework, which guarantees access to contraception, safe abortion services, and infertility treatments. As a former part of Yugoslavia, Slovenia was a pioneer in reproductive rights, being among the first countries to constitutionally affirm the right to make informed

decisions about childbirth. This legal groundwork has enabled the formulation of healthcare policies that prioritize the health of women, mothers and children.

Since the 1980s, in Slovenia abortion rates are declining, because of accessible contraceptive methods, services, and education. The legalization and regulation of abortion, coupled with high medical standards, have ensured that abortion is safe. Slovenian healthcare policies place a strong emphasis on education and counselling as vital elements of family planning. Professional counselling services have been instrumental in providing individuals with information about reproductive health choices. The country's low rates of adolescent pregnancies further demonstrate the success of these initiatives. Additionally, infertility treatments are widely accessible, reinforcing Slovenia's commitment to comprehensive reproductive healthcare.

However, challenges remain. While conscientious objection is legally recognized, it should not impede individuals' rights to essential medical care, e.g. safe abortion. It is vital to enhance policies that guarantee timely access to abortion services for all women. Moreover, despite the widespread use of modern contraception, recent declines in the use of hormonal contraceptives emphasize the necessity for ongoing education and the availability of a variety of contraceptive methods. Ensuring that all methods remain affordable and accessible is essential.

Note

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Zakon o zdravstvenih ukrepih pri uresničevanju pravice do svobodnega odločanja o rojstvu otrok *(ZZUUP)*: Uradni list SRS, št. 11/77, 42/86; Uradni list RS, št. 70/00 – ZZNPOB.

Povzetek v slovenskem jeziku

Načrtovanje družine omogoča posameznikom, da dosežejo želeno število otrok in razmike med nosečnostmi. To je mogoče doseči s kontracepcijo, z zmanjšanjem potrebe po nevarnem splavu in zdravljenjem neplodnosti. Nosečnost in porod sta povezana z umrljivostjo mater, ki jo je mogoče zmanjšati s preprečevanjem nenačrtovane nosečnosti. Dostop do kontracepcije in varnega splava je ključnega pomena. Na mednarodni konferenci o človekovih pravicah v Teheranu leta 1968 je bilo načrtovanje družine razglašeno za temeljno človekovo pravico. Leta 1974 je Jugoslavija kot prva država na svetu razglasila ustavno pravico do svobodne izbire o rojstvu otrok. Varnost umetne prekinitve nosečnosti so močno povečale izboljšave tehnike vakuumske aspiracije, ki so jo slovenski zdravniki razvili leta 1964. V Sloveniji se od leta 1980 število dovoljenih splavov zaradi razpoložljive kontracepcije in dobrega kontracepcijskega svetovanja nenehno zmanjšuje. Predstavljena je zgodovina načrtovanja družine v Sloveniji in dejansko stanje.

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CLIMATE CHANGE AND AIR POLLUTION: THE TWIN THREATS TO CHILDREN'S HEALTH AND WELL-BEING

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Abstract Environmental factors, such as air pollution and climate change, significantly contribute to the global burden of disease and are critical to understanding health disparities between countries, with low- and middle-income nations facing the highest environmental health burdens across various diseases and injuries. While health is universally acknowledged as both a fundamental human need and a basic human right, yet the harmful effects of unhealthy environments disproportionately impact children. Research indicates that pre- and post-natal exposures to environmental toxicants can disrupt brain and lung development, impairing their function. These health impacts are distributed unequally, with marginalised populations experiencing greater harm. The IPCC identifies fossil fuel combustion as the primary driver of climate change. Epidemiological studies further highlight the existing and future consequences of climate change, including its effects on infectious diseases, cardiovascular and pulmonary diseases, and mental well-being.

Keywords
environmental toxicants, convention on the rights of the child, united nations framework convention on climate change, human rights-based approach, sustainable development goals

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1 Introduction

Climate change and air pollution are both regarded as invisible killers, with devastating human health impacts. Until recently, the global community has focused its attention on climate change and the greenhouse gases (GHGs) contributing to it. The ongoing emissions from burning fossil fuels are behind the planet's warming trend and thus it is accurate to say that the burning of fossil fuels is causally responsible for most of the climate change (Shue, 2021, p. 37). Unlike natural disasters, climate change is not a random occurrence but a direct consequence of human actions. Scientific consensus now unequivocally confirms that human-induced emissions of carbon dioxide (CO_2) and other GHGs have significantly altered the atmosphere, leading to a rise in global temperatures. At the core of the climate change problem lies the issue of equity. Not all individuals or nations have contributed equally to environmental degradation, nor do all segments of society engage in unsustainable practices. Crucially, those least responsible for the problem often face the most severe consequences. Very few scientists would now question whether human-made carbon pollution released by burning fossil fuels has heated the planet 1.3 degrees Celsius (°C) since preindustrial times (Parsons, 2023, p. 201-202).

Despite this alarming reality, many nations continue to rely on fossil fuel-based economies, shaping policies that exacerbate the crisis. Moreover, a relatively small number of corporations bear a disproportionate share of responsibility. Just one hundred currently operating carbon producers have accounted for 71 percent of global industrial GHG emissions since 1988. This highlights the urgent need for systemic changes and corporate accountability to address the root causes of both climate change and air pollution (Grasso, 2022, p. 31). In 2015, leaders from 196 nations came together to address climate change by signing the Paris Agreement[1], a global treaty aimed at limiting global warming to well below 2°C, while pursuing efforts to limit warming to 1.5°C. This target is considered critical to avoiding the most severe consequences of climate change impacts (Gazmararian & Tingley 2023, p. 3). However, 2024 has been confirmed as the hottest year on record globally, and according to the EU's Copernicus Climate Change Service, global warming has

[1] Paris Agreement (adopted 12 December 2015, entered into force 4 November 2016), UN Doc FCCC/CP/2015/L.9/Rev.1.

exceeded 1.5° over an entire year for the first time in 2024.[2] The Intergovernmental Panel on Climate Change (IPCC)[3] projected that the 1.5°C threshold above pre-industrial temperature – an essential benchmark for protecting developing nations and small island nations – would be crossed permanently by the middle of the next decade (IPCC, 2022).

The burning of fossil fuels has triggered two interconnected crises: climate change and air pollution. What was once considered a set of localised problems has now escalated into a serious global problem for human health (Attfield, 2024, p. 42). The World Health Organisation (WHO)[4] identifies air pollution as the leading environmental risk to human health and one of the most preventable causes of death and disease worldwide (Okowa, 2021, p. p. 477). Since GHG emissions are often accompanied by other toxic air pollutants that harm public health and the local environment, efforts to combat air pollution and mitigate climate change are closely linked. Indeed, the United Nations Framework Convention on Climate Change (UNFCCC)[5] is fundamentally an attempt to regulate fossil fuel-related carbon pollution emissions (Harrington, 2021, p. 39). Increasing public awareness of air pollution's health impacts has also made air quality regulation a growing priority, particularly in Europe, where it has become a widely embraced cause (Fisher, Lange & Scotford, 2019, p. 561). The EU Emissions Trading Scheme, the world's first and largest international cap-and-trade program, exemplifies efforts to reduce GHG emissions (Perera, 2022, p. 119).

While discussions about fossil fuel combustion often focus on CO_2 and its role in climate change, the health impacts of co-emitted pollutants are frequently overlooked. In recent years, however, air pollution has been recognised as a public

[2] According to the EU's Copernicus Climate Change Service, the period from February 2023 to January 2024 reached 1.52°C of warming. This first year-long breach does not break that landmark Paris Agreement but at current rate of emissions, the Paris goal of limiting warming to 1.5°C as a long-term average - rather than a single year- could be crossed within the next decade.

[3] The IPCC (the world's leading authority on climate science) was established by the United Nations Environment Programme (UNEP), the World Meteorological Organisation (WMO), and the World Health Organisation in1988 to synthesize research on climate change. IPCC reports intended to provide policymakers with regular scientific assessments on climate change, its implications, and potential future risks, as well as to put forward adaptation and mitigation options.

[4] Constitution of the World Health Organisation, adopted on 22 July 1946 (entered into force on 7 April 1948), in 14 UNTS 185. The WHO was established by an international conference convened in New York in 1946 at the request of the UN Economic and Social Council.

[5] United Nations Framework Convention on Climate Change (UNFCCC) (adopted 9 May 1992, entered into force 21 March 1994) 1771 UNTS 107.

health emergency in its own right. Understanding the substantial health burden of air pollution has become a crucial driver for advancing climate change action. The impact of air pollution is comparable to that of climate change in terms of human casualties. Emissions from vehicles and domestic and industrial fires are significant contributors to both crises. These dual threats are interconnected, with overlapping causes, which weakens the argument of climate change denial, particularly the rejection of the causal link between human activity and climate change. The millions of deaths and illnesses caused by air pollution are clearly linked to a subset of factors that all scientists agree contribute to climate change. Therefore, the crises of climate change and air pollution can be seen as part of a single emergency, that will worsen rapidly without strong and coordinated action (Attfield, 2024, p. 46-47).

Furthermore, addressing air pollution and climate change together is both logical and necessary, as both crises are primarily driven by the burning of fossil fuels. Their combined effects amplify harm, particularly to children's health. Integrating these dual threats allows for the development of comprehensive and equitable policies that safeguard vulnerable populations today and in the future. Since 2009, the efforts to reduce GHG emissions have been framed in terms of their health co-benefits, particularly through the reduction of air pollution (Perera, 2022, p. 46-47). Whether framed as an air pollution or a climate mitigation policy, both target emissions from fossil fuel combustion, and their success is often measured by the avoided health impacts directly linked to reduced air pollution (Perera, 2022, p. 138). The fact remains that climate warming is an air pollution problem with a classic profile. To substances that occur naturally in our environment and are beneficial to life on the planet in their natural concentrations. Human activity has added an excessive amount of the same substances, resulting in disruptive concentrations (Billiet, 2024, p. 100).

A study published in the *British Medical Journal* links air pollution from fossil fuel use in industry, power generation, and transportation to 5.1 million additional deaths annually worldwide. This accounts for 61 percent of the estimated 8.3 million global deaths caused by ambient (outdoor) air pollution from all sources in 2019 (Lelieveld, et al., 2023).[6] Similarly, the 2024 *State of Global Air Report*, released by the Health

[6] In 2022, an update report on the 2017 publication of the *Lancet* Commission on Pollution and Health found that pollution was responsible for approximately 9 million premature deaths per year, corresponding to 1 in 6 deaths

Effects Institute, highlights the devastating impact of air pollution on children, reporting that nearly 2,000 children under five die each day due to air pollution (Harvey, 2024). Further research has uncovered alarming evidence that air pollution's health effects begin before conception. Studies indicate that pollution can disrupt the development of eggs, lowering their quality and affecting reproductive health – an impact previously unreported (Devlin, 2024). Successive reports of the IPCC emphasize that transitioning from fossil fuels to clean, renewable energy sources over the coming decades could significantly reduce deaths from air pollution. Additionally, such a transition would help limit the global mean temperature increases to below 2°C, aligning with the goals of the Paris Agreement. Environmental factors, including inadequate access to clean water, poor sanitation, exposure to disease-carrying insects and air pollution, contribute to nearly one-quarter of the total global disease burden. Among children under fourteen, as much as one-third of the disease burden is believed to be attributable to modifiable environmental conditions such as lack of adequate water for drinking and sanitation, exposure to disease-carrying insects and air pollution (Wiley, 2022, p. 160).

Health has long been considered as both a fundamental human need and a basic human right. In 1948, the Universal Declaration of Human Rights (hereinafter: UDHR)[7] explicitly recognised health as a human right and a necessity. Specifically, Art. 25 of the UDHR highlights the rights of children, stating that everyone, including children, has "the right to a standard of living adequate for the health and well-being of ourselves and our families, including food, housing and healthcare and necessary social services" while also granting children the right to special care, assistance, and social protection. In 1959, the UN adopted the Declaration of the Rights of the Child, which laid the foundation for the 1989 United Nations Convention on the Rights of the Child (hereinafter: CRC).[8] Furthermore, when the WHO was established in 1948, its constitution declared that the highest attainable standard of health is a fundamental human right "without distinction of race, religion, political belief, economic or social condition" (Sachs, 2015, p. 275). In 2022, the United Nations General Assembly (hereinafter: UNGA), overwhelmingly passed

worldwide. The 2022 Lancet study found that air pollution causes 6.5 million deaths each year globally, and this figure is increasing.

[7] Universal Declaration of Human Rights (UDHR) (adopted 10 December 1948) United Nations General Assembly Resolution 271 A (III).

[8] Convention on the Rights of the Child (adopted 20 November 1989, entered into force 2 September 1990) 1577 UNTS 3.

a resolution recognising an international human right to a clean, healthy, and sustainable environment, with a vote of 161-0. A healthy and functioning environment is essential for the wellbeing of individuals, families, and communities (Sritharan, 2023, p. 149).

We are facing a public health crisis: the profound impact of fossil fuel pollution on human health, with a particularly severe impact on all children and their future. Air pollution and climate change affect people in every country in the world, leading to millions of deaths yearly. However, low- and middle-income countries, along with disadvantaged populations, bear the greatest burden. While all children are at risk, those in poor, developing nations, as well as socially disadvantaged children in wealthier countries, are the most vulnerable (Perera, 2022, p. 10, 80). The developing fetus and children under five are especially susceptible to the harmful effects of air pollution from fossil fuel combustion. Their heightened vulnerability is due to their rapid growth, developing brain, and immature respiratory, detoxification, immune, and thermoregulatory systems, making them more biologically and neurologically at risk than adults (Vohra, et al., 2021).

Protecting the right to health and well-being is a key objective of the United Nation's Sustainable Development Goals (hereinafter: SDGs)[9] for 2030 (Gerards, 2023, p. 504). Good health is fundamental to sustainable development, as it underpins overall well-being and is crucial for achieving many other aspirations. It enables children not only survive the disease but to thrive, learn, and successfully progress through school and into adulthood, ultimately contributing to the work force. SDG 3 aims to ensure healthy lives for all. By 2030, countries aim to reduce under-5 mortality rates to below 25 per 1,000 live births and maternal mortality to below 70 per 100,000 live births. Meanwhile, SDG 13 calls for urgent action to combat climate change and its impacts (Sachs, 2015, p. 275, 486-489). Improving air quality plays a significant role in achieving several of the UN's SDGs, as air pollution is recognised as a critical sustainability issue. It is directly addressed in two SDG targets: SDG 3.9 (which aims for a substantial reduction in health impacts from hazardous substances) and SDG 11.6 (focused on reducing the adverse impacts of cities on people) (Lelieveld, et al., 2023).

[9] Resolution adopted by the UN General Assembly on September 2015, *Transforming Our World: The 2030 Agenda for Sustainable Development* (UNGA/RES/70/1). The SDGs are non-binding and do not specifically address human rights, but they can play a role in interpreting fundamental rights norms.

The idea of climate justice highlights the difference in vulnerability faced by the highest and lowest emitters. This inequality in generation and impacts of carbon emissions is vitally important to understanding how and why climate change manifests (Parsons, 2023, p. 4). The world's most vulnerable people are not well protected from climate-caused disasters by climate policy. They have benefited the least from the advances of industrial society enjoyed by the world's wealthy. They are also those who have suffered the most from fossil fuel extraction, which continues to displace them as it poisons and destroys their land. The vulnerability of those populations is not simply a coincidence. Just as carbon emissions are not acts of God, neither is exposure to the results of those emissions. Both are rooted in the current unsustainable, fossil fuel-dependent global economy that relentlessly extracts and consumes the Earth's resources in increasing amounts (Sritharan, 2023, pp. 147-188).

In the next section, this article begins by examining the unique vulnerability of the developing child, and the multiple and combined effects of air pollution and climate change on the health of children. It looks at the many health and developmental impacts now being inflicted on children, harm beginning even before they are born, by the toxic air pollutants and climate-altering gases released by the production and combustion of fossil fuel. Sections 3 and 4 assess the impacts of air pollution and climate change on children's health. They focus on the extraordinary versatility of fossil fuel-generated air pollutants and climate-related disasters in harming the health of children. Section 5 discusses the many factors contributing to the differential vulnerability of children. Awareness of the harm caused by fossil fuel-generated toxic air pollutants and climate change to children's health has been growing. Finally, Section 6 outlines the soft law instruments and multilateral conventions addressing transboundary air pollution and climate change, while also examining the impact of human rights frameworks and the legal concept of sustainable development.

2 The Vulnerability of the Developing Child to Environmental Insults

One of the greatest miracles of biological engineering in humans is the prenatal development of the brain. Extensive research reveals the diverse ways in which environmental exposures and toxins linked to air pollution and climate change can harm children's brains and bodies during critical stages of development, resulting in disease and impairment. Laboratory and epidemiological studies have suggested how

environmental toxicants and stress can derail development. The carefully arranged processes associated with early development are highly vulnerable to adverse environmental conditions and physical toxicants, nutritional deprivation, physical and psychological trauma and stress (Dresser & Balsari 2021, p. 497-520).

A large body of recent epidemiological studies have shown that pre- and post-natal exposures to harmful stimuli impair the developing brain and lungs and affect their functioning. The advent of new types of magnetic resonance imaging (hereinafter: MRI) has allowed neuroscientists to study the steps in human brain development. Christopher Smyser, a paediatric neurologist at Washington University in St. Louis, Missouri, used MRI scans of preterm infant's and children's brains to examine prenatal brain development. His research revealed that babies born as early as 26 weeks have immature versions of many functional brain networks found in adults (Konkel, 2018; Perera, 2022, p. 25).

Joan Stiles and Terry Jernigan at the University of California San Diego describe brain development as the product of a complex series of interactions between inherited, genetically intrinsic factors and environmental input. These interactions between genes and environment occur throughout brain development. During the fetal period, genetic factors play a dominant role; but across the fetal period and all the way to adulthood, factors in the external world increasingly influence the course of brain development (Stiles & Jernigan, 2010). Robert Wright, a paediatrician at Icahn School of Medicine at Mount Sinai in New York, highlights those toxic exposures, such as lead, can disrupt synaptic development pruning, hindering the proper development of brain signalling networks (Konkel, 2018).

At the end of nine months, the brain is a functioning organ; however, it is still a work in progress. Neurodevelopment continues all the way through adolescence. By age two, a toddler's cerebral cortex has over 100 trillion synapses. The remarkable speed of growth and elegant complexity of organ development during the fetal and postnatal periods place the young at significant risk of harm from pollutants, and things can go wrong. Neurodevelopmental disorders resulting from disruptions in early brain development include conditions such as autism spectrum disorders (hereinafter: ASD) and attention deficit hyperactivity disorder (hereinafter: ADHD) (Perera, 2022, p. 27 & 28; Mizuno, et al., 2019).

The brain is the only organ known to have its own security system. The barrier that protects the developing brain is known as the blood-brain barrier. While physiological defences like the placental and blood-brain barrier once protected the fetus, new toxicants from fossil fuel burning, such as polycyclic aromatic hydrocarbons (hereinafter: PAHs), fine particulate matter ($PM_{2.5}$), ground-level ozone, and mercury, can now bypass these barriers through diffusion or active transport. The blood-brain barrier evolved to operate as the brain's sentinel. However, research has shown that this protection is far from complete, with many new harmful chemicals quite easily breaching the barrier. These toxic invaders show great versatility in derailing normal neurodevelopmental programs (Perera, 2022, p. 33). The greater the lipid solubility of a toxic chemical, the greater the placental transfer. Research from the United States and other countries has increasingly shown that the placenta is permeable to environmental chemicals and toxicants, with evidence of their presence in cord blood, fetal tissue, and the placenta (Grandjean, 2013).

The young are particularly vulnerable to air pollution and the effects of climate change due to the underdevelopment of their biological defence systems, including enzyme systems responsible for metabolising toxic pollutants. Immune defences are also limited in the young. The fetal immune system itself develops along two lines: the first line of defence is "innate immunity", and the second line of defence is "acquired immunity". At birth, the innate immune system is weak, making newborns more vulnerable to infections. The acquired immune system is also immature in both fetuses and newborns. However, immune protection strengthens over time, leading to fewer infections in young adults. Besides their toxicity to the developing brain and their interference with the function of natural hormones, toxicants like PAHs, lead, and mercury are harmful to the immune system, so the infant will have even less ability to mount a defence against viruses and other infectious agents (Simon, Hollandar & McMichael, 2015).

Environmental toxicants and stress can interfere with the immune system to produce inflammation. Chronic stress during early development is linked to immune system malfunction, resulting in an excess production of inflammatory proteins, with potentially serious lifelong consequences in terms of chronic disease. Exposure to air pollution can trigger an inflammatory response, and when combined with

other exposures, it increases the risk of developing asthma. Mercury also stimulates the immune system to release inflammatory proteins (Olvera Alvarez, et al., 2018).

Children tend to be more physically active than adults. The higher breathing rate of young children results in a greater intake of any pollutants present in the air. Therefore, environmental toxicants present in the air, such as air pollutants, molds and pollen, are directly delivered to children at higher doses than adults. Their disproportionate exposures, plus the increased concentrations of these toxicants due to climate change, are clearly factors in the high incidence of childhood asthma and hospitalisations due to asthma (Perera, 2022, pp. 36-37).

Toxic exposures, such as air pollution, mercury, and stress, can also overwhelm the body's detoxification and repair systems, leading to damage to DNA, proteins, and other cell components. This is known as "oxidative damage," which happens when reactive oxygen forms are generated due to exposure to harmful stimuli. This can potentially cause gene mutations or altered gene expression through DNA methylation changes. Exposure to air pollution, malnutrition, and stress during early life can cause epigenetic changes that may be inherited, leading to lasting health impacts across future generations. Environmental pollutants, and stress-related hormones like cortisol generated by maternal stress (due to adverse social and environmental factors), can cause prenatal DNA damage that may lead to an alteration in the DNA sequence of a gene (a gene mutation). Consequently, the resultant proteins may be non-functional or abnormal, with potentially dire consequences for health and brain development (Perera, 2022, p. 33, 37).

When DNA damage from chemicals is detected, the DNA repair enzymes are called in. DNA repair enzymes generally work well in adults, but their efficiency is limited in fetuses and children (Perera, 2022, p. 33, 37). Toxic exposures can also disrupt protein production by switching certain genes on or off at the wrong moment in early development but without altering the DNA sequence of a gene. The result is the same as that of a gene mutation, and it may have grave consequences for the developing fetus and child. DNA methylation is the most extensively studied part of epigenetic damage. Numerous studies, including those involving newborns, have found that environmental exposures such as air pollutants (PAHs, particulate matter, ozone, and mercury) and stress can alter normal epigenetic programming, potentially impacting the child's health (Perera & Herbstman, 2011).

Extreme heat puts toddlers and young children at risk of hyperthermia. An early stage of hyperthermia can be "heat stress" or "heat exhaustion," and if the condition turns into "heatstroke", it needs to be treated as an emergency. If untreated, heatstroke can be fatal. Infants and children are less capable than adults of regulating body temperature during prolonged heat, and their greater time spent outdoors, and vigorous activity levels increase their exposure extreme heat. Also, children cannot recognise the early signs of distress and rely on adults for hydration. More heat-related deaths among infants are reported during heatwaves. For these reasons, children under the age of four face a significantly higher risk of illness and death caused by heat (Dresser & Balsari, 2021, pp. 511-512).

Climate-related droughts and crop failure particularly affect the young by depriving them of the macro- and micro-nutrients. Water is also considered an essential nutrient. Climate disasters that affect nutrition can therefore have devastating effects on infants and children. Newborn infants have low stores of fat and protein and can only cope with starvation for short periods of time. Throughout infancy and childhood, nutritional requirements are higher per kilogram of body weight than at other developmental stages. Because of their particularly rapid growth, infants have the greatest nutritional demand. Nutritional deficiencies during pregnancy, infancy, and early childhood can significantly affect the developing brain. From conception to 3 years of age, the rapidly growing brain requires more nutrients than at other stages of development. During this period, essential nutrients for brain development include protein, certain fats, iron, zinc, copper, iodine, selenium, choline, and vitamins A and B. Although malnutrition is linked to stunting of the body, stunting of the brain is the more serious outcome, affecting health and function over the child's life (Spencer, Chandra & Arthur, 2021, pp. 424-432).

The logic behind focusing on environmental exposures is that, unlike genes, once they are identified as harmful these exposures can be averted. Many studies have shown that the special susceptibility of the fetus, infant, and child arises from a host of biological and behavioural factors all occurring at the same time. These factors include rapid growth, complex developmental programming, immaturity of detoxification and immune defence systems, limited ability to regulate body temperature during periods of severe heat, greater nutritional needs, and dependence on adult caretakers. The combination of susceptibility factors such as toxic exposures, air pollution, heat, malnutrition, viral infection, and stress – often linked

to fossil fuel burning and climate change – greatly increases the risks to the developing fetus and child, amplifying the potential harm.

3 The Impacts of Air Pollution on Children's Health

3.1 Mortality, Preterm Birth, Low Birth Weight

According to the WHO, air pollution is linked to around seven million premature deaths annually. These deaths are attributed to diseases such as ischemic heart disease, stroke, chronic obstructive pulmonary disease, lung cancer, and acute respiratory infections like pneumonia which disproportionately impact children in low- and middle-income countries (WHO/Newsroom, 2023). In 2019, air pollution was associated with nearly 500,000 newborn deaths within their first month of life.[10] Furthermore, in 2020, according to the WHO, household air pollution alone was linked to an estimated 3.2 million deaths, including over 237,000 deaths among children under the age of five.[11]

With the global rise in outdoor air pollution levels, mortality rates among children under the age of five are projected to exceed current figures. The many health and developmental impacts now being inflicted on children are often initiated in utero. Newborns, who are already susceptible to infection because of their immature immune systems, are vulnerable to a second hit from air pollution. By weakening the lung's immune response to respiratory infection and then causing further inflammation, air pollution causes a more severe course of illness. The grim prediction is that, at the present rate of emissions, by 2050, outdoor air pollution will become the leading cause of child death (Perera, 2022, p. 49-50).

[10] In 2012, air pollution was linked with 1 out of every 8 deaths, globally: Around 600,000 of those were children under 5 years old, see: UNICEF. (2016, October). *Clear the air for children*. Retrieved December 20, 2023, from Clear_the_Air_for_Children_Executive_summary_ENG.pdf (unicef.org). in 2019, Air pollution now accounts for 1 in 9 deaths globally. It is estimated to have contributed to 6.67 million deaths worldwide. According to the State of the Global Air report, it is estimated that in 2019, 476,000 infants died in their first month of life from health effects associated with air pollution exposure, see: The State of Global Air. (2023, November). *Global Health Impacts of Air Pollution*. Retrieved December 20, 2023, from https://www.stateofglobalair.org/health/global#Millions-deaths; In 2021, 572,000 infants died in their first month of life from health effects associated with air pollution exposure, see: The State of Global Air. *Impacts on Newborns*. Retrieved from: https://www.stateofglobalair.org/hap/newborns#fragile-stage (20 December 2023).

[11] According to the WHO's News, the combined effects of ambient air pollution and household air pollution are associated with 6.7 million premature deaths annually, see: WHO News. (15 December 2023). *Household air pollution*. Retrieved December 20, 2023, from Household air pollution (who.int).

Each year, an estimated 15 million babies are born preterm worldwide, a figure that continues to grow. Preterm birth, defined as delivery before 37 completed weeks of gestation, is the leading cause of death among children under five, with over one million preterm infants dying shortly after birth. Additionally, many preterm babies experience lifelong disabilities, often resulting in significant financial and social impacts (UNICEF, 2021). Air pollution has also been linked to another critical birth outcome: low birth weight. Globally, around 20 million low-birth-weight babies are born annually. According to the WHO, low birth weight is defined as less than 2,500 grams, regardless of gestational age (Devaguru, et al., 2023).

Considerable research has documented that both exposure to air pollution and heat have a hand in preterm birth and low birth weight. Globally, 2 million premature births in 2019 were attributed to ambient exposure to mostly $PM_{2.5}$ but not all in developing countries.[12] A comprehensive review of 48 studies comprising 32 million births in the United States concluded that there was overwhelming evidence that exposure to $PM_{2.5}$ is associated with increased risk of both preterm birth and low birth weight (Bekkar, Pacheco, Basu, & DeNicola, 2020). Disorders due to preterm birth and low birth weight are not only the leading causes of infant mortality but also contribute to lifelong consequences of being born too soon and too small. Preterm babies are at higher risk for increased respiratory infections, other infectious diseases, asthma in childhood, and long-term intellectual disabilities, IQ loss, ADHD, autism, anxiety, and depression – often extending into adulthood (Jonhson & Marlow, 2011).

3.2 Neurodevelopmental Disorders

Neurodevelopmental disorders are seen in a large and growing number of children globally. Multiple studies have linked fossil fuel-generated air pollution to neurodevelopmental disorders in children and adolescents. The developing brain of fetuses, infants, and young children is particularly vulnerable, and research over the past two decades has strongly established that exposure to combustion-related air

[12] In 2019, neonatal disorders caused 2.42 million deaths, with nearly one-fifth linked to $PM_{2.5}$ air pollution, see: Environment.ec.europa.eu. (2023, August 10). *Air pollution to blame for one-fifth of the global burden of newborn health disorders.* Retrieved from: https://environment.ec.europa.eu/news/air-pollution-blame-one-fifth-global-burden-newborn-health-disorders-2023-08-10 (20 December 2023).

pollutants during early life, even before birth, negatively impacts cognitive and behavioural development (Perera, 2022, p. 52).

3.2.1 Cognitive Abilities

The term "cognition" encompasses many aspects of intellectual functioning and processes, such as perception, memory, judgment, and reasoning. Several cohort studies conducted across the US, Europe, and Asia have investigated the links between early-life exposure to $PM_{2.5}$ or traffic-related air pollutants and cognitive development in infancy and childhood. The researchers have accounted for factors like income, age, race, ethnicity, and education. Research on $PM_{2.5}$ exposure has produced mixed findings, with some studies linking it to lower IQ. Conversely, studies on traffic-related pollution have more consistently shown links to diminished mental development in young children, including impaired memory and lower IQ scores (Chiu, et al., 2016). Frederica Perera and her team at Columbia University have extensively studied the impact of PAHs on cognitive development in populations living in New York City (hereinafter: NYC), Krakow, Poland, and Chongqing, China, for many years. Their research has also found consistent associations between prenatal PAH exposures and cognitive problems across these different populations (Perera, 2022, pp. 52-53).

3.2.2 Attention Deficit Hyperactivity Disorder (ADHD)

Exposure to combustion-related air pollutants has been linked with attention difficulties and ADHD in children. The previously mentioned NYC study found that prenatal exposure to PAHs was linked to symptoms of inattention and ADHD in children aged 6 to 9. The findings also highlighted those socioeconomic challenges amply the impact of pollution. Children with high prenatal PAH exposure exhibited more pronounced symptoms of ADHD compared to those with lower exposure, with the most differences observed among children whose mothers faced material hardship during pregnancy and their early childhood (Perera, et al., 2012).

3.2.3 Autism Spectrum Disorders (ASD)

Studies in the US and other countries have reported associations between prenatal exposure to $PM_{2.5}$ or traffic-related air pollutants and autistic traits, indicating that these exposures are likely to be causally related to the condition. Studies conducted in Israel, Denmark, and the US, also found postnatal exposure to air pollution has been implicated as a contributor. In the NYC study mentioned above, testing of the children at age 11 found a link between prenatal PAH exposure and deficits in social communication (an autistic trait), as well as reductions in children's capacity to regulate their emotions (Perera, 2022, pp. 52-54).

3.2.4 Mental Health Disorders

Mental health disorders are afflicting a record number of children and adolescents, at a 15 percent prevalence globally.[13] Researchers have recently begun to focus on the role of air pollution in the mental health of children and adolescents. A cohort study in London found that children exposed to higher levels of outdoor air pollution had an increased likelihood of major depressive disorder by age 8 (Fisher, et al., 2018). Similarly, a US cohort in Cincinnati, Ohio, found that exposure to traffic-related air pollutants correlated with higher rates of self-reported depression and anxiety symptoms by age 12 (Yolton, et al., 2019). In the NYC study, greater prenatal PAH exposure was linked to more anxiety and depression symptoms in children (Phillips, et al., 2011). A related study in Poland observed that prenatal PAH exposure, combined with maternal psychological distress, significantly raised the risk of anxiety and depression symptoms in children (Wang, et al., 2013).

3.2.5 Brain Changes

Researchers using MRI brain imaging to study the impact of prenatal or postnatal exposure to air pollutants on brain development, have shown that exposure to PAHs or $PM_{2.5}$ prenatally and in childhood can change the architecture of the brain. In some cases, the observed changes were linked to worse neurodevelopmental

[13] An estimated 15 percent of 10-19-year-olds worldwide experience mental health conditions, with depression, anxiety, and behavioral disorders as leading causes of illness and disability. Adolescents with mental health conditions face heightened risks of social exclusion, stigma, discrimination, educational challenges, poor health and human rights violations, see: WHO News, (2021, November 17). *Mental health of adolescents*. Retrieved from: Mental health of adolescents (who.int) (21 December 2023).

outcomes (Perera, 2022, p. 55). The NYC study in a sample of 7- to 9-year-old children showed significant correlations between their prenatal PAH exposure and decreased "white matter" of the brain that, in turn, correlated with various cognitive and behavioural problems in the children. A large cohort study in Barcelona, Spain, revealed that prenatal exposure to $PM_{2.5}$ during fetal life was linked to a thinner cortex in multiple brain regions when the children were imaged at ages 6 to10. These structural changes helped explain the connection between prenatal exposure to $PM_{2.5}$ and impaired ability to inhibit inappropriate impulses. Another study in Barcelona found that prenatal $PM_{2.5}$ exposure was associated with a decrease in the volume of a key connective structure in the brains of children who were imaged at 8-12 years: this specific structural change was linked with a higher hyperactivity score in the same children (Peterson, et al., 2015; Guxens, et al., 2018; Herting, et al., 2022; Bansal, et al., 2022)

3.2.6 Long-term Effects of Air Pollution on the Brain

At least a third of children with ADHD and half of those with autism continue to have poor outcomes as adults. Some of these early neurodevelopmental disorders can diminish or weaken as children pass through adolescence and into adulthood but the effects of toxic exposures on children's cognitive and behavioural functioning often persist into adulthood (Perera, 2022, p. 56). MRI-based research and epidemiology is now revealing that long-term exposure to airborne pollutant during early childhood years may set the stage for neurodegenerative diseases to develop, manifesting themselves in older age. Studies conducted on children residing in high air pollution areas in Mexico City have found distinct brain alterations like those seen in adults with Alzheimer's disease and mood disorders. Additionally, large-scale epidemiological research indicates that previous exposure to air pollution raises the likelihood of developing dementia, Alzheimer's and Parkinson's disease in older adults (Calderon-Garciduenas, et al., 2018).

Cumulatively, this evidence supports the conclusion that air pollution contributes to adverse neurodevelopmental outcomes, including when exposure occurs during the prenatal period, and it is clearly detrimental to children's cognitive and behavioural development and mental health, often with lifelong consequences for their ability to learn, earn, and contribute to society.

3.3 Asthma and Other Respiratory Conditions

The lung also shows remarkable speed of growth and complexity during prenatal and postnatal periods. Like the brain, the lung is not a finished organ at birth; it continues to develop after birth. At birth, the newborn requires a fully functional lung that can take in oxygen and remove CO_2 from the blood. The respiratory tract is highly vulnerable to toxic air pollutants in the first days, months, and years of life. Asthma is just one of the many health issues caused by pollution in children. A study published in *Lancet Planetary Health* revealed that traffic-related air pollution leads to the development of asthma in four million children each year. This study provides the first global analysis of the link between exposure to traffic-related air pollution and the onset of asthma in children (Anenberg, Achakulwisut, Brauer, & Hystad, 2019).

We now know that air pollution is not only able to trigger asthma attacks in children who have the disease but that it also can act to initiate the disease. Asthma often develops during childhood, though it can occur at any age. In cases of childhood asthma, the lungs and airways become highly sensitive and inflamed in response to triggers such as air pollutants, pollen, or a respiratory infection. If left untreated, asthma in children can lead to severe and potentially life-threatening attacks. Globally, the ratio of childhood asthma is high, about 13 percent, and the rate has increased significantly in recent decades. Particulate matter has been established as a trigger of severe symptoms and asthma attacks in children who have the disease, causing visits to emergency departments and hospitalisation. Nitrogen dioxide and ozone, environmental tobacco smoke, and pollen are known triggers as well. In 2019, approximately 1.85 million new cases of paediatric asthma worldwide were linked to nitrogen dioxide exposure (Milken Institute School of Public Health, 2022).

Other respiratory outcomes of serious concern associated with air pollution are impaired lung function and abnormal patterns of lung function growth. Multiple studies have linked exposure to air pollutants in childhood to both outcomes. A study conducted on nearly 2,000 school children in Southern California showed a significant decrease in lung function growth by age 18 among those exposed to higher levels of air pollution (Avol, Gauderman, Tan, London, & Peters, 2001). Acute respiratory infections are another consequence of air pollution exposure. Research involving over 140,000 children in Utah, primarily under the age of two,

revealed a link between short-term increase in $PM_{2.5}$ levels and the onset of acute lower respiratory infections in these children (Horne, et al., 2018). As with neurodevelopmental outcomes related to air pollution, these respiratory conditions frequently persist over the lifetime. Data from a study in Melbourne, Australia, showed that half of individuals who had had persistent asthma in childhood and 82 percent of those who had been classified as having had severe childhood asthma still had asthma symptoms at age 50 (Tai, et al., 2014).

3.4 Immune Effects

The immune system, which starts developing during the fetal stage and remains immature for years after birth, can be adversely affected by air pollution. For example, respiratory infections due to air pollution exposure can cause direct harm to the developing lung, and exposure to air pollutants can suppress the immune system's ability to guard against bacterial and viral infections like respiratory syncytial virus (RSV) and pneumonia. Usually, RSV causes mild, cold-like illnesses, but it can also cause severe illnesses such as bronchiolitis and pneumonia. Premature infants are at greater risk (Centers for Disease Control and Prevention, 2024). Stanford researchers found that children exposed to elevated levels of particulate matter and PAHs, experienced more severe symptoms compared to those living in areas with lower exposure levels. The researchers also collected blood samples from the children and measured the level of key immune cells – the T-regulatory (T-reg) cells – a subpopulation of white cells whose job is to suppress the harmful inflammatory responses that are the hallmark of asthma and other allergic diseases. They discovered that the children exposed to higher levels of air pollutants had reduced levels of T-reg cell function (Nadeau, et al., 2010).

4 The Impacts of Climate Change on Children's Health

The effects of climate change on infants and children are already severe and continue to worsen each year. Young children are particularly susceptible to both the direct and indirect impacts of climate change. Recent reports indicate that nearly every child worldwide is exposed to at least one climate-related hazard, shock, or stress, with one billion children residing in countries at extremely high risk from its effects (UNICEF, 2021). Children in low- and middle-income countries face the greatest burden of climate-sensitive diseases due to limited adaptation capacity. However,

climate change impacts are also growing in the US and Europe, particularly among low-income populations and communities of colour. In 2015, the UN International Children's Emergency Fund (UNICEF) emphasized that "there may be no greater, growing threat facing the world's children – and their children – than climate change" (UNICEF, 2015).

4.1 Floods and Severe Storms

Scientists overwhelmingly agree that human-induced global warming is intensifying and increasing the frequency of storms and major floods, even though no single event can be directly attributed directly to climate change. Of all the climate-induced severe weather disasters, floods are the most common, and the greatest damage to life and property is from secondary connected events such as storm surges, landslides, coastal and inland flooding, and tornados. Major floods and hurricanes, intensified by climate change, have led to drowning, physical injuries, and traumatic stress among children. By 2015, over half a billion children were living in regions with extremely high levels of flood risks (UNICEF, 2015).

Flood disasters, with drowning accounting for 75 percent of deaths, primarily affect children. The greatest risks are in low- and middle-income countries where people live in flood-prone areas and lack developed systems for warning, evacuation, and protection (WHO, 2024). Children worldwide feel the impacts of weather-related events, exacerbated by climate change. For example, Hurricane Katrina in 2005 killed over 1,800 people and left 370,000 children without schools, while Hurricane Sandy in 2012 caused severe damage in New Jersey and New York, closing schools for over 20,000 students. In 2017, Hurricane Harvey caused the deaths of 107 people in Texas, and affected up to 3 million children and their families. Hurricane Ida caused widespread flooding and dozens of deaths from drowning (Perera, 2022, p. 62).

Children are highly vulnerable to trauma and stress from extreme weather events, which can lead to mental health problems. Each year, around 100 million youths are exposed to disasters, with up to 72 percent showing posttraumatic stress symptoms within the first three months. Posttraumatic stress symptoms in children are linked to poorer mental and physical health, decreased academic performance, and future employment challenges. For example, children directly affected by Hurricane

Katrina later struggled with concentration in school, exhibited more behavioural problems, experienced greater anxiety, and faced persistent mental health issues (Lai, et al., 2021).

4.2 Heat

Climate change has intensified heatwaves, making them both hotter and longer across the US, Europe, and Asia. A recent analysis warns that, without rapid global action to reduce emissions, children born in 2020 will face up to seven times more extreme weather events than those born in the 1960s (Dunning, 2021). As the planet has become warmer, the incidence of heat-related illness in children is increasing. Almost half of heat-related illnesses are in infants and children. Pregnant women, fetuses, and young children are highly vulnerable to heat, which can lead to adverse birth outcomes through dehydration and impair fetal growth. Studies have shown that maternal exposure to heat is linked to increased risk of preterm birth and low birth weight. Additionally, heatwaves and $PM_{2.5}$ may combine to elevate the likelihood of preterm birth (Chersich, et al., 2020).

Direct effects of heatwaves are infant deaths, hyperthermia, heat stress, kidney disease, and impacts on mental health of children. Infant deaths have been increased during heat waves in Europe, China, Australia, and many other countries. Warmer temperatures act in other insidious ways to adversely affect children's health: they increase exposures to toxic air pollutants, chemicals, and infectious agents. Higher temperatures in dry areas can cause toxic chemicals and pesticides to become airborne, posing a particular risk to children's developing nervous systems. Higher temperatures cause migration of some pests and insects to more northern, cooler regions, resulting in more infectious disease (Sheffield & Landrigan, 2010).

4.3 Forest Fires and Smoke

Higher temperatures have increased the frequency of extreme forest fires which in turn have negatively impacted children's health. Climate change has led to increased $PM_{2.5}$ concentrations in some areas due to changes in temperature, precipitation, and air stagnation. It is not just children living close to the forest fires who suffer. Millions of children far from forest fires are also exposed to wildfire smoke, as pollutants can travel thousands of miles from their source.

The frequency and intensity of uncontrolled fires around the world are increasing each year. Forest fires inject vast quantities of particulate matter, PAHs, black carbon, hydrocarbons, and volatile organic chemicals into the atmosphere in the form of aerosols and gases, adding to and potentially interacting with the ambient load from fossil fuel burning. Because children inhale more air per unit of body weight compared to adults and their nasal passages are less effective at trapping particles, a higher proportion of particles reaches their lower lungs. Wildfire smoke contains higher levels of $PM2_{2.5}$, PAHs, volatile organic chemicals, and other ozone precursors, which means more potential to create harmful oxidative stress and inflammation in developing brains and lungs (Perera, 2022, p. 65).

Exposure to wildfire smoke during pregnancy is linked to lower birth weight and preterm birth in infants. Respiratory illnesses, including wheezing, pneumonia, and bronchitis, are increased by wildfires. Exposure of young lungs to intense episodes of wildfire pollution may trigger the development of asthma. Wildfire disasters can cause serious mental health effects in children. The combination of wildfire smoke exposure and the trauma of evacuation significantly impacts children's mental health. Research on youth from California and Australia have shown increased stress levels and prevalent posttraumatic stress disorder (PTSD) symptoms after experiencing fires (Abdo, et al., 2019).

4.4 Drought and Malnutrition

Droughts have become more frequent, prolonged, and intense in recent decades, a trend that is expected to intensify in many regions due to climate change. The result has been crop failure, livestock deaths, and food insecurity, affecting children in poor countries. Although drought is the most prominent and recognisable cause of malnutrition in children, other impacts of climate change - higher temperatures, water scarcity, floods, and changing patterns of agricultural pests and diseases - have also increased food insecurity around the world. In many regions, including Africa, Central and South America, and parts of Asia, food prices are climbing rapidly, leading to increased hunger. The crisis is especially severe in conflict zones, where war intensifies food shortages, raises costs, and heightens malnutrition. In 2015, around 160 million children lived in areas of extreme drought severity (UNICEF, 2019). Globally, the number of people affected by droughts is expected to grow by 9–17 percent in 2030 and up to 50–90 percent in 2080 (Andersson, et al., 2020).

As drought linked to climate change reduced food harvests, with such massive food insecurity has come a sharp increase in malnutrition in children. The greater nutritional needs of infants and children place them at the greatest risk of famine. Malnutrition leads to stunted growth and development, causing cognitive and behavioural issues. The result is that children are less able to learn. In 2020, 149 million children under five were stunted globally, with 14 million experiencing acute malnutrition. Malnutrition increases children's susceptibility to infection and infection contributes to malnutrition, setting up a vicious cycle (Perera, 2022, p. 66).

4.5 Infectious Diseases

Climate change is significantly increasing the risk of infectious disease in children worldwide. Variations in temperature, precipitation, and humidity influence disease transmission and rising temperatures are expanding the habitats of diseases like malaria and dengue and leading to the spread of infectious diseases. Diseases such as malaria, dengue fever, Zika, and Lyme disease disproportionately affect children due to their developing immune systems. The IPCC confidently warns that climate change amplifies global health threats, as the life cycles of many infectious diseases are inextricably linked to climate conditions (Van de Vuurst & Escobar, 2023).

Climate change is not the only factor causing these dramatic shifts in the pattern of infectious agents; it plays an important role. The toll on children's health from these infectious agents is huge and growing. For example, the geographic range of *Anopheles* mosquitoes that carry malaria has expanded in response to climate change. Malaria remains a major cause of illness and death among children in the world's most resource-limited regions, with those under five being particularly vulnerable. In 2018, an estimated 270,000 children under the age of five died from malaria globally (Donovan, et al., 2021). In 2022, the global malaria death toll reached an estimated 608,000, with the WHO African Region bearing the brunt, accounting for 95 percent (580,000) of these deaths. Children under five comprised about 80 percent of all malaria-related fatalities in the Region (World Health Organisation, 2023).

Dengue is the most important mosquito-borne viral disease globally - in this case, it is the *Aedes* mosquito that is the carrier. As global temperatures rise, mosquito-borne diseases are spreading to regions where they were previously uncommon, with

dengue cases recently being reported in parts of Europe and North America (Colon-Gonzalez, 2022, p. 143). Dengue primarily affects children under 15 years old, with the *Aedes* mosquito being the main vector. This mosquito also transmits the Zika virus, which poses a unique threat to developing fetuses, passing from a pregnant woman to her baby and evading the fetal immune system to reach the fetal brain, causing microcephaly, severe brain malformation, and other birth defects. The pattern of Lyme disease has also changed. Most children with Lyme disease recover fully if treated early, but some may develop post-infectious syndrome, experiencing symptoms such as fatigue, joint pain, headaches, sleep difficulties and trouble concentrating. Additionally, children are also more prone than adults to cholera and other diarrhoeal diseases caused by crop and water contamination from storms and floods. Repeated diarrhoeal infections in childhood can affect children's education and cognitive development (Perera, 2022, p. 68-69).

4.6 Allergy and Asthma

Due to climate change, children are experiencing more allergy and respiratory illness from increased pollen production from certain trees, grasses, and weeds at warmer temperatures. The increase in pollen levels is strongly coupled to observed warming and parallels the rise in pollen sensitisation in children. This trend also aligns with an increasing number of adolescents and adults with allergic asthma. Besides triggering symptoms of asthma, hay fever, and eczema in children with allergies, high-pollen periods are identified with greater susceptibility to respiratory illnesses by intensifying lung inflammation and weakening immune responses (Singh & Kumar, 2022).

Air pollutants like ozone, particulate matter, and sulfur dioxide can combine with pollen in many ways to exacerbate risk. Mold is another trigger of asthma attacks. Excess moisture from heavy rains and flooding due to tropical cyclones, hurricanes, and thunderstorms can lead to multiplication of mold in homes and other structures, thus leading to illness to those that inhabit them. Climate change, by raising temperatures, accelerates the formation of ground-level ozone, causing ozone levels to surge during heatwaves. This has led to higher ozone concentrations across vast areas of the US and Europe, particularly in the summer. This contributes to tens of millions of asthma-related emergency room visits by children annually. In addition

to being a short-term respiratory trigger, prolonged exposure to ozone is linked to reduced lung function and abnormal lung development in children.

4.7 Forced Migration and Displacement

Climate change affects mobility in various ways. It contributes to droughts, reduces the arability of land in large swathes of the world, raises sea levels that threaten coastal communities, and worsens natural disasters such as storms, floods, and wildfires. Climate change in combination with factors like armed conflict, political instability, overpopulation, poor resource management, and limited economic opportunities, can drive migration, particularly among poor and vulnerable populations. Additionally, it also affects the likelihood, frequency, and intensity of extreme climate-related events. These changes create stronger migration push factors (Arar & FitzGerald, 2022, p. 241).

The scale of these modifications is immense and is driving large-scale human displacement and forced migration, threatening people's habitats and livelihoods. Managing displacement caused by climate change could become the key environmental challenge of the 21st century. Every corner of the globe has the potential to be affected (Brock, 2021, p. 63). One certainty is that climate change disproportionately affects people in the Global South, who did much less to contribute to global warming via their consumption of fossil fuels than people in wealthy countries who, along with their ancestors, have been pumping GHGs into the air since the industrial revolution (Arar & FitzGerald 2022, p. 242).

A UNICEF report revealed that between 2016 and 2021, climate change-driven weather disasters displaced 43.1 million children across 44 countries. If current climate trends continue, over 100 million children and young people could be displaced by weather-related disasters in the next 30 years (UNICEF, 2023). Over 20 million people are displaced annually due to weather-related disasters. Projections for climate migrants by 2025 vary significantly, ranging from 25 million to 1 billion, with people relocating both domestically and internationally. Even the modest estimate of 200 million by 2050 is staggering (Perera 2022, p. 70, Arar & FitzGerald 2022, p. 242).

Children are most at risk from displacement physically and emotionally: they are prone to physical harm, chronic stress, and psychological trauma because of being forced to flee their homes. The mental health consequences include anxiety, depression, and posttraumatic stress. Children are also dependent on adult caregivers who themselves may be affected by injury or psychological trauma from forced migration. When families are displaced in developing countries, children are often separated from their parents, increasing their vulnerability to violence, exploitation, and abuse. Disasters and displacement have broken apart families and smashed social norms and supports, propelling an increase in violence against girls and women, rape, and sexual trafficking of children (Perera, 2022, p.71).

Migration driven by food shortages or extreme weather can spark conflicts. When these climate-related factors combine with social, economic, and political factors, they heighten the risk of wars and armed conflicts in vulnerable nations. The war in Syria and conflict in the Sahel region of Africa are examples of disasters attributable in part to climate change (McGuire, 2022, p. 113-116). In Syria, changing weather patterns caused a drought from 2006 to 2010, leading to massive food insecurity that helped fuel the Syrian war. Although not entirely caused by climate change, drought was a significant factor in fuelling this devasting war (Busby, 2022, p. 122).

4.8 Effects on Mental Health

Climate change is deeply connected to all aspects of human life, including food security, water access, economic stability and mental health. Its effects, along with air pollution, extend beyond immediate physical and developmental harm and contribute to rising mental health disorders among children and adolescents. Exposure to toxic air pollutants during pregnancy or childhood, as well as the broader impacts of climate change, can cause lifelong health issues. Research indicates that climate change will both initiate and intensify mental health challenges, disproportionately affecting young people and marginalised populations throughout their lives (Dober, 2024).

Common forms of mental health illness in children who have suffered many adverse childhood experiences include anxiety, depression, aggressive behaviour, PTSD, and substance use problems. Adverse experiences not only raise the risk for mental disorders in childhood but also confer a lasting vulnerability to anxiety, depression,

and mood disorders in adulthood. Almost one-third of all mental disorders worldwide have been attributed to exposure to adverse experiences in childhood (Scattolin & Resegue, 2022).

Even in the absence of direct exposure to the influence of climate change, stress due to the awareness of climate change and its impacts is having a significant effect of the mental health of children everywhere in the world. There is now a term, "climate change anxiety" for the conditions that many young people are experiencing. Many young people feel hopeless and incredibly frustrated when faced by the failure of governments to act, and determination of vested corporate interests to block the change. As children learn, either first-hand or through reports, of the climate threats to their very existence, this knowledge fosters a kind of PTSD. As with other climate disasters, the physical, emotional, and psychological scars left by wildfires can last a lifetime.

5 Disparities in Exposure to Air Pollution and Climate Change

Environmental challenges, such as air pollution and climate change, represent a form of slow violence, disproportionately impacting those in less wealthy nations of the global South. These problems do not discriminate based on status, ethnicity, or nationality, affecting people across socioeconomic, geographic, and racial or ethnic divides. However, the most immediate and severe consequences – whether from polluted air, rising sea levels, or failed crops – are felt most acutely by marginalised groups, especially those from lower socioeconomic backgrounds and communities often excluded on racial, ethnic, and religious grounds. While no one is entirely immune to these problems, children in low-income and communities of colour are particularly vulnerable (Darian-Smith, 2022, p. 2 and 97).

In recent years, the concept of environmental justice has gained traction among vulnerable communities in both rich and developing countries. This concept has become a unifying call for marginalised groups worldwide, who often bear an unequal share of the harm caused by environmental degradation. Studies highlight that poor and minority communities face greater risks from environmental hazards, such as polluted air and water, due to their proximity to high-polluting industries and waste sites. Focusing on environmental justice creates an opportunity to address how various groups are affected by decisions that impact the environment. Disputes

over environmental justice arises at international, national, and local levels (Pare, 2022, p. 152).

The environmental justice framework aims to uncover the relationship between environmental challenges and the unequal burden of air and climate pollution borne by populations of low socioeconomic status and communities of colour, who are often marginalised due to their ethnicity. It explores the health and environmental impacts of this disproportionate exposure, as well as the disparities in environmental protections and quality enforced through laws, regulation, and governmental programs. For these communities, the harm caused by air pollution and impacts of climate change is exacerbated by inadequate access to nutrition, healthcare, limited social support, and insufficient housing. Additionally, the psychological strain of poverty, violence, and racism further intensifies their vulnerability (Perera, 2022, p. 81).

Rooted in social justice theory, the environmental and climate justice movements emerged to tackle the stark socioeconomic and racial inequalities in environmental exposures and health impacts experienced by communities. These movements have become central to the development of environmental and climate policies. The glaring socioeconomic disadvantage and racial or ethnic disparities magnify the harm from air pollution and climate change (Perera, 2022, p. 104). Vulnerable groups often articulate their calls for environmental justice in terms of human rights, despite the absence of explicit environmental protections in most human rights treaties (Atapattu, Gonzalez & Seck, 2021, p. 9 & 12).

The climate crisis arises from a social and economic system dependent on the relentless extraction and consumption of the planet's resources. In the era of human-caused global warming, it is important to acknowledge that climate disasters intensify pre-existing vulnerabilities and disproportionately impact marginalised groups defined by race, ethnicity, politics, and economic status. Studies show notable systemic disparities in the occurrence and severity of diseases and developmental disorders caused by air pollution among children from different socioeconomic backgrounds and racial or ethnic groups. Injustice starts even before birth with fetal exposures.

5.1 Disparities in Fossil Fuel-generated Air Pollution Exposure and Health Impacts

Air pollution serves as a shocking example of environmental injustice. According to the WHO, 9 out of 10 people worldwide breathe polluted air. While air pollution affects everyone, it disproportionately impacts the poorest and most marginalised communities.[14] Although air pollution exposure is not limited to populations of colour or low-income groups, a study by the American Lung Association highlights stark disparities. Nearly 4 in 10 Americans – approximately 131.2 million people – live in areas with unhealthy levels of ozone or particulate pollution. A significant disparity exists in the distribution of air quality across countries with the worst conditions. Of the nearly 44 million residents in these areas, 63 percent are people of colour, while 37 percent are white. The report further highlights that people of colour are 2.3 times more likely than white individuals to live in these regions with the poorest air quality. This disparity is due to many interrelated factors: racism, class bias, land costs, unfair housing market and zoning practices, and imbalances in political power that perpetuate the siting of pollution sources such as power plants, industrial sources, major roadways in or near socially and economically disadvantaged communities.[15] In Europe, people with lower socioeconomic status are more likely to live, work, and study in areas with poorer air quality, reflecting global and US disparities. Apart from poverty, belonging to a certain racial or ethnic or Indigenous group in Europe correlates to more exposure to pollution.

Most of the 15 million babies born preterm are in low-income countries. Each year, about 20 million low-birth-weight babies are born worldwide, the majority in low- and middle-income countries. In the US alone, over 310,000 babies are born with low birth weight, highlighting a stark disparity: 13 percent of Black infants are low-birth-weight compared to 7 percent of White infants. Infant mortality shows the same glaring disparity. The US has the highest infant mortality rate among developed countries, with large variations between racial or ethnic groups. The rate is highest

[14] Nine out of 10 people worldwide are exposed to harmful air pollution, causing 7 million deaths annually, see: WHO. (2018, May 2). *9 out of 10 people worldwide breathe polluted air, but more countries are taking action*. Retrieved from: https://rb.gy/y0mdl4 (accessed: 15 September 2024).

[15] In the United States, 131.2 million people, or 39 percent of the population, live in areas with poor air quality due to unhealthy levels of ozone or particle pollution, see: American Lung Association (2024). Retrieved from: Key Findings | State of the Air | American Lung Association (assessed: 15 September 2024).

for Black infants (almost 11 per 1000 live births), more than twice that in Whites (Perera, 2022, p. 84-85).

Childhood asthma, the most common chronic illness among children, is likely to increase as particulate air pollution rises due to climate change. Long established as a trigger of asthma in children, air pollution is now considered to be a cause of the disease as well. Epidemiological studies found that over four million new paediatric asthma cases annually are associated with traffic-related air pollution (Anenberg, Achakulwisut, Brauer, & Hystad, 2019). Women with asthma and women of colour, particularly Black mothers, are at the highest risk from maternal exposure to air pollution. Asthma rates among children in the US show significant racial and ethnic disparities. While approximately 6.5 percent of all children under 18 are diagnosed with asthma, this average masks the reality that nearly 11.6 percent of Black children, compared to just 5.5 percent of White children, are affected by the condition (Centers for Disease Control and Prevention , 2023). A study by the Institute for Public Policy Research found that affluent white men from rural areas are the largest contributors to transport-related GHG emissions in the UK. The research, which examined transport emissions across income, gender, location, ethnicity and age, highlights the existing inequalities involved and calls for wealthier individuals to reduce their emissions (Taylor, 2024).

Air pollution affects children's immune defences, increasing their vulnerability to infectious agents. In the US, the incidence of pneumonia and other invasive pneumococcal diseases has traditionally been much higher in children of Alaska Native, Native American, and African American race or ethnicity compared to other groups. Air pollution is associated with mental health disorders such as ADHD, ASD, anxiety, and depression, with these disorders often showing disparities along racial or ethnic lines. For example, the percent of Black children diagnosed with ADHD or learning disability is higher than for White children in the US. A study of 290,000 mental health-related visits to paediatric emergency departments in the US concluded that Black children had a 52 percent higher rate of mental health visits compared with White children (Perera, 2022, p. 85-86).

5.2 Disparities in Fossil Fuel-generated Climate Change and Health Impacts

Children worldwide experience both physical and mental health impacts from climate change. Every harmful climate change impact disproportionately affects the health of marginalised and disempowered children. Systemic inequalities, such as wealth disparities, political power imbalances, and racial and ethnic segregation, drive fossil fuel-related GHG emissions contributing to climate change. These inequalities exist both within and between countries. The term climate gap highlights how disadvantaged groups disproportionately suffer from climate change's effects, while global climate policies fail to adequately protect the most vulnerable populations (Sritharan, 2023). The world's poorest communities, despite contributing minimally to global emissions, are the most affected by extreme weather events (Chomsky, 2022, p. 103 and 108).

Vulnerable children face the greatest harm to their health as the impacts of climate change intensify existing inequalities, including poverty, poor health, racism, and discrimination. Low-income and racially marginalised families and children face the highest risk of severe storms and floods, as they often reside in areas most vulnerable to such events and lack the resources to cope or recover. A child experiencing poverty, with inadequate access to housing, food, water, and sanitation, is not only more affected by an initial disaster but also faces increased vulnerability to future crises. In a downward spiral, each subsequent disaster is more damaging than the one before, as the ability to cope and recover is diminished. In the past two decades, more than 7000 major environmental disasters caused more than one million deaths worldwide and trillions of dollars in damage, mostly in developing countries. In low-income countries, the death toll per disaster was over three times higher than in high-income countries. Nearly all of the 67 million children affected annually by weather-related disasters over the past decade, as well as most child fatalities, resided in lower-income countries (Perera, 2022, p. 86-87).

Even within more affluent countries, the impacts of disasters are strikingly unequal. In the US, counties, cities, and neighbourhoods with large numbers of Black and Hispanic residents have suffered disproportionately from hurricanes because they are more often located in damage-prone areas and lack the resources to recover quickly from those disasters. Hurricanes Katrina, Harvey, Sandy, and Maria

disproportionately impacted low-income communities and people of colour, exposing them to greater risk of injury, death, and disaster-related mental health issues. The effects of hurricane Katrina in Louisiana vividly illustrate climate injustice. Mould in homes because of disasters also observes the general rule of inequality. Major storms cause flooding and excess moisture in homes and lead to the proliferation of mould, which is a notorious trigger of asthma attacks. African American children face higher risks of poor housing and mould sensitisation (Morello-Frosch & Obasogie, 2023).

In Europe, low-income families are the most exposed and vulnerable to climate change impacts. Apart from poverty, belonging to certain racial or ethnic or Indigenous groups means more exposure to disasters from climate change. Climate change is threatening the livelihoods, ways of life and culture of Indigenous peoples of Europe, such as the Saami. In a warming climate, the unique cultural livelihood and knowledge system of these ancient people is likely to fade away.

Communities of colour and low-income populations are particularly at risk due to factors such as uneven exposure to extreme temperatures in their neighbourhoods, poor working conditions, inadequate housing quality, limited access to air conditioning, higher rates of chronic health issues, and the broader consequences of structural racism and social inequality. For more than two decades, the world's poorest countries have faced a more significant rise in extreme temperatures compared to the highest-income countries. As climate change drives an increase in the frequency, intensity and duration of heatwaves, there has been growing concern about their health impacts (Gronlund, 2014).

Socially marginalised and low-income populations everywhere are more at risk because of their limited access to climate-controlled housing, and shelter from heat outdoors. In the US, exposure to extreme heat is unequal along both socioeconomic and ethnic or racial lines. Many of the same disadvantaged groups most affected by storms and flooding are also vulnerable to extreme temperatures: they live in urban "heat islands" created by extensive development using concrete and pavement and the lack of green spaces and trees to cool them. Indigenous groups face severe impacts from rising temperatures, with Alaskan and Pacific Northwest Native communities experiencing significant declines in food supplies due to damage to fish and wildlife.

A study of 53 developing countries found that the estimated impacts of hot days on infant mortality are 10-fold greater than estimates from rich countries. Heat-related impacts on birth outcomes and infant deaths are more severe in disadvantaged populations globally, like the effects of air pollution. In many cities in rich countries, people of colour and lower socioeconomic status have disproportionate exposure to heat, and consequently greater health risks (Perera, 2022, p. 90).

While climate change does not cause fires, it creates conditions that make them more intense and frequent. Wildfires, which can spread rapidly, may seem indiscriminate, unaffected by a person's status, ethnicity, or nationality. However, while everyone is at risk, some people and communities bear the brunt of their impact. The physical, emotional, and psychological damage caused by wildfires can endure a lifetime, similar to other disasters (Darian-Smith, 2022, p. 3). In addition to causing physical trauma, wildfire disasters have impaired children's mental health. High levels of stress and symptoms of posttraumatic stress disorder (hereinafter: PTSD) have been reported in youth affected by wildfires from California to Australia (Perera, 2022, p. 91).

With climate change driving a rise in wildfire frequency, the greatest burden falls on disadvantaged populations. Children in low-income and historically marginalised communities of colour face heightened risks from wildfire smoke, compounded by prior exposure to unhealthy air and high rates of chronic health issues. Those with asthma are particularly vulnerable to the respiratory harm. Wildfire smoke has been associated with low birth weight, preterm birth, asthma attacks, and other respiratory illnesses. Research by the University of Washington and the Nature Conservatory created an index to assess community resilience to wildfires, uncovering significant racial and ethnic disparities in vulnerability (Davies, Haugo, Robertson, & Levin, 2018).

Nothing highlights the complex and wide-ranging ramifications that climate change will inflict upon society more than the interrelationships between drought, food, famine, migration and conflict. In a hotter world, drought will impact severely on agriculture, which in turn will translate into food shortages and famine in the majority of the world and price hikes in developed countries. In the longer term, sustained drought conditions will drive mass migration and measures to protect

dwindling water supplies, bringing civil strife and cross-border conflict (McGuire, 2022, p. 77).

Drought is a threat multiplier for hungry and undernourished children in many ways: it affects not only the availability and affordability of food, but also its nutritional value. Children in developing countries have been especially affected by malnutrition and its dire consequences for their health and brain development. The burden of drought has disproportionately affected rural areas in developing countries, particularly in Africa, Central and South America, and Asia. Communities of colour, low-income, rural, tribal, and farming communities have been hit hardest. On top of experiencing greater food insecurity, these groups are most likely to lose access to clean water as droughts become more common and severe.

Although malnutrition is rare in the richer countries, undernutrition is not. Undernutrition, including wasting, stunting, underweight, and mineral deficiencies, significantly increases children's vulnerability to disease and death. In 2022, an estimated 149 million children under five were stunted, 45 million were wasted (14 million severely), and 37 million were overweight or obese globally (WHO, 2024). While stunting affects 3.4 percent of US children, 15 percent of households with children face food insecurity, putting them at risk of undernutrition. The rates of food insecurity differ sharply by race/ethnicity and socioeconomic status: Black households (almost 22 percent), Hispanic households (17 percent), and White households (8 percent). Households below the poverty threshold have the highest rate of all (28 percent).

Infectious vector-borne diseases, to which climate change is contributing, take a terrible toll on children in low-income countries. These vector-borne diseases are disproportionately linked to poverty and inequality. Numerous studies have examined the impact of climate change on malaria and dengue, two major global health threats. Infectious diarrhoeal diseases are also caused by water contamination from heavy rainfall and floods. Diarrhoeal disease is responsible for killing around 443,832 children every year and an additional 50,851 children aged five to nine years. Diarrhoeal diseases are the second leading cause of death for children under five, responsible for one in nine child deaths worldwide, with the highest mortality rates in South Asia and sub-Saharan Africa (UNICEF, 2024).

Climate change is becoming a major driver of migration, forcing more people in low-income countries to flee extreme weather events and violent conflicts caused by its effects. Countries most vulnerable to conflict and humanitarian crises due to climate change typically have: (1) weak state institutions, (2) exclusive political systems, and (3) foreign aid that is either restricted or unevenly distributed (Busby, 2022, p. 2). Around the world, the indications are clear that climate change is leading to food and water insecurity and risks escalating the number, length, and complexity of armed conflicts, accelerating and multiplying disasters, triggering and scaling migration, exacerbating inequalities and grievances, and weakening international law and governance. A few case studies have aimed to highlight the relationship between climate change and specific conflicts, with the civil war in Darfur, Sudan, and the Syrian war, standing out as examples. These conflicts are often cited as instances where climate processes have played a crucial role in intensifying or exacerbating the violence (Busby, 2022, p. 2-3).

Such conflicts have not only directly exposed children to violence and trauma, but also have torn families apart, interrupted schooling, cut off access to healthcare or food, and eliminated the jobs that families depended on for a living. Children caught in and fleeing zones of conflict have suffered physical injuries, psychological damage, developmental delays, malnutrition, and lost years of education. The effects often persist into adulthood and limit the person's ability to make a living; they may also affect the next generation. In addition to physical trauma, displacement and conflict have driven sexual violence and sexual trafficking, especially affecting poor and marginalised women and children (Perera, 2022, p. 93-94).

Forced migration places socioeconomically disadvantaged children and adolescents at high risk of chronic stress, anxiety, depression, and posttraumatic stress. The effects have been felt mainly in developing countries and among the least advantaged within them. Disparities result from a combination of social and environmental factors, including poverty, racism, unequal healthcare access, lack of education, pollution, and climate change impacts. These social and environmental exposures are concentrated in racial or ethnic minorities and those who live in socioeconomically disadvantaged circumstances. Although rich countries have not experienced major climate-related internal migrations, many millions of migrants fleeing war-torn countries that experienced a change in climatic and weather conditions have entered Europe and the US during the past two decades.

The Internal Displacement Monitoring Centre's 2023 Global Report revealed a record 75.9 million people living in internal displacements at the end of the year. Forced displacement due to conflict and violence totalled 20.5 million, while weather-related disasters caused 26.4 million internal displacements (Internal Displacement Monitoring Centre, 2024). Internally displaced persons (hereinafter: IDPs) and refugees are similar in many ways. The most fundamental distinction is that the refugee has crossed an international frontier while the IDP remains within their country of origin. IDPs and refugees often face the same practical problems, such as lack of documentation, adequate shelter, food, water, sanitation, healthcare, access to justice and financial resources (NiGhrainne, 2022, p. 182).

6 The International Law on Air Pollution and Climate Change

International environmental law continues to prioritise the issue of transboundary harm resulting from polluting activities occurring within or extending beyond boundaries. International environmental law imposes general obligations on states to address pollution and other environmental challenges. Some of these obligations are recognised as customary international law. A central obligation is the responsibility of states to prevent activities within their jurisdiction or control from causing harm to the environment of other states or areas beyond national boundaries. However, modern transboundary pollution challenges often transcend the traditional 'source state' and 'victim state' framework. Many such problems are now regional or global in nature, with climate change being the most prominent example. Addressing these widespread pollution challenges requires cooperation[16] and shared responsibilities among all contributing states (Bugge, 2015, p. 263-294).

The reliance on fossil fuels generates significant externalities, impacting climate, the environment, and human health. Air pollution caused by burning fossil fuels leads to numerous health issues, while climate change exacerbates existing threats, including diarrhoeal illness, vector-borne diseases, waterborne diseases, and cardio-respiratory diseases. Collaborations between the WHO and UNFCCC have become more prominent over the last several years. While recent conferences of parties (hereinafter: COPs) have brought renewed attention to the health effects of climate

[16] The duty of states to cooperate is recognised as a general principle of international environmental law. As such the duty to cooperate supplements and to some extent overlaps with the duty not to harm the environment of other states and areas outside national jurisdiction.

change, existing global public health frameworks often focus on other threats. Environmental degradation significantly amplifies health disparities both between nations and within communities. The scope of a regulatory action is influenced by factors such as the current scientific advancements of the issue or the practical realities of political feasibility (Dupuy & Vinuales 2018, p. 148).

6.1 Soft Law Instruments and Multilateral Conventions

The impacts of climate change are expected to be widespread but unevenly distributed. Currently, there is no global treaty specifically addressing air pollution, with little indication that states will adopt one soon (Okowa, 2021, p. 489). Many atmospheric concerns, including aspects of air pollution, are more effectively addressed at the local or regional level. The 1979 Geneva Convention on Long-Range Transboundary Air Pollution (LRTAP),[17] is the sole significant regional multilateral agreement focused on managing and mitigating transboundary air pollution. Its objective is to prevent, reduce, and control air pollution that crosses borders, originating from both new and existing sources (Boyle & Redgwell, 2021, p. 366). Despite the absence of a global framework, state practices have given rise to established principles of customary international law principles, supported by the interaction between treaties and customs. One widely recognised customary rule of international law, which is universally accepted as an established custom, obligates states to act with due diligence to prevent significant transboundary harm. This "no-harm principle" or "duty of prevention", is rooted in various been legal maxims and doctrines, prominent in both common and civil law traditions (McIntyre, 2017, p. 199).

In the 1941 *Trail Smelter* arbitration case[18], the tribunal ruled that "under the principles of international law…no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the property of persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence." The *Trail Smelter* case was one of the first inter-state claims addressing the harmful transboundary effects of airborne pollutants. The ruling was pivotal, as it marked the first time an

[17] Convention on Long-Range Transboundary Air Pollution (LRTAP), adopted 13 November 1979, 1302 UNTS 217 (entered into force 16 March 1983).
[18] *Trail Smelter Arbitration (United States of America, Canada)* (1938 and 1941) 3 RIAA 1905 (Trail Smelter).

international tribunal formally established the no-harm principle, requiring states to prevent, reduce, and manage transboundary environmental harm caused by activities within their jurisdiction (Rose, et al. 2022, p. 324).

Today, the older "no harm rule" (a duty not to cause significant transboundary harm) and the "harm prevention rule" (a duty to prevent significant transboundary harm) are considered two aspects of the same principle.[19] The difference in terminology mainly reflects the evolution of international environmental law (Brunnee, 2020, p. 53). The International Court of Justice (hereinafter: ICJ) first addressed states' responsibilities to safeguard the rights of other states within their territories in the *Corfu Channel* case.[20] In its Advisory Opinion on the *Legality of the Threat or Use of Nuclear Weapons*,[21] the ICJ reaffirmed that the harm prevention rule (obligation) is an established part of the international law, stating that "the general obligation of States to ensure that activities within their jurisdiction and control do not harm the environment of other States or of areas beyond national jurisdiction" (Brunnee, 2020, p. 52-119).

The Court reaffirmed this principle in its 1997 ruling in the *Gabcikovo-Nagymaros Project*,[22] its 2010 judgment in the *Pulp Mills* case,[23] and its 2015 inter-connected rulings in *Costa Rica v Nicaragua/Nicaragua v Costa Rica*.[24] These rulings make it clear that the harm prevention rule restricts a state's sovereign rights to engage in or permit harmful activities within its borders. The ICJ has consistently upheld that both the no-harm rule and associated procedural obligations apply not only to environmental damage within national territories but also to areas beyond national jurisdiction, including the global commons (Rose, et al., 2022, Brunnee, 2020; Harm Prevention, 2021, p. 271; Wewerinke-Singh, 2020, p. 56).

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[19] Some scholars make a distinction between two principles: the no-harm principle, which establishes a negative obligation for states to refrain from causing serious transboundary harm; and the preventive principle, a due diligence obligation to prevent activities that would cause serious transboundary harm from being carried out under their jurisdiction. See Benoit Mayer "Relevant Norms of General International Law," in The International Law on Climate Change (Cambridge: CUP, 2018).

[20] *The Corfu Channel Case (United Kingdom v Albania)* (1949) ICJ Rep 4. The ICJ confirmed the customary nature of this principle in 1949, in Corfu Channel case, referring to the existence of 'certain general and well-recognised principles, namely every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States', see Pierre-Marie Dupuy and Jorge E. Vinuales, *International Environmental Law* (Cambridge: CUP, 2018) 63.

[21] *Legality of the Threat or Use of Nuclear Weapons (Advisory Opinion)* (1996) ICJ Reports 226.

[22] *The Gabcikovo-Nagymaros Project (Hungary v Slovakia)* (1997) ICJ Rep 7.

[23] *Pulp Mills on the River Uruguay (Argentina v Uruguay)* (2010) ICJ Reports 14.

[24] *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica/Nicaragua)* and *Construction of a Road in Costa Rica along the San Juan River (Nicaragua/Costa Rica)* (2015) ICJ Rep 665.

The harm prevention rule has evolved to cover situations where environmental harm affects areas of shared global interest. This framework is believed to apply to global commons, including the oceans, Antarctica, the atmosphere, and their interconnected ecosystems, all of which are facing unprecedented strain. While states have a responsibility to prevent harm to the global commons, the circumstances under which one state can hold another legally accountable for failing to take appropriate actions to protect these areas remain unclear (Brunnee, 2020, p. 134).

The rule was also reflected in several international documents, including Principle 21 of the 1972 Stockholm Declaration[25] and Principle 2 of the 1992 Rio Declaration.[26] Principle 21 asserts that while states have the "sovereign right to exploit their own natural resources pursuant to their own environmental policies," they also have the responsibility to ensure that activities within their jurisdiction do not cause harm to the environment of other states or of areas beyond their national control. The language of Principle 21 indicates that the harm prevention rule applies to the global commons such as high seas or Antarctica and by extension, the Earth's atmosphere (Bodansky, Brunnee & Rajamani, 2017, p. 40).

Principle 2 of the Rio Declaration restated the Stockholm Declaration's stance, while also stating that states have the right to utilise their resources according to their own environmental and "developmental" policies. At present, our economic development remains heavily reliant on fossil fuels. Climate science urges the need to decarbonise our entire economy to limit global temperature rise to 1.5°C. The Paris Agreement sets the goal of keeping the average global temperature increase "well below 2°C" and, ideally, below 1.5°C". Achieving net-zero emissions across the entire economy presents both technological and societal challenge (Bodansky, Brunnee, & Rajamani, 2017, p. p.40). Principle 2 does not impose an outright ban on environmental harm that crosses national boundaries, nor does it grant states unrestricted freedom to exploit natural resources or pursue economic development without considering environmental impacts (Boyle & Redgwell, 2021, p. 116).

[25] Declaration of the United Nations Conference on the Human Environment, Stockholm, 16 June 1972, UN Doc. A/CONF 48/14/Rev.1 (Stockholm Declaration).
[26] Rio Declaration on Environment and Development, 13 June 1992, UN Doc. A/CONF. 151/26. Rev. 1 (Rio Declaration).

The Rio instruments outline a framework that differentiates global environmental responsibilities from those that are regional or transboundary in nature, such as air pollution. These instruments use the term "common concern" to refer to issues that carry global responsibilities (Boyle & Redgwell, 2021, p. 142). Some have argued that common concerns align with *erga omnes* obligations, meaning duties owed to the international community at large, where all states have an interest in ensuring compliance. Both common concerns and erga omnes obligations address matters that impact individuals worldwide. The central principles of the climate regime are, therefore, of universal concern to all states (Soltau, 2016, p. 203-212).

In 1988, General Assembly resolution 43/53 declared that "climate change is the common concern of mankind," recognising that the climate is a fundamental condition for sustaining life on Earth.[27] This notion was incorporated into Principle 2 of the Rio Declaration, which was later reflected in the Preamble to the 1992 UNFCCC (Sands & Peel, et al. 2018, p. 209). The 1992 UNFCCC also asserts in its Preamble that "change in the Earth's climate and its adverse effects are a common concern of humankind" (Bodansky, Brunnee & Rajamani, 2017, p. 51). This distinction highlights that it is not the climate itself, but rather the change in climate and its negative impacts that are considered the common concern (Soltau, 2016, p. 209). Similarly, the Preamble of the 2015 Paris Agreement, adopted under the UNFCCC, reinforces that "climate change is a common concern of humankind." It further emphasises that, in taking action to address climate change, parties must respect and promote human rights, including the rights to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations. The Agreement also underscores the importance of development, gender equality, empowerment of women and intergenerational equity in the context of climate action (Boyle & Redgwell, 2021, p. 394).

The UNFCCC establishes more extensive commitments than those contained in LRTAP or the Vienna Convention for the Protection of the Ozone Layer.[28] The UNFCCC sets out, in its Art. 3, certain fundamental principle of the climate change

[27] General Assembly Resolution 43/53 of 6 December 1988 (A/RES/43/53). The same resolution welcomed the establishment of the Intergovernmental Panel on Climate Change (IPCC) and outlined issues to be addressed by the Panel.

[28] Vienna Convention for the Protection of the Ozone Layer (adopted 22 March 1985, entered into force 22 September 1988) 1513 UNTS 293. The Vienna Convention established the framework of a regime "to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer."

regime, including the principle of common but differentiated responsibilities and respective capabilities (hereinafter: CBDRRC) (Art. 3(1)), the principle of intergenerational equity (Art. 3(1)), and the precautionary principle (Art. 3(3)) (Dupuy & Vinuales, 2018, p. 178). The UNFCCC recognises in Art. 3(4) that states have a right to promote sustainable development. However, Art. 3 is not an exhaustive list, and the principles guide the parties in their actions to achieve the objectives of the convention. The parties may consider other relevant principles in implementing the convention. States have accepted that their mitigation obligations depend on various differentiation principles. Climate change mitigation is a strong case for differentiation. A state's capacity to limit and reduce its GHG emissions depends on various national circumstances, including its financial and technological capacity, geographical situation, and economy. The CBDRRC principle has been recognised as a relevant principle in other aspects of global environmental protection, including the protection of the ozone layer and the regulation of mercury pollution (Mayer, 2022, p. 243).

The Preamble of the 2015 Paris Agreement acknowledges the principle of CBDRRC and includes references to key concepts such as equity, sustainable development, poverty reduction, and climate justice. Under the Paris Agreement, each party is required to submit nationally determined contributions (hereinafter: NDCs) that align with the principle of CBDRRC. The principle of CBDRRC originates from the broader application of equity in international law and emphasizes the importance of considering the specific needs of developing nations in creating, implementing, and interpreting environmental frameworks. The concept of responsibility within CBDRRC is grounded in the principle of cooperation, which calls for collaborative efforts among states to tackle transboundary pollution. Significantly, the widespread impacts of climate change are deemed a common concern for humanity, as addressing them effectively requires the active involvement of major GHG emitters, consistent with key principles of the climate regime, including the principle of CBDRRC (Soltau, 2016, p. 208-212).

Climate change has drawn increased attention to intergenerational responsibilities, raising critical questions about the obligations of the present generations to future ones. A significant driver of this attention has been the rise of child and youth climate activism, which underscores the vulnerability of children who are likely to face the brunt of a worsening climate crisis. As GHGs continue to accumulate in

the atmosphere, today's actions are not only intensifying the challenges of mitigating climate change but also imposing a heavier burden on future generations to adapt to its far-reaching consequences (Mayer, 2018, p. 30). Children are both part of the present generation and representatives of future generations, as they are excluded from current decision-making but bear the consequences of those decisions made by today's adults. A clear distinction can be made between individuals alive today and those yet to be born to differentiate between present and future generations. Arguing that children's rights are being violated in the present holds much potential. Children today may have legal standing to argue that they are already harmed, particularly in cases where their future interests are neglected or disregarded in current decision-making (Pare, 2022, p. 153).

The principle of intergenerational equity mandates that each generation utilise and enhance its natural and cultural heritage responsibly, ensuring it is preserved for future generations in a condition no worse than how it was inherited. The principle is deeply embedded within international law. Internationally, the rights and interests of future generations have been acknowledged in non-binding soft law declarations, in the preambles of several environmental treaties and, the provisions of the UNFCCC (Redgwell, 2016, pp. 195-196). Principle 3 of the Rio Declaration highlights intergenerational equity, asserting that the right to development must be pursued in a way that ensures developmental and environmental needs of present and future generations are met equitably (Boyle & Redgwell. 2021). The 1972 Stockholm Declaration stated that humanity has a profound responsibility to protect and improve the environment for both present and future generations. This concept was later expanded in 1987 by the Brundtland Commission's report, which defined the concept of sustainable development as fulfilling the needs of present generations without compromising the ability of future generations to meet their own needs (Dupuy & Vinuales, 2018, p. 88).

This principle is closely associated with concepts of fairness, and of distributive justice (Redgwell, 2016, p. 186). The increasing incorporation of an intergenerational perspective in international treaties and declarations emphasizes the growing recognition of the importance of protecting the environment for the benefit of future generations. This sentiment is echoed in Art. 3(1) of the UNFCCC, which stresses the need to consider intergenerational equity in the decisions made by its parties. Many global environmental treaties, including the 1985 Ozone Convention,

the 1992 Convention on Biological Diversity,[29] and UNFCCC aim to prevent irreversible harm to the environment. Additionally, there has been an increasing focus on generational rights in climate litigation by those over 18 years old, bringing cases that highlight the impact of climate inaction on future generations. In the domestic German case *Neubauer and others v Germany*,[30] for example, the plaintiffs argued that state's failure to mitigate the climate crisis placed an unfair burden on future generations. Although the principle has been acknowledged in both international and domestic court rulings, these cases do not establish that future generations have recognised legal rights under international law (Boyle & Redgwell, 2021, p. 121-122).

6.2 Human Rights-Based Approaches to Climate Change and Atmospheric Pollution

The impact of climate change on human rights is now well documented, highlighting the disproportionate harm experienced by marginalised groups and vulnerable communities. Environmental damage has been shown to interfere with the enjoyment of numerous recognised human rights, including the rights to life and health. Human rights are fundamental standards that belong to every individual, irrespective of nationality, place of residence, gender, ethnicity, disability, or socio-economic status. They provide the foundation for survival and development with dignity. The universal value of human dignity is affirmed by the international community's adoption of the UDHR. Art. 1 of the UDHR states: "All human beings are born free and equal in dignity and rights," emphasizing that human dignity is an inherent aspect of human existence. Building on this principle, it is understood that basic human rights are essential to preserving human dignity for all people, regardless of when and where they are born. These rights extend universally, both spatially and temporally, ensuring their relevance for future generations (Lawrence, 2019, p. 91).

International human rights law establishes states' fundamental obligations to treat all individuals with fairness, ensure non-discrimination, and guarantee the enjoyment of all human rights, including the right to health. The right to health is enshrined in

[29] Convention on Biological Diversity (CBD) (adopted 5 June 1992, entered into force 29 December 1993) 1760 UNTS 79.
[30] Bundesverfassungsgericht (BVerfG) (Federal Constitutional Court) BvR 2656/18/1, Mar. 24, 2021.

various legal frameworks and encompasses not only access to personal and public health services but also the fundamental determinants of health, such as clean water, adequate sanitation, sufficient nutrition, safe housing, and clean air. The importance of an adequate standard of living for health and well-being is explicitly affirmed in several key human rights instruments, including Art. 25(1) of the UDHR, in Art. 12(1) of the International Covenant on Economic, Social and Cultural Rights (hereinafter: ICESCR)[31], Art. 24(1) of the CRC, and other human rights treaties.

The CRC is built on four fundamental principles: 1) Non-discrimination: States must uphold children's rights without any form of discrimination, regardless of the child's or their parents' race, colour, gender, language, political or other opinion, national, ethnic or social origin, property, disability, birth or other status; 2) Best Interests of the Child: All laws, policies, and actions concerning children should prioritise their best interests; 3) Comprehensive Protection and Development: Governments are obligated to safeguard children's rights, ensuring their survival and promoting their physical, spiritual, moral, and social development; 4) Right to Participation: Children have the right to express their views and participate meaningfully in decisions that affect their lives (Butcher & Hallward, 2021, p. 112). The rights described in the UDHR have been incorporated into binding international human rights treaties and covenants that establish rights for individuals and responsibilities for governments, transnational corporations, organisations, and people. The right to health is intrinsically linked to living in an environment that is healthy, safe, clean, and sustainable. Yet, this fundamental right – to achieve the highest attainable standard of health (the right to health) - is under significant threat from the growing impacts of climate change (Wewerinke-Singh & Antonidis, 2022, p. 146-147).

Health is a universal right, equally applicable to all, including children. As individuals under the age of 18, children are entitled to additional protections under the CRC, due to their vulnerability and dependence on families and adults for their care, well-being, and the environments that support their growth and development. Children's physical and developmental needs make them particularly sensitive to the effects of climate change. The UN Committee on the Rights of the Child has identified climate change as one of the greatest threats to children's health. According to the former

[31] International Covenant on Economic, Social and Cultural Rights (ICESCR) (adopted 16 December 1966, entered into force 3 January 1976) 993 UNTS 3.

Special Rapporteur on human rights and the environment, children face the greatest vulnerability to environmental harm, with the long-term consequences of climate change and biodiversity loss likely to profoundly disrupt their lives for years to come (Narula, 2021, p. 148-149).

The principle of the best interests of the child, as outlined in Art. 3 of the CRC, offers a particularly promising approach. This principle shifts the focus in climate law and policy to prioritise children's needs over other competing interests. As a fundamental principle of the CRC, it provides a framework for interpreting all other rights within the Convention. Combined with complementary principles, such as the right of children to be heard, it ensures that their rights and interests are addressed comprehensively in legal and policy contexts.[32] The CRC Committee asserts that children's best interest should be a central consideration in all decision-making, including government policies related to climate and environmental issues. Since children are disproportionately impacted by climate change, their interests could be considered even more critical in environmental matters than in other policy areas (Daly, 2023).

The CRC identifies environmental pollution as a significant threat to children's access to nutritious food and clean drinking water, essential for achieving the highest attainable standard of health. Governments are obligated to take effective measures to mitigate these risks and uphold children's health rights. Children's extended life expectancy means they face longer exposure to worsening environmental conditions and a greater risk of developing diseases with long latency periods. Climate breakdown further affects children's access to education and other critical factors - recognised as human rights - that are fundamental to lifelong health and well-being. Since children's rights are inherently interconnected, fulfilling their right to health and development requires addressing related rights, including adequate living conditions, safe housing, protection from hazardous work and economic exploitation, and access to vital information that empowers them to protect themselves and make informed choices (Knox, 2016, p. 217). The UN human rights treaty bodies have repeatedly emphasised that environmental harm can undermine the realisation of human rights they protect. Climate change, as a specific form of

[32] Committee on the Rights of the Child, *General Comment No. 5: General Measures of Implementation of the Convention on the Rights of the Child* (27 November 2003) CRC/GC/2003/5. The other general principles are the right to be heard (Art. 12); the right to life, survival and development (Art. 6); and non-discrimination (Art. 2).

environmental harm, is no exception in this regard. Human rights bodies have consistently acknowledged that climate change poses a significant threat to the enjoyment of human rights (Knox, 2016, p. 218).

The climate crisis is a major threat to human rights but also offers opportunities to improve them. Climate change caused by human activity is expected to negatively impact well-being, affecting rights to life, health, and subsistence, particularly in poorer countries and marginalized communities. Groups at risk include children, women, the elderly, people with disabilities or chronic illnesses, Indigenous peoples, low-income populations, and those in jobs sensitive to climate or unsafe conditions. Children are especially vulnerable due to their development and physiology, making them more prone to health issues like heat and air pollution. Climate change is anticipated to worsen global child mortality and illness from diseases such as malaria, respiratory and diarrheal diseases, malnutrition, and other communicable diseases (Blaiklock, Williams & Jones, 2021, p. 397).

Unabated climate change affects various human rights, such as the rights to life, health, food, water, sanitation, housing, education, an adequate standard of living, and self-determination. Certain groups are more severely impacted than others, and those countries and communities that contribute least to climate change often suffer the most. They also lack the economic and infrastructural resources needed to adapt. A rights-based approach is crucial for guiding mitigation efforts to address these disparities. Human rights and dignity are essential for promoting intergenerational justice. Though there is no universally agreed-upon theory of intergenerational justice, it generally requires that current generations maintain an ecological system – including the climate system – that supports a minimum level of subsistence for future generations. This standard should protect fundamental human rights to life, health, and subsistence (Lawrence, 2019, p. 91).

States are bound by international human rights law to respect, protect, and fulfil the rights of all individuals. Since 2008, the UN Human Rights Council[33] has highlighted how climate change affects the enjoyment of human rights globally, both now and in the future. Given the broad nature of human rights treaties, climate change

[33] By General Assembly Resolution 60/251, the Assembly decided to establish, as a subsidiary organ, a Human Rights Council, to replace the Commission on Human Rights.

obligations under the UNFCCC must inform the interpretation of these human rights obligations. At the same time, states must ensure that their climate actions comply with human rights law. The 2015 Paris Agreement marked a significant milestone as the first multilateral environmental treaty to explicitly acknowledge human rights. Its preamble highlights the right to health and calls on Parties to respect, promote and consider their respective obligations on human rights while addressing climate action. It also emphasizes the importance of specific rights, including the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and vulnerable populations. Additionally, the Agreement stresses the right to development, gender equality, women's empowerment and intergenerational equity (Woerdman, Roggenkamp & Holwerda, 2021, p. 260; Wewerinke-Singh & Antonidis, 2022, p. 159).

International and regional human rights systems recognise states' duty to mitigate climate change as part of their human rights obligations. The Dutch Supreme Court's ruling in the *Urgenda Foundation v. State of Netherlands*[34] affirmed that protecting citizens from climate change align with the right to life and private life. This landmark case highlights how international human rights law can strengthen the obligations outlined in the UNFCCC and Paris Agreement. It also demonstrates how climate change law can inform the interpretation of states' human rights duties. These duties include establishing legal and institutional measures to protect against environmental harm, conducting environmental impact assessments, ensuring public awareness and participation in environmental decisions, providing remedies for harm, addressing the needs of vulnerable groups, and safeguarding the rights of individuals striving for a safe, healthy, and sustainable environment (Wewerinke-Singh & Antonidis, 2022, p. 159).

6.3 Sustainable Development

Sustainable development, introduced in the Brundtland Commission's 1987 report, emphasizes the integration of environmental, social, and economic goals. Principle 4 of the Rio Declaration highlights that environmental protection is essential to the development process and cannot be treated independently. Similarly, the 2002

[34] Supreme Court of the Netherlands, *State of the Netherlands v Urgenda,* Case19/00135, 20 December 2019.

Johannesburg Declaration on Sustainable Development[35] identifies economic development, social development and environmental protection as three pillars of sustainable development. Economic development cannot happen at the expense of the environment and of the well-being of humans. To achieve true sustainability, development must balance these pillars, ensuring economic progress does not compromise human well-being or environmental health (Dupuy & Vinuales 2018, p. 91).

Sustainable development's social pillar closely aligns with human rights, as fundamental human needs such as food, water, healthcare, shelter, and education, are framed in the language of rights (Atapattu, Gonzalez & Seck, 2021, p. 4). Similarly, the UNFCCC highlights the rights and responsibilities of its Parties in promoting sustainable development and expresses a collective commitment safeguarding the climate system for present and future generations. This emphasis is further reinforced in the Paris Agreement, where sustainable development is a central theme, mentioned at least twelve times (Mayer, 2018, p. 72).

Numerous treaties, international instruments, and court decisions affirm, directly or indirectly, the concept of sustainable development and states' responsibility to utilize natural resources in a sustainable fashion. These acknowledgements have solidified sustainable development as an integral component of international customary law (Sands, Peel, et al., 2018, p. 218-219). In the *Gabcikovo-Nagymaros Project* case, the ICJ highlighted the need to balance economic development with environmental protection, embodying the concept of sustainable development (Boyle & Redgwell 2021, p. 117). Judge Weeramantry, in his Separate Opinion, described sustainable development as more than just a concept, recognising it as a principle with normative value essential to resolving the case (Bosselmann, 2021, p. 40). Sustainable development is recognised as a broad framework comprising both substantive and procedural aspects. Substantive aspects principles like intergenerational equity, sustainable use, equitable use and integration. Procedural aspects focus on ensuring access to information, stakeholder participation in decision-making, environmental impact assessment, and access to remedies (Atapattu & Schapper, 2019, p. 20).

[35] The UN World Summit on Sustainable Development "Johannesburg Declaration on Sustainable Development", UN Doc. A/CONF.199/20 (2002).

The Agenda for Sustainable Development 2030 with its SDGs, adopted by 193 countries in September 2015, officially came into effect on January 1, 2016.[36] This Agenda encompasses 17 SDGs and 169 associated targets, addressing the three dimensions of sustainable development: economic, social, and environmental. The UN General Assembly recognised the urgency of addressing climate change and its impacts as a priority under Goal 13, which calls for states to implement the UNFCCC (Target 13.3) (Mayer, 2018, p. 263). Reducing air pollution is a key focus of the SDGs, particularly in targets 3.9 under SDG 3 (Health) and 11.6 under SDG 11 (Sustainable Cities) (Dupuy & Vinuales 2018, p. 149).

The Paris Agreement is closely connected to the SDGs, particularly with Goal 13, as both share the objective of addressing climate change. The SDGs are rooted in the promotion of human rights, aiming to enhance their enjoyment alongside environmental sustainability. Growing global awareness of climate change influenced the integration of climate-related targets within SDGs, paving the way for the Paris Conference later that year. Numerous parallels exist between the SDGs and the Paris Agreement, with Goals 13, 14 and 15 addressing climate change, while the Paris Agreement incorporates provisions on "sustainable lifestyles", "sustainable development", and "sustainable management of forests" (Giacomini, 2022, p. 114-115).

The right to development is recognized as a human right, as affirmed by Art. 1 of the 1986 UN Declaration on the Right to Development. The SDGs align closely with international human rights standards and are central to the work of the UN Human Rights Council, being referenced in universal periodic reviews and addressed by Special Procedure mandate holders. Each goal is overseen by a designated UN agency, which collaborates with States to conduct research, gather information, and promote activities to achieve the targets. Agenda 2030, which outlines the SDGs, serves as a strategic blueprint for achieving social equity, environmental protection, and economic prosperity. Its preamble underscores these three interconnected dimensions of sustainable development, presenting them as a vision for the future. The framework is built around themes that resonate with human rights values: prioritizing the inclusion of marginalized and vulnerable groups to ensure no one is

[36] UN General Assembly, '*Transforming Our World: the 2030 Agenda for Sustainable Development*' (21 October 2015) UN Doc A/RES/70/1.

left behind, holding governments and their partners accountable for development outcomes, and encouraging the active participation of all individuals in the process.

Facing an unprecedented planetary crisis, the United Nations has, for the first time, acknowledged the universal right to live in a clean, healthy and sustainable environment. Although not legally binding, resolutions adopted by the UN Human Rights Council and the UN General Assembly affirm this right and are expected to drive legal advancements globally, regionally, and locally while spurring efforts to uphold it. Recognising this right promotes better environmental outcomes, including cleaner air, improved access to safe drinking water and lower GHG emissions. It also aligns with the SDGs, under the 2030 Agenda, which address health, clean water, sanitation, and climate action. Achieving sustainable development depends on prioritising a healthy environment as the cornerstone of economic and social progress.

In recent years, climate litigation has surged as a significant development. As the climate emergency intensifies, rights-based climate cases are becoming an increasingly important tool for securing more ambitious climate action. Lawsuits are being filed against governments for not fulfilling their environmental and human rights duties, with the goal of compelling them to adopt more ambitious climate actions. Recent high-profile cases include those against the Netherlands, Germany, Australia, and the United States. Additionally, legal actions are being pursued against major corporate polluters such as large fossil fuel companies, to seek compensation for harm. One of the major litigation cases in 2023 was the *Held et al. v. State of Montana* (Cohen, 2023), in which a judge ruled in favour of young residents of Montana. The court determined that state officials had violated their right to a clean and healthy environment by supporting fossil fuels (Sritharan, 2023, p. 173). The CRC plays a crucial role by directly addressing environmental concerns. Art. 24, which focuses on the right to health, mandates that states take measures to combat disease and malnutrition, while also considering the dangers and risks posed by environmental pollution. Additionally, it ensures that parents and children receive education and are supported in areas such as child health, nutrition, hygiene and environmental sanitation (Pare, 2022, p. 161-162).

7 Conclusion

Environmental factors contribute significantly to the global burden of disease, with children, especially those in developing countries, being the most affected. Health impacts are distributed unequally, with the most vulnerable populations – those experiencing extreme poverty, social marginalisation, or existing health conditions – bearing disproportionate share of disease, disability, and mortality. Factors such as age, socio-economic status, and pre-existing conditions further exacerbate this inequality. Additionally, the changing climate poses an escalating threat to the health and well-being of children throughout the world. Their inherent vulnerabilities and limited agency make it particularly challenging for them to confront environmental injustices effectively.

The global focus on climate change has largely centred on GHG emissions, but it is equally important to recognise the health impacts of fossil fuel combustion. Sources of heat-trapping carbon emissions often release local pollutants such as fine particulate matter, ozone precursors, air toxins, and metals all of which can significantly degrade air quality and harm human health. Rising temperatures worsen air pollution, leading to increased risks of cardiovascular and respiratory illness. The health impacts of climate change are wide-ranging and severe, with the potential to affect every organ system in the human body. Children across the globe face the risk of at least one climate-related hazard, while vulnerable populations, including the very young, the elderly, those with limited mobility, socially marginalised groups, and economically disadvantaged communities, are disproportionately affected. Extreme heat contributes significantly to the global health burden worldwide, with heatwaves posing particular dangers to the very young and the elderly. Elevated temperatures can exacerbate cardio-respiratory conditions and central nervous system disorders. Moreover, climate change also amplifies existing environmental health challenges, including the spread of diarrhoeal illness and vector-borne diseases, while redistributing these threats by introducing diseases like malaria or dengue fever to previously unaffected regions.

Climate scientists warn that exposure to climate-related hazards and toxic air pollutants caused by burning of fossil fuels is expected to increase. Pregnant women and children are particularly at risk from overlapping exposures to factors such as air pollution, extreme heat, food insecurity, and severe storms. For infants and young

children, a combination of neurotoxic air pollutants and drought-induced malnutrition can impair cognitive development through synergistic effects. Air pollution weakens immune function, leaving children highly susceptible to infectious diseases that are spreading due to climate change. There is strong evidence of a combined impact of heat and air pollution to higher rates of cardiovascular and respiratory illnesses in both adults and children, with increased morbidity and mortality. Researchers also highlight the compounded risks of prenatal exposure to heat and air pollution which elevate the likelihood of preterm birth. Beyond immediate physical and developmental consequences, air pollution and climate change contribute to rising rates of mental health disorders among children and adolescents. Exposure to air pollution and elevated temperatures, starting in utero, raises the likelihood of preterm birth. Preterm babies are more prone to emotional and behavioral problems, including depression and anxiety. Stress and air pollution exposure experienced during childhood further amplify the risk of mental health problems during childhood and adolescence.

Climate change intensifies existing threats, amplifying their impact on communities. Climate change-fuelled extreme weather events such as wildfires, floods, tropical storms, tornadoes, hurricanes, and mudslides cause not only physical injuries and acute illnesses but also aggravate chronic health conditions. In the aftermath of these disasters, individuals face heightened exposure to infectious diseases and toxic chemicals, often through contact with contaminated floodwaters or unsanitary and unsafe living conditions. Additionally, the displacement and damage to infrastructure disrupt access to essential to medications and treatments, putting those with chronic diseases at greater risk.

A human rights approach focuses on how environmental impacts affect individual's rights to life, health, private life, and property. A rights-based approach to climate change emphasizes the obligations of states to respect, protect, and fulfil all human rights endangered by climate change. This perspective can drive the adoption of stricter environmental standards by requiring governments to mitigate pollution that endangers health and well-being. The Paris Agreement has become a foundation for legal challenges worldwide, allowing litigants to hold governments accountable for insufficient mitigation policies. Many rights outlined in international human rights law depend on a clean and healthy environment, yet such rights become difficult to

realise in polluted conditions. Despite these connections, the persistent lack of political determination remains a significant obstacle to meaningful progress.

The responsibilities of states and non-state actors to mitigate and adapt to climate change remain unclear despite the emergence of a complex web of regulatory framework. In recent years, children and young people have become prominent leaders in mass protests and civil society movements, amplifying political pressure and contributing to climate change-related litigation at both domestic and international levels. Rights-based climate lawsuits are increasingly used as a strategy to push for stronger climate action. Many of these cases rely on human rights arguments to hold governments accountable for inaction. Climate litigation has also become a regulatory tool to address the damage caused by human-induced GHG emissions, focusing on prevention, mitigation and compensation. In the context of human health impacts, such litigation examines whether domestic and international law, conventions, and climate change negotiations uphold the right to health and seek remedies for violation.

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Povzetek v slovenskem jeziku

Okoljski dejavniki, kot sta onesnaženost zraka in podnebne spremembe, močno prispevajo k globalnemu bremenu bolezni in so ključni za razumevanje razlik v zdravju med državami, pri čemer se države z nizkimi in srednjimi dohodki soočajo z največjim okoljskim zdravstvenim bremenom pri različnih boleznih in poškodbah. Čeprav je zdravje splošno priznano kot oboje, kot temeljna človekova potreba in temeljna človekova pravica, škodljivi učinki nezdravega okolja nesorazmerno slabše vplivajo na otroke. Raziskava kaže, da lahko izpostavljenost strupenim snovem iz okolja pred in po rojstvu zmoti razvoj možganov in pljuč ter poruši njihovo delovanje. Ti vplivi na zdravje so neenakomerno porazdeljeni, pri čemer marginalizirane skupine prebivalstva doživljajo večjo škodo. IPCC ali t. i. Medvladni forum za podnebne spremembe ugotavlja, da je izgorevanje fosilnih goriv glavno gonilo podnebnih sprememb. Epidemiološke študije nadalje poudarjajo obstoječe in prihodnje posledice podnebnih sprememb, vključno z njihovimi učinki na nalezljive bolezni, bolezni srca ter pljučne bolezni in duševno zdravje.

NOTES FOR CONTRIBUTORS

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