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ELŐSZÓ

Fordulatokkal telve indult az év első fele, amely folyóiratunk működését is érintette. Sokrétű fejlesztéseket hajtottunk végre folyóiratunk életében, új, nemzetközi előírásoknak megfelelő hivatkozási rendszert vezettünk be (OSCOLA), amely segíti szerzőinket is a kéziratuk előkészítésében és nemzetközi láthatóságának biztosításában. Eközben folyóiratunk bekerült a CEEOL (Central and Eastern European Online Library) és Index of Copernicus indexált folyóiratai közé, miközben egy, kéziratában teljesen angol nyelvű szám sorait olvashatja az Olvasó.

Jelen folyóiratszámban Szerzőink széles spektrumon fejtik ki gondolataikat: elmerülnek az energiaszabályozás kérdéseiben, s aktívan vizsgálják a technológiai fejlődés és a társadalmi változások jogalkotásra, emberi jogokra, a viták rendezésére való hatásait.

A Kiadó nevében ezúton is köszönöm Szerzőink igyekezetét, a Szerkesztőbizottság tagjainak és a lektoroknak a felkérések elfogadását és áldozatos munkájukat. Külön köszönet illeti a Dél-dunántúli Regionális Könyvtár és Tudásközpont munkatársait, akik oly sok tekintetben nyújtanak segítséget folyóiratunk megjelentetéséhez.

Jó szakmai „merítkezést" kívánok minden Olvasónak!

Dr. Hohmann Balázs
főszerkesztő

FOREWORD

The first half of the year brought dynamic developments that have also shaped the trajectory of our journal.

We have undertaken a range of improvements, including the introduction of a new referencing system in line with international standards (OSCOLA), which supports our authors in preparing their manuscripts and strengthens their international visibility. Meanwhile, our journal has been indexed in both the Central and Eastern European Online Library (CEEOL) and the Index of Copernicus. This issue is also notable for being composed entirely of English-language contributions.

On behalf of the Publisher, I would like to express my sincere gratitude to our Authors for their dedication, and to the members of the Editorial Board and the reviewers for accepting our invitations and for their committed work. Special thanks are due to the staff of the South Transdanubian Regional Library and Knowledge Centre, whose support is invaluable in ensuring the successful publication of our journal.

I wish all readers a good professional "immersion"!

Dr. Balázs Hohmann
Editor-in-Chief

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PRICE REGULATION OF THE RESIDENTIAL (RETAIL) ENERGY MARKET - COMPARING THE PRACTICES OF THE UNITED STATES OF AMERICA WITH THE EUROPEAN COMMISSION'S "CLEAN ENERGY PACKAGE"

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ABSTRACT

Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market in electricity, which amends Directive 2012/27/EU, advocates for the phasing out of regulated household electricity prices in favour of a fully liberalised retail electricity market. According to the author's position, the removal of regulated end-user prices adversely affects Hungarian household consumers. This stance is supported by the economic argument that genuine competition in the household electricity market can only function effectively – thus should only be permitted by law – under specific conditions: the presence of a developed economy with abundant domestically sourced energy resources; high individual income levels, which enhance consumer engagement; widespread adoption of energy-efficient, cost-effective technologies and innovations at the household level. Only where these criteria are met can liberalisation result in reduced household energy costs and increased energy savings over the long term. In all other contexts, even partial liberalisation of the retail market tends to trigger a spiralling increase in household energy prices.

KEYWORDS

Electricity retail market, USA vs. EU retail, Regulated vs. fully liberalized supply.

ARTICLE HISTORY

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I. Introduction

After lengthy consultations and its first publication in 2016, the EU Council and the Parliament adopted its complex regulation package entitled "Clean Energy for all Europeans" (hereinafter: Package) in 2019. The Package consists of 8 different legal instruments, one of them being the directive on the internal electricity market.

Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU takes the stand of leading out regulated electricity prices for households, giving space to a liberalised household electricity market.

Article 5 of the Directive created detailed rules for market-based supply prices, especially on the retail markets, where the possibility of applying administrative price regulation is restricted exclusively to vulnerable or energy poor consumers. The first evaluation of the 2019 system will be on 31st of December, 2025, by which the European Commission shall submit its report to the European Parliament and the Council.

According to the Author's position, the rescission of the regulated end-user prices is negatively affecting the Hungarian domestic consumers. It is backed by the economic argument according to which free competition in the commodity market, for the retail (household) market is only possible (thus shall be allowed by the law only) where the following criteria are met:

- the existence of a developed economy,
- rich in indigenously produced energy resources
- high individual income-earning capacity, resulting in higher consumer motivation,
- high penetration of energy efficient, cost-effective technical solutions, and innovations at the household level,

and only in that case may they bring household energy costs down and energy savings up in the long run. In all other cases, even partial retail market liberalisation will lead to a spiral up of energy prices for families.

The Directive has negative effects on the domestic development and even the sustainability of the National Public Utility Service System. The Directive and its application to the retail (household electricity market) are harmful to Hungarian consumers. The current economic model of the universal service is maintained by Hungarian internal legal instruments left from the internal market regulation of the EU.

However, there are several more sophisticated solutions in relation to the application of regulated end-user prices, and we are ready to make recommendations for these.

The cancellation of the regulated retail end-user prices was possible in the EU member states with developed economies, rich energy sources, and with high general individual income-earning capacities. External imposition on the immature

Eastern-European energy markets resulted in social instability, social tensions, the narrowing of private consumption, and finally, in the elimination of competition. Therefore, it is not the solution to abolish regulated energy prices or to speed up this process. The date of this only depends on the development of the Hungarian economy, the solutions of the economies of scale of the Hungarian energy sector integrated into the European one, and on the income levels of society and families.

By presenting the industrial regulations and practices of the United States and comparing them to the Package, the study aims to examine and justify that it is possible to maintain administrative price regulation on the retail market, and to have retail administrative price regulation and free retail markets at the same time within a member state/country. I would like to highlight that if it is possible to have administrative price regulation and free retail markets in parallel within a (federate) state – in US member states (or in smaller regions) –, then it is less justified that according to the Directive, it would be necessary to withdraw/rescind/restrict administrative retail/end-user price regulation in each EU member state, because it does not distort the EU's internal energy market significantly, and it does not hinder the extension/development of the effective internal energy market of the EU.

Although the different retail prices and their fluctuations are explained by the deviations of the wholesale prices, for reasons of space, this study does not aim to analyse and compare in detail the energy production sources, population density and economic development of the member states of the USA, which may be notably different and may result in different wholesale and retail prices in each member state. The twenty-eight member states of the EU are also characterised by the same heterogeneity – with even bigger differences –, and therefore, this would not result in reasonable conclusions when examining the obligatory cancellation of regulated retail prices, and would not justify the requirement of obligatory cancelling when comparing the USA to the EU 27.

II. Presentation of the retail energy market price regulations of the United States

The American Constitution allows federal regulation of utilities only where interstate commerce is involved. Accordingly, intrastate activities are subject to regulation by state regulatory commissions, while all states approve retail prices for their jurisdictional electric utilities.[1]

In the energy market regulation of the United States of America, FERC (Federal Energy Regulatory Commission) exercises jurisdiction over transmissions between wholesale energy markets and US states, but its jurisdiction is not related

[1] International Energy Agency, *Energy Policies of IEA Countries: The United States 2014 Review* (OECD/IEA 2014) 44.

to retail energy markets.[2] The retail markets are regulated at the level of the given US state – with the cooperation of public utility commissions (PUC) – which may differ significantly in each member state.[3]

The majority of wholesale energy markets and some of the retail energy markets are competition-based, where the pricing system is also competition-based. In other cases – including non-competition based retail markets – pricing is cost-based.[4] The state public utility regulatory commissions regulate the rules and prices of the retail energy markets. Their task is to ensure the population's access to safe and reliable public utility services at reasonable rates, and to exercise oversight over certain areas of the organization and financing of public utilities.[5]

Pursuant to Order 888 of FERC published in 1996, State Commissions have jurisdiction over the distribution component of retail service, the generation component of retail service and the transmission component of bundled retail service.[6] The jurisdictional determinations of the Order between FERC and the State Commissions were also affirmed by the Supreme Court in 2003.

At present, a hybrid system for providing electric service exists in the United States for wholesale and retail markets. Electric service currently provided to end-user customers in one of the following sets of configurations:

- States with restructured retail markets and organized wholesale markets
- States with traditionally-regulated retail markets and organized wholesale markets
- States with traditionally-regulated retail markets and bilateral wholesale markets.[7]

It is important to mention that Congress could have changed existing jurisdictional arrangements in Energy Policy Act of 2005 (EPACT 2005), but did not do so, and therefore, the USA is likely to have a hybrid system in the foreseeable future. On the whole, it can be established that in the hybrid electricity market system of the United States, the opening of retail markets and the pricing of retail markets are subject to the competence of the state commissions, i.e. these are the "home affairs" of the member states within the federal state.

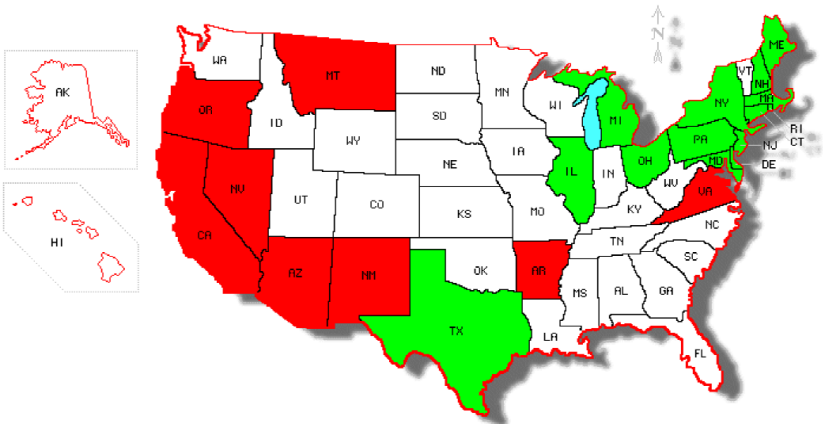
[2] Federal Energy Regulatory Commission, *Energy Primer: A Handbook of Energy Market Basics* (FERC 2015) 35.
[3] Michael S Hindus, Robert A James, Joseph H Fagan and Becky M Bruner, *Electricity, Oil and Gas Regulation in the United States* (Pillsbury Winthrop Shaw Pittman LLP 2010) 193.
[4] FERC (n 2) 35.
[5] Hindus and others (n 3) 194.
[6] Sam J Ervin, 'The State of Energy Regulation in the United States' (Presentation, North Carolina Utilities Commission and NARUC Committee on Electricity, 2007) slide 23.
[7] Ibid slide 24.

III. Retail market opening in the United States

Although well established in most OECD economies, retail competition in the inherently deregulated US electricity market is limited and confined only to a small number of states. End-users in fewer than 15 states benefit from retail energy competition, while the majority of consumers in the remaining states enjoy only one option, a monopoly utility provider, when it comes to purchasing electricity.[8]

Currently, nearly half of the US states have allowed retail Choice on retail energy markets, which is presented in the following figure.[9]

Figure 1: Retail Choice on retail energy markets (2015).



Source: own compilation based on state-level regulatory data (2015).

Legend:

Green: retail choice on retail energy markets (15).

Red: suspended or withdrawn retail choice on retail energy markets (8).

White: no retail choice has been introduced to the retail energy markets (28).

It can be seen that retail choice is allowed mainly in the states where population density and the rate of urban population are high. States where population density is low, are less likely to attract new service providers to the retail market, because they have less consumers and the dispersed location of the consumers is not advantageous in terms of payback, but we can find some

[8] International Energy Agency (n 1) 77.

[9] Mathew J Morey and Laurence D Kirsch, *Retail Choice in Electricity: What Have We Learned in 20 Years?* (Christensen Associates Energy Consulting 2016) 4.

exceptions where states with relatively large populations do not allow retail choice on retail energy markets (Florida, Georgia, North Carolina).

Between 1996 and 2001, twenty-two states and the District of Columbia directed regulated utilities to prepare to open their retail markets through either legislative or regulatory action. These moves toward retail choice began in 1996, coincident with FERC's issuance of Order No. 888, which promoted non-discriminatory access to transmission facilities and thus promoted competition at the wholesale level.[10] The movement toward retail choice came to a sudden halt in 2001, when the Western power crisis made it clear that there were fundamental problems with the manner in which electricity sector restructuring had been implemented (e.g. producers and traders went bankrupt, retail energy market options shrank, fraudulent trading occurred, while retail electricity prices increased). In California, for example, the legislator clearly committed a regulatory error in the model, which is well documented.[11] As a reaction to the events, several member states suspended or rescinded retail choice on the retail energy markets (Nevada and California 2001; Montana and Oregon 2002; Arkansas and New-Mexico 2003; Arizona 2004; Virginia 2007).[12] Virginia, for example, decided in 2007 to stop its retail energy market practice allowing retail choice, and it returned to total cost-based retail price regulation.[13]

It should be noted that in states allowing retail choice, providers of last resort were designated to supply consumers, and in several cases, price caps were also set for the public utility services provided by these providers—thereby diminishing the effect of promoting competition.[14] It should also be added that in states allowing retail choice, competitive market-based wholesale markets are generally in place, while the member states not allowing retail choice have either competitive market-based or traditional wholesale markets.[15] In the United States, nearly one-third of the member states allowed retail choice on the retail energy markets, and it occurred several times that certain member states suspended or rescinded retail choice due to adverse circumstances or the lack of effects expected from market opening. It also happened that wrong models were introduced in certain member states, or the regulation or implementation of market opening were poorly executed. In the case of retail choice, positive effects do not arise

[10] Ibid 18.

[11] See e.g.: Charles J Cicchetti, Jeffrey A Dubin and Colin M Long, *The California Electricity Crisis: What, Why, and What's Next* (Kluwer Academic Publishers 2004); Paul L Joskow, 'California's Electricity Crisis' (Harvard Electricity Policy Group 2001). https://doi.org/10.3386/w8442

[12] Morey and Kirsch (n 9) 19.

[13] Hindus and others (n 3) 188.

[14] Morey and Kirsch (n 9) 22.

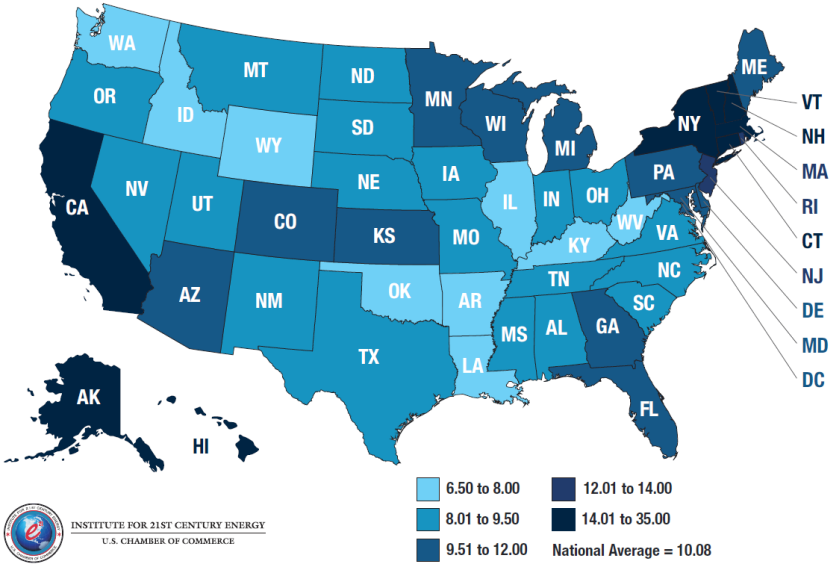
[15] Ervin (no 6) Slide 24

immediately, since these depend on the volatile balance of market demand and supply.

IV. Changes of energy rates in US states allowing and not allowing retail choice

Experiences show that on the retail energy market, in the member states allowing retail choice, rates increased by fifty percent more quickly between 1997 and 2007 than in the states not allowing retail choice, but a slow decrease started in 2007.[16] Average rates in states that did not allow retail choice have continued to increase since 2007, though at a slightly slower pace than during 1998-2007. Overall there is almost no difference in the change in average rates for the two groups between 1998 and 2012.[17] The following map shows the average retail electricity rates of the US member states in 2013 in the unit of cents/kWh:

Figure 2: The average retail electricity rates of the US member states in 2013



Source: U.S. Energy Information Administration; Electric Power Monthly. February 2014

[16] American Public Power Association (APPA), *Retail Electric Rates in Deregulated and Regulated States: A Ten Year Comparison* (APPA 2008) 3.

[17] Severin Borenstein and James Bushnell, 'The US Electricity Industry after 20 Years of Restructuring' (2015) Energy Institute at Haas Working Paper 252R, 16. https://doi.org/10.3386/w21113

The Energy Information Administration figures published by the Department of Energy of the United States of America also show that between 1997 and 2015, rates of the retail choice states increased to a greater extent than in the states not allowing retail choice; moreover, in recent years, unit prices have also diverged further.[18] The figures also show that the implementation of retail choice led to a higher rate difference among the states allowing and not allowing retail choice, than in the period preceding the market opening: in 1997, the average retail electricity rates of the deregulated states were 2.8 cents higher than the rates of regulated states, while in the same comparison, the difference was even higher in 2015, the average rates of member states opening the markets were on average 3.4 cents higher than the rates of the states not allowing retail choice.[19]

It appears from the comparison of retail rates that – over the period of nearly twenty years – overall, the opening of the retail energy markets did not reduce the average retail energy rates more effectively in the retail choice states than the regulated prices of the states not allowing retail choice. Moreover, the average difference between the two price categories was higher in 2015 than before the opening of the retail markets.

In the American market model, retail market opening has no added value (there is no extra profit in retail trade). Market opening did not lead to price decrease. Competitive rates are formed in wholesale trade. The retail market of the USA is not a price setter; it only reflects the difference in the wholesale rates. Therefore, the opening of the retail market has no incentivising effect on price. Large-scale wholesale market competition makes the market effective. There is no such profit margin on the retail markets of the USA that would cover the extra (administrative) costs of consumer switches. Furthermore, not everyone is connected to the national network – in such areas, the network is not developed, which does not allow the opening of the retail market from a technical perspective.

It shall also be added to the comparison of rates that higher retail rates may also include the costs of other services which do not exist under administrative price regulation. For example, the increase of retail prices may also be related to the solar panel boom, because the legal environment is beneficial for the spread of ESCO services. Federal investment tax incentives are critical, which are also supplemented by the incentives provided by the member states. These may be so significant that of the ten jurisdictions with the highest rates of return on residential solar, only one (California) remains in the top ten without its state incentives.[20] The

[18] American Public Power Association, *Retail Electric Rates in Deregulated and Regulated States: 2015 Update* (APPA 2016) 2.
[19] Ibid 3.
[20] Morey and Kirsch (n 9) 9.

third key factor in terms of retail rates is the practice of net metering. Net metering in effect pays "producer-consumer" customers not only for the electrical energy that they provide (in excess of what they consume) but also for distribution and customer services to the households (as the producers). The consequence is that the distribution costs of residential customers with solar power are heavily subsidised by customers without solar power. The efficiency of the aforementioned tax and other regulatory incentives is low, and the wasteful subsidy system appears as a price increasing factor in retail rates.[21]

V. Changes of electricity rates in the United States and in the European Union

The 2015 analysis of KPMG drew the following consequences when comparing the electricity rates of the USA and the EU:[22]

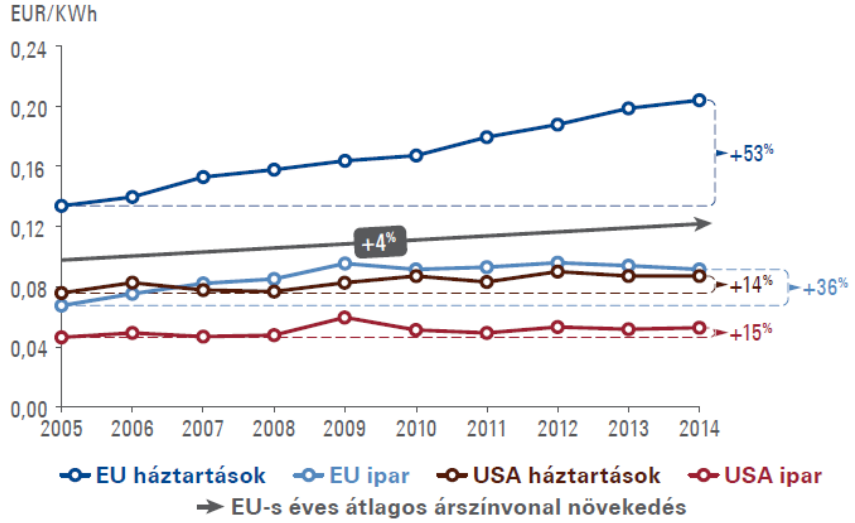
"There is a significant difference in energy rates between the European Union and the United States of America, in favour of the latter. In 2005, the European average industrial consumer price was 46 percent higher, while the residential rate was 75 percent higher than in the USA. The tendencies of the last 10 years had a more beneficial effect on the American region because the energy rates (both industrial and residential) are only 15 percent higher there than in 2005, while in Europe, industrial prices increased by 36 percent, and residential rates grew by 53 percent. In the case of the USA, the annual average price increase is ~2 percent, which is in harmony with the rate of the average economic performance and inflation. Despite this, the European annual average energy rate increase is 4 percent for industry and 5 percent for households, exceeding the region's annual economic growth or inflation in both cases. The effect nowadays is twofold: compared to the United States of America, the competitive disadvantage of the European Union keeps increasing in the industrial sectors, and the consumer protective role of the European "welfare state" keeps weakening in the households. As a result of the aforesaid processes, to Europe's disadvantage, the difference between the levels of residential and industrial rates has increased compared to 2005 and in 2014, an average European household has to pay two and half-fold (235%) compared to the Americans, and industrial consumers pay nearly the double (173%) for exactly the same product, electricity. It is a question whether it is sufficient for the Union to implement legislative campaigns for improving the significant and increasing competitive disadvantage of the European Union."

The following figure shows the total average electricity costs (with taxes and fees) in the residential and industrial consumer sectors of the EU and the USA:

[21] Ibid.

[22] Attila Szepesi, 'Európai dilemmák a globális energiaipari versenyben' in Csaba Kovács (ed), *Energetikai Évkönyv 2015* (KPMG 2015) 12.

Figure 3 – The total average electricity costs (with taxes and fees) in the residential and industrial consumer sectors of the EU and the USA



Source: Szepesi (n 22) 12.

It is acknowledged by the European Commission that its earlier 2014 report also established that energy rates vary significantly among the member states of the Union, and are noticeably higher in Europe than at its international commercial partners, especially in the United States of America. On the other hand, the residential average price of electricity (weighted EU-28 average rate) was EUR 208.7 /MWh in 2015 and contrary to the wholesale rate, the average rate increased on average by 3.2% per year between 2008 and 2015.[23]

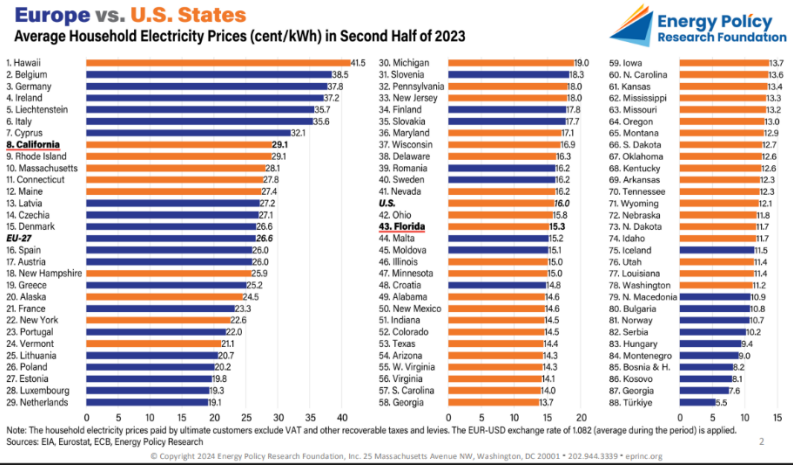
For the sake of completeness, it shall also be added that in Europe, end-user rates contain significant tax elements and the import exposure of the USA is lower in terms of energy sources. With a USA-sized integrated (wholesale) energy market, energy sources and USA-level of tax content, the European consumer prices would be comparable to the USA rates (and in the USA, there is no ETS).

Also for the sake of being politically correct, we have to state, that the 2019 EU Package not only did not result in the reduction of household electricity prices, but free competition on the retail market has disgracefully declined.

[23] European Commission, *Report of the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Energy Prices and Costs in Europe* COM(2016) 769 final, Brussels, 30 November 2016, 2–6.

The graph below clearly demonstrates that the Hungarian energy policy model of retail price control – known as *rezsicsökkentés* – is functioning effectively.

Figure 4 – Average Household Electricity Prices – Europe vs. U.S. States



Source: European Commission (n 24) 2.

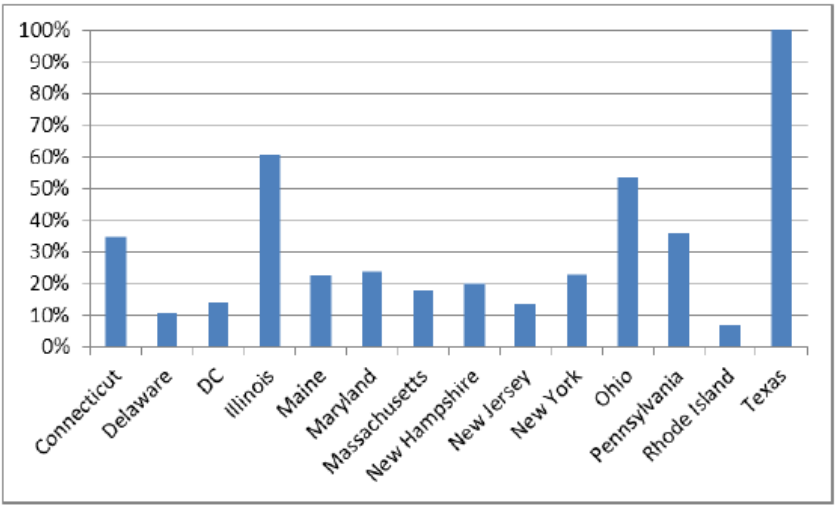
VI. Switching suppliers, consumer behaviour

It shall also be examined what percentage of residential consumers in retail choice states switched suppliers. For the fourteen jurisdictions shown in the figure, 44% of 37.8 million eligible customers took service from competitive suppliers in 2014, which is less than half of the eligible customers, and excluding Texas (where switching was compulsory), this rate drops to only 33%, which is relatively low.[24]

The following figure shows the rate of eligible residential customers that switched in the different member states in 2014 (the figure does not refer to the energy quantities provided):

[24] Morey and Kirsch (n 9) 5.

Figure 5 - Rate of Eligible Residential Customers Who Switched Suppliers by US State in 2014



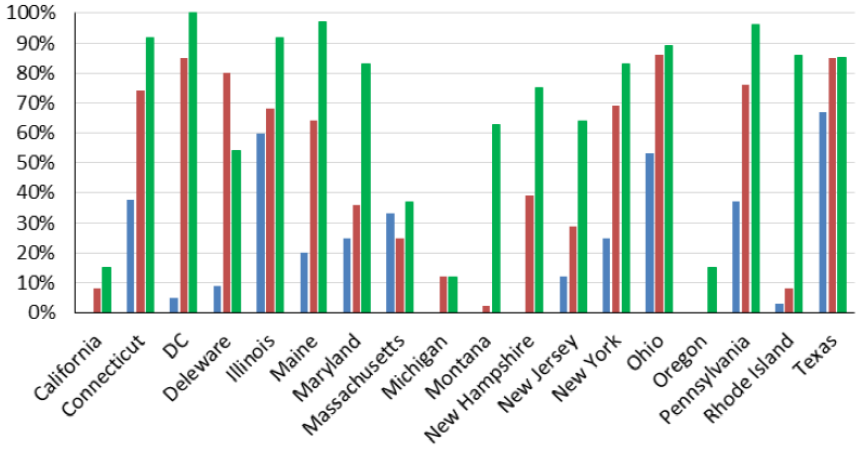
Source: Morey and Kirsch (n 9) 6.

The rate is even lower if we examine the consumption share represented by the consumers of the different retail categories (residential, industrial, commercial) in the total consumption of their own categories in the various member states (mainly those allowing retail choice or those which had allowed it earlier). As shown in the following figure, based on a simple average, the consumption of the residential load switched to competitive suppliers represented only seven percent of the total retail consumer category consumption in the examined US member states.[25]

The figure shows the quantities of electricity sold to retail consumers that switched to competitive suppliers as a share of total sales in the various retail categories in 2014 (retail consumer categories: blue – residential; red – commercial; green – industrial):

[25] Ibid 4.

Figure 6 - Electricity Sales to Retail Consumers Using Competitive Suppliers as a Share of Total Sales by Category (2014)



Source: Morey and Kirsch (n 9) 5.

The low quantity of electricity sold to retail consumers that have switched to competitive is related to and can be explained partially by the fact that over 90% of residential customers (and roughly half of commercial and industrial customers) in retail choice states continue to take standard offer or POLR service.[26]

Studies also highlight that in the USA, residential consumers – particularly low-income households – are more likely than other groups to choose alternative energy suppliers who charge more than the incumbent utility. There is evidence that retail choice decisions require business savvy that many consumers lack, and that less-educated, low-income customers are more prone to making poor retail supplier choices.[27]

It shall be mentioned that following the issuance of the 1992 Energy Policy Act, the opening of the wholesale energy markets led to actual and significant savings in the USA, but the savings expected from retail market opening were at best speculative.[28] Although the wholesale and retail energy markets were opened around the same time, after two decades, there is **little evidence** that retail opening has brought notable surplus beyond the savings achieved by wholesale liberalisation.[29]

[26] Ibid 22.
[27] Ibid 62.
[28] Ibid 64.
[29] Ibid 65.

The comprehensive restructuring of markets began in states with high energy costs, in the hope of rate reductions. While efficiency gains on the wholesale market were substantial, the profit from retail market opening has so far been marginal in comparison. A more detailed analysis could examine the energy mix in retail choice states and compare it to states with regulated prices, but this study does not address that issue. Likewise, EU-28 member states have varying energy mixes, so a comparative justification for the mandatory withdrawal of regulated retail prices in the EU based on US experiences would not be sound.

Only the future might prove — through the application of smart grids, smart devices, and demand-side management tools — that retail opening can also generate real social surplus, but for now, this remains unrealised. Other sources emphasise that, in current practice, retail choice is primarily exercised by large consumers in the USA, while the majority of residential customers continue to be served by designated universal service providers or Providers of Last Resort. US experiences also confirm that the cost of supplying low-consumption users (due to administration, client acquisition, etc.) exceeds the profit realised from electricity sales, excluding the distribution fee.[30]

[30] Jim Lazar, *Electricity Regulation in the US: A Guide* (2nd edn, Regulatory Assistance Project 2016) 18.

THE PROTECTION OF HUMAN RIGHTS UNDER THE ARTIFICIAL INTELLIGENCE ACT

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ABSTRACT

Artificial intelligence (AI) has developed rapidly and is having a profound impact on society as a whole. AI-driven technologies are now present in sectors such as healthcare, agriculture, food safety, education, media, sports, and culture, where they have the potential to optimize human time and enhance work efficiency. However, the social prospects of AI are both alluring and alarming; its promises and perils are difficult to disentangle. The risks to users have become an increasing concern as AI technologies are embedded in everyday products and services. Furthermore, AI can influence human behavior in new and unexpected ways, potentially undermining human dignity. To ensure better conditions for the application and use of AI in the development of social and economic sectors – while placing human rights at the center – the European Union enacted the AI Act, which entered into force in August 2024. This is the world's first comprehensive AI legislation, establishing a legal framework for both users and developers of AI systems in Europe. It aims to create a safe, transparent, and trustworthy environment for the deployment of AI technologies.

This paper will examine AI systems and explore the current challenges related to human rights in the context of rapid AI advancement. In addition, it will analyze the provisions of the AI Act to shed light on how it addresses the protection of human rights.

KEYWORDS

Human rights, fundamental rights, artificial intelligence, AI Act, AI systems.

ARTICLE HISTORY

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I. Introduction

The development of technology and the integration of AI into everyday life are accelerating rapidly. AI-driven technologies are increasingly permeating individuals' daily routines, from smart home appliances to social media applications.[1] Public authorities are also increasingly using AI to assess individuals' personalities or competencies.[2] AI enables technical systems to perceive their environment, process information, solve problems, and act autonomously to achieve specific goals.[3]

A major milestone in AI development was the launch of a groundbreaking chatbot system by OpenAI, which marked a significant turning point in the development of AI. This system possesses an extensive knowledge base and can engage in conversations across a wide range of fields, including technology, science, business, education, and more. It can understand context, generate human-like dialogue, and improve continuously through user interaction.

In general, AI represents an innovative digital system capable of self-learning, developing its own search and learning algorithms, constructing artificial neural networks, and even writing its own code. Most importantly, it possesses decision-making capabilities.[4] As such, AI increasingly affects many aspects of life and poses potential threats to a wide array of human rights, including the right to non-discrimination, freedom of expression, human dignity, personal data protection, and privacy.[5] Notably, AI is not an isolated issue,[6] it is inextricably linked to the processing of personal data and privacy concerns. During the use of AI systems, users often provide significant amounts of personal information, which may be accessed and used without their explicit consent. This raises substantial risks and may harm both public interests and individual rights.

Moreover, AI - 'decision-makers' can directly affect the health and life of one or more humans. For instance, AI plays a crucial role in the development of autonomous (driverless) vehicles, which operate without human intervention. In

[1] For example, the online sales system uses AI to analyze user habits, helping to optimize advertising content for each customer. Therefore, similar products that you have searched for will continue to appear in ads on your phone or laptop.

[2] Council of Europe Commissioner for Human Rights, *Unboxing Artificial Intelligence: 10 steps to protect Human Rights* (2019) https://rm.coe.int/unboxing-artificial-intelligence-10-steps-to-protect-human-rights-reco/1680946e64 accessed 1 March 2025.

[3] European Parliament, 'What is artificial intelligence and how is it used?' (2020) https://www.europarl.europa.eu/topics/en/article/20200827STO85804/what-is-artificial-intelligence-and-how-is-it-used accessed 1 March 2025.

[4] Ingrid Lleana Nicolau, 'Human Rights and Artificial Intelligence' (2019) 12 *Journal of Law and Administrative Sciences* 64.

[5] European Parliament, *Artificial Intelligence Act: Briefing EU Legislation in Progress* (2024) https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/698792/EPRS_BRI(2021)698792_EN.pdf accessed 1 March 2025.

[6] Chris Lewis, 'The Need for Legal Framework to Regulate the Use of Artificial Intelligence' (2022) 47(2) *University of Dayton Law Review* 287.

traffic situations—especially when a crash is imminent—human lives depend on split-second decisions made by software-driven systems. This highlights the urgent need for regulatory frameworks and ethical guidelines to define the permissible scope of AI decision-making. Without sufficient transparency, AI systems may produce biased or erroneous outcomes.[7] Therefore, human oversight is essential to prevent harmful consequences.

AI should serve as a tool for human benefit, contributing positively to society with the ultimate aim of enhancing human well-being.[8] Addressing the challenges of opacity, complexity, bias, unpredictability, and partial autonomy in certain AI systems is essential to ensure compatibility with fundamental rights and facilitate the enforcement of legal standards.[9] Recognizing both the benefits and risks of AI, EU policymakers have adopted a "human-centric" approach to AI,[10] aiming to maximize the benefits of new technologies while mitigating their associated risks. At the same time, strengthening the legal framework is an immediate priority, as it is essential for guiding AI development and ensuring a safe and rights-respecting environment.

In 2018, the European Commission published its AI strategy and established the 'High-level Expert on Artificial Intelligence' (AI HLEG) to support its implementation.[11] The foundation of AI regulations began with the Ethics Guidelines for Trustworthy AI in 2018, which identified three essential components of trustworthy AI: legality, ethical alignment, and technical robustness. In 2019, the Commission issued these guidelines in a non-binding form as a soft law instrument to provide operational guidance. Subsequently, the EU moved toward adopting harmonized rules for the development, market placement, and use of AI systems. In February 2020, the Commission launched its White Paper on AI, initiating a public consultation on the future regulatory framework.[12]

[7] Carol M Bast, 'Artificial Intelligence and Ethics' (2024) 50(2) *Rutgers Computer and Technology Law Journal* 285.

[8] European Commission, *Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative Acts*, COM(2021) 206 final.

[9] Council of the European Union, *Presidency Conclusions – The Charter of Fundamental Rights in the Context of Artificial Intelligence and Digital Change*, 11481/20 (2020) https://www.consilium.europa.eu/media/46496/st11481-en20.pdf accessed 1 March 2025.

[10] European Parliamentary Research Service, *Artificial Intelligence Act: EU Legislation in Progress – Briefing* (2024) https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/698792/EPRS_BRI(2021)698792_EN.pdf accessed 1 March 2025.

[11] Martin Ebers, 'Standardizing AI – The case of the European Commission's Proposal for an "Artificial Intelligence Act"' in Larry A Dimatteo, Cristina Poncibò and Michel Cannarsa (eds), *The Cambridge Handbook of Artificial Intelligence: Global Perspectives on Law and Ethics* (Cambridge University Press 2022) 325.

[12] European Commission, *White Paper on Artificial Intelligence: A European Approach to Excellence and Trust* (2020) https://commission.europa.eu/publications/white-paper-artificial-intelligence-european-approach-excellence-and-trust_en accessed 1 March 2025

This process culminated in the enactment of the AI Act (Regulation 2024/1689), which entered into force in 2024.[13] It is the world's first binding, horizontal regulation on AI, establishing a common legal framework for the development and deployment of AI systems within the EU.[14] he regulation underscores the EU's dual focus on innovation and economic growth, as well as on ethical and societal implications. Compliance with European ethical principles, legal standards, and social values is framed as essential to building 'an ecosystem of trust'.[15]

This paper employs legal analysis, commentary, and comparative methods to clarify the following issues. First, it provides a historical overview of the definition of artificial intelligence and its development over time, alongside a discussion of relevant legal provisions. Second, it categorizes AI systems based on their risk levels. Third, it analyzes how AI systems may affect human rights and evaluates the AI Act's mechanisms for safeguarding these rights.

II. Overview of the Key Characteristics of Artificial Intelligence

It is important to have a clear understanding of AI that captures aspects relevant to societal intervention while being aware of AI's current and future technical capabilities.[16] There have been many different definitions of AI over the years, but there is no standard definition of what AI actually involves[17]. In 1955, a Dartmouth mathematics professor named John McCarthy declared that "every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it".[18] Then, in 1956, the term 'artificial intelligence' was officially coined.[19] According to Bellman (1978), AI is defined as "the automation of activities that we associate with human thinking, such as decision-making, problem-solving, and learning."[20] Kurzweil (1990) further

[13] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) [2024] OJ L 2024/1689, (Artificial Intelligence Act).

[14] European Parliamentary Research Service (n 10).

[15] Ebers (n 11) 325.

[16] Pascal D König, Tobias D Kraff, Wollfganf Schulz and Katharina A Zweig, 'Essence of AI – What is AI?' in Larry A Dimatteo, Cristina Poncibò and Michel Cannarsa (eds), *The Cambridge Handbook of Artificial Intelligence: Global Perspectives on Law and Ethics* (Cambridge University Press 2022) 18. https://doi.org/10.1017/9781009072168.005

[17] JRC Technical Reports, *AI Watch – Defining Artificial Intelligence* (European Commission, 2019) https://publications.jrc.ec.europa.eu/repository/bitstream/JRC118163/jrc118163_ai_watch._defining_artificial_intelligence_1.pdf accessed 1 March 2025.

[18] Lewis (n 6) 288.

[19] Rockwell Anyoha, 'The History of Artificial Intelligence' (2006) https://sitn.hms.harvard.edu/flash/2017/history-artificial-intelligence/ accessed 1 March 2025.

[20] Anne Bowser, Michael Sloan, Pietro Michelucci and Eleonore Pauwels, *Artificial Intelligence: A Policy-Oriented Introduction* (Wilson Center, 2017)

described AI as "the art of creating machines that perform functions which, when performed by people, require intelligence,"[21] while Rich and Knight (1991) framed it as "the study of how to make computers do things which, at the moment, people are better at."[22] In short, in simple terms, AI is the ability of a machine to display human-like capabilities such as reasoning, learning, planning and creativity.[23] It can process input data into recognizable patterns and/or then use those patterns to formulate decisions.[24]

From a legal perspective, as Article 3 of the AI Act, *'AI system'* means a machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. This term refers to general-purpose AI (GPAI) models 'that are trained with a large amount of data using self-supervision at scale', that display 'significant generality' and are 'capable to competently perform a wide range of distinct tasks' and 'can be integrated into a variety of downstream systems or applications'.[25] In other words, AI systems run by complicated algorithms and wide-ranging data collected during the training process. Besides, AI exhibits a level of proficiency comparable to a human expert in most fields. In particular, its capabilities in various areas, such as communication, self-learning, adaptation, decision-making, and generating new outputs, have made AI increasingly advanced.

It can be seen that the legal definition of 'AI system' is quite broad, which significantly widens the scope of the AI Act. The regulations apply directly to public and private actors both inside and outside the EU as long as the AI system is applied to the EU market or its use affects people located in the EU.[26] Article 2(1) lists the subjects within the scope of the AI Act, such as providers and deployers of AI systems, importers and distributors of AI systems, product manufacturers, and affected persons in the Union, to name a few. However, the AI Act's scope has several exemptions for AI systems, such as those used for military or defense

https://www.wilsoncenter.org/sites/default/files/media/documents/publication/wilson_center_policy_brief_artificial_intelligence.pdf accessed 1 March 2025.

[21] Frank Emmert-Streib, Olli Yli-Harja and Matthias Dehmer, 'Artificial Intelligence: A Clarification of Misconceptions, Myths and Desired Status' (2020) 3 *Front Artif Intell* 524339 https://doi.org/10.3389/frai.2020.524339

[22] Department of Aeronautical Engineering, *Artificial Intelligence* (Malla Reddy College of Engineering & Technology) https://mrcet.com/downloads/digital_notes/AE/III/Artificial%20Intelligence.pdf accessed 1 March 2025.

[23] European Parliament (no 2)

[24] *Further reference:* Lewis (n 6) 286-311.

[25] European Parliamentary Research Service (n 10)

[26] Ebers (n 11) 333.

purposes, and limited exemptions for free and open-source systems.[27] For example, in Recital 24 of the AI Act, AI systems placed on the market, put into service, or used—with or without modification—for military, defense, or national security purposes should be excluded from the scope of this Regulation, regardless of whether the entity carrying out those activities is public or private. This exclusion is justified by the fact that national security remains the sole responsibility of Member States, as well as by the specific nature and operational needs of national security activities, along with the national rules applicable to those activities. Or, in Recital 25, the AI act will not apply to AI systems and models, including their output, which are specifically developed and put into service for the sole purpose of scientific research and development.[28]

Furthermore, this definition has also been the subject of controversy due to its broadness.[29] The EU Commission's original legislative proposal referred to 'software' for AI systems developed using certain specifically defined 'techniques and concepts' (such as deep learning, inference and deduction machines, and statistical approaches). However, there is a problem with this approach: it was too broad in its use of 'software' and too narrow in specifying particular 'techniques and concepts', making it overall inaccurate.[30] In Article 3 of the AI Act, the term *'machine-based'* is used to refer to the fact that AI systems are operated by machines. However, the AI Act does not provide a specific definition of what is meant by 'machine' in this context.

It is evident that regulating the definition of AI systems is significantly challenging. As AI is notoriously difficult to define.[31] There are several reasons why it is difficult to arrive at a unified definition. Many subfields are researching AI, each with various approaches and methods. Moreover, the disciplinary heterogeneity of AI research is further increased by its ties to other fields, such as neuroscience, biology, and cognitive science. Besides, many definitions of AI are not widely recognized among researchers. They are not wrong, but they are not useful.[32] In the meantime, AI is growing and becoming more complex. Therefore, the demand for

[27] KPMG, *Decoding the EU AI Act: Understanding the AI Act's Impact and How You Can Respond* (2023) https://assets.kpmg.com/content/dam/kpmgsites/xx/pdf/2024/02/decoding-the-eu-ai-act.pdf accessed 1 March 2025.

[28] *Further reference:* European Parliamentary Research Service (n 10)

[29] Rubén Cano, 'A Proposal for (AI) Change? A Succinct Overview of the Proposal for Regulation Laying Down Harmonised Rules on Artificial Intelligence' (2021) https://iplens.org/category/artificial-intelligence/ accessed 1 March 2025.

[30] Lukas Feiler, Alexander Hofmann and Beat König, *'AI Act: Regulation with Little Accuracy' (2024) IT Law Decoded Blog https://www.derstandard.at/story/3000000203623/ai-act-regulierung-mit-wenig-treffsicherheit* accessed 1 March 2025.

[31] König et al (no 6) 23.

[32] Pei Wang, 'On Defining Artificial Intelligence' (2019) 10(2) *Journal of Artificial General Intelligence* 5 https://doi.org/10.2478/jagi-2019-0002

exactness can only be relatively satisfied, as there is no way to completely remove ambiguity in a definition.[33]

The AI Act follows a risk-based approach, categorizing AI systems into four risk levels: Unacceptable risk (Prohibited AI practices), High-risk AI system, Limited risk (Transparency risk), and Minimal risk. Each type is categorized according to different standards. Based on the level of risk, an AI system must comply with various requirements to ensure the development of trustworthy AI and to minimize risks. This approach is illustrated by Recital 26, "a clearly defined risk-based approach should be followed" to create a proportionate and effective set of binding rules for AI systems. The categories are a horizontal approach, meaning they are not sector-specific but pertain to the broader, general use of AI.

(i). Unacceptable risk: The AI Act bans applications and systems that create an unacceptable risk. The prohibited AI practices contravene Union values, and their harm is unacceptable due to their threat to the safety, livelihood and rights of individuals[34]. In other words, Article 5(1) lists the use of AI, which poses a high potential risk of violating fundamental rights and social values. In the AI Act, the scope of prohibited practices is broader than before and is regulated in Article 5(1). Some typical examples include AI systems using subliminal techniques that are out of a person's consciousness, or purposefully manipulative or deceptive techniques, which lead to significant harm to a person or a group of persons. Because the adverse effects impair human judgment or decision-making ability. Another concern is that AI systems exploit any of the vulnerabilities of a person or groups based on their age, disability, or a specific social or economic situation. The regulation also prohibits the use of AI to exploit personal data illegally or infer sensitive attributes such as race, political opinions, through the use of biometric categorisation systems.

(ii). *High-risk:* cover high-risk applications and systems because they can potentially create an adverse impact on people's health, safety, environment or fundamental rights.[35] High–risk AI systems are permitted on the European market but are subject to compliance with mandatory requirements and conformity assessment[36] before they can be launched on the market. In other words, before high-risk AI systems can be put into service or used on the Union market, they have to comply with mandatory requirements regulated by the AI Act. Those requirements aim to ensure that the use of high-risk AI systems do not give rise to any unacceptable risks. As a result, public interests and human dignity in the Union are protected and safeguarded by Union law. High-risk AI systems are regulated in Article 6.2 of the AI Act and Annex III. Some sectors with high-risk AI systems include the following: evaluation of eligibility for credit, health or life insurance, or

[33] ibid 5.
[34] Ebers (n 11) 334.
[35] European Parliament (n 10).
[36] 'Conformity assessment' means the process of demonstrating whether the requirements set out in Chapter III, Section 2 of AI Act relating to a high-risk AI system have been fulfilled;

public benefits; analysis of job applications or candidate evaluations; and product safety components.

(iii) Limited risk: Users must be aware that they are communicating with or dealing with AI systems. In other words, AI systems with limited risks designed to interact directly with natural persons must inform the individuals concerned that they are interacting with an AI system. Moreover, AI systems with limited risks can generate synthetic audio, image, video, or text content, and such outputs should be labeled clearly as AI-generated or manipulated. This concerns AI systems that interact with humans (chatbots), emotion recognition, and biometric categorization systems and systems that generate or manipulate content[37] (deep fakes[38]). These systems shall adhere to transparency and information requirements.[39] Obligations for limited-risk systems focus on outputs and users.

(iv). *Minimal risks:* those AI systems that do not fall into the three categories above. Therefore, there are no requirements to meet any obligations.[40] For example, AI-enabled video games or spam filters. Nevertheless, the EU strongly encourages the development of codes of conduct to foster the wider adoption of reliable AI.

III. Artificial Intelligence and the Protection of Human Rights: Challenges and Solutions

In the simplest terms, human rights can be defined as the collective and individual rights which are to be enjoyed by every human being by the virtue of their birth.[41] As outlined by the United Nations Office of the High Commissioner for Human Rights, the human rights that may be adversely affected by generative AI, listed in the order they appear in the Universal Declaration of Human Rights (UDHR), these include the right to freedom from physical and psychological harm; the right to equality before the law and protection against discrimination; the right to privacy; the right to own property; the right to freedom of thought, conscience, religion, and opinion; the right to freedom of expression and access to information; the right to participate in public affairs; the right to work and earn a living; the rights of the

[37] Ebers (n 11) 334.

[38] AI Act, art 3(60). *'Deep fake'* means AI-generated or manipulated image, audio or video content that resembles existing persons, objects, places, entities or events and would falsely appear to a person to be authentic or truthful

[39] Balázs Hohmann, 'The Interpretation of Transparency from the Legal Point of View' in Tamás Haffner (ed), *4th Youth in Europe Conference – Proceedings* (Sopianae Cultural Association 2018) 155–163
Balázs Hohmann, 'Interpretation of the Concept of Transparency in the Strategic and Legislative Documents of Major Intergovernmental Organizations' (2021) 2(1) *PhD Studies in Administrative and Infocommunications Law* 50-54. https://doi.org/10.47272/KIKPhD.2021.1.4

[40] Forvis Mazars, 'EU AI Act: Different Risk Levels of AI Systems' https://www.forvismazars.com/ie/en/insights/news-opinions/eu-ai-act-different-risk-levels-of-ai-systems accessed 1 March 2025.

[41] *Universal Declaration of Human Rights* (adopted 10 December 1948 UNGA Res 217 A(III)).

child; and the right to culture, art, and science.[42] It's clear that the scope of AI may impact human rights broadly. In this paper, *inter alia,* the focus will be on a select few human rights affected by the AI Act, rather than all the affected rights.

As mentioned before, with a horizontal approach, the AI Act does not regulate sector-specific areas but categorizes AI systems by risk. The management of AI systems becomes more flexible and effective through this method. For each type of AI system, this Act lays down the fundamental requirements and necessary safeguarding mechanisms. Moreover, it emphasizes a high level of traceability and transparency obligations. In the first recitals of this Act, it is stated that the regulation aims to boost innovation and the development of AI systems that are trustworthy, human-centric, and respectful of human rights, thereby achieving the goal of balancing AI development and innovation with the effective management of emerging risks. Additionally, it seeks not only to prevent harmful or abusive acts but also to protect human dignity, freedom, equality, democracy, and fundamental rights.

First, AI systems affect privacy and personal data. The Universal Declaration of Human Rights declared that *"No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks."* (Article 12) However, generative AI raises several concerns related to the right to privacy.

The longest and most sustained human rights debate on automated data processing and algorithms relates to the right to privacy.[43] This issue derives from a massive data source necessary for the operation of AI systems. In other words, the input data is the essential factor for their functionality and performance. Through a series of algorithms and data, AI systems can solve prompts, create new outputs, make conversations, or make prediction. These algorithms are mathematical, logical commands with step-by-step instructions on how to process the input data. Thus, AI systems must collect extensive data from users, especially personal data to learn and perform tasks. This data can include personal information such as names, addresses, financial information, and sensitive information such as medical records and social security numbers.[44] During the process of operation or self-assessment, the AI system poses a real risk of violating human rights. Main concerns include how the collected data is being used, who has access to it, and whether this data is being abused or misused. Depending on its enormous amount of data, AI systems may create harmful, false and convincing content that may be used to directly attack

[42] United Nations Human Rights Office of the High Commissioner, *Taxonomy of Human Rights Risks Connected to Generative AI* https://www.ohchr.org/sites/default/files/documents/issues/business/b-tech/taxonomy-GenAI-Human-Rights-Harms.pdf accessed 1 March 2025.

[43] Arthur J Sills, 'Automated Data Processing and the Issue of Privacy' (1970) 1 *Seton Hall L Rev* 7.

[44] The Economic Times, 'AI and Privacy: The Privacy Concerns Surrounding AI, Its Potential Impact on Personal Data' (2023) https://economictimes.indiatimes.com/news/how-to/ai-and-privacy-the-privacy-concerns-surrounding-ai-its-potential-impact-on-personal-data/articleshow/99738234.cms?from=mdr accessed 1 March 2025.

an individual's privacy, honour or reputation.[45] For example, these data and information can be exploited for anti-social purposes or fraudulent activities. A fraudster might use personal details from social media profiles or a resume, then leverage AI applications to impersonate individuals and carry out extortion via traditional phone calls.

The protection of privacy and personal data is adjusted by both the AI Act and the EU General Data Protection Regulation (GDPR)[46]. Accordingly, there are many regulations to achieve the goals. In Recital 69 of the AI Act, the right to privacy and protection of personal data must be guaranteed throughout the entire lifecycle of the AI system. In this regard, the principles of data minimisation and data protection by design and by default, as set out in Union data protection law, are applicable when personal data are processed. Moreover, providers may adopt measures to minimize risks to personal data, such as anonymisation and encryption. Technologies can also be used to bring algorithms to the data, enabling AI training without transmitting or copying raw data between parties.

Especially, Article 10 of this Act strictly regulates data governance. High-risk AI systems must meet quality criteria whenever data sets are used. Data sets for training, validation, and testing must have high-quality data which is supported by appropriate data governance and management practices. Besides, to facilitate compliance with the Union Data Protection Law, it is important to ensure transparency regarding the original purpose of personal data collection.[47] One of the practices that shall be of particular concern is data collection processes, the origin of data, the original purpose of the personal data collection, and examination in view of possible biases that may have a negative impact on fundamental rights or lead to discrimination. In certain special cases, to examine, detect, prevent and mitigate possible biases (Art.10(2)(f).(g) of the AI Act), providers of these systems may exceptionally process special categories of personal data, provided that appropriate safeguards for the fundamental rights and freedoms of individuals are in place, as outlined in Article 10.5 of the AI Act. These safeguards include: ensuring that special categories of personal data are subject to technical limitations on their reuse and are protected by state-of-the-art security and privacy-preserving measures, including pseudonymisation; or implementing measures to ensure the personal data

[45] United Nations Human Rights Office of the High Commissioner, *Taxonomy of Human Rights Risks Connected to Generative AI* https://www.ohchr.org/sites/default/files/documents/issues/business/b-tech/taxonomy-GenAI-Human-Rights-Harms.pdf accessed 1 March 2025.

[46] The aspect of the protection of personal data is safeguarded in particular by Regulations (EU) 2016/67946, (EU) 2018/172546 of the European Parliament, and the AI Act, which provide the basis for sustainable and responsible data processing, including where data sets include a mix of personal and non-personal data.

[47] Bence Kis Kelemen and Balázs Hohmann, 'A Schrems ítélet hatásai az európai uniós és magyar adattovábbítási gyakorlatokra (The Effects of the Schrems Judgment on EU and Hungarian Data Transfer Practices)' (2016) 2–3 *Infokommunikáció és Jog* 64-68.

processed are secured, protected, and subject to suitable safeguards, such as strict controls and documentation of access, to prevent misuse and ensure that only authorised personnel have access to the data, with appropriate confidentiality obligations. So, the purpose limitation binds the data controller to a purpose - the original purpose for which the data was first processed under their control.[48] Besides, it also restricts the use of data: it is not legal to process data without a purpose and outside of the purposes for which the data was processed first.[49]

Secondly, AI systems can affect equality and non-discrimination. The international human rights framework grants all people the right to equal protection against discrimination. The UDHR declared that "*Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status."* (Article 2); And *"All are equal before the law and are entitled without any discrimination to equal protection of the law. All are entitled to equal protection against any discrimination in violation of this Declaration and against any incitement to such discrimination."* (Article 7).

AI-driven applications can pose significant dangers because the AI systems may be exploited to reinforce inequality and discrimination. In some cases, AI systems make errors or are purposely utilized as a means to produce outputs that strengthen biases. These facilitate various forms of discrimination in society. For example, the incident involving Microsoft occured when they released an application on Twitter.[50] That incident violated human dignity on a large scale and affected a large number of users within a short amount of time. Another case is Amazon, which found that its algorithm used for hiring employees was biased against women. The reason for that algorithm was based on the number of resumes submitted over the past ten years, and since most of the applicants were men, it was trained to favor men over women.[51]

Therefore, in all circumstances, the risks of discrimination must be prevented and mitigated, particularly for groups that are at a higher risk, including

[48] Indra Spiecker genannt Döhmann, 'AI and Data Protection' in Larry A Dimatteo, Cristina Poncibò and Michel Cannarsa (eds), *The Cambridge Handbook of Artificial Intelligence: Global Perspectives on Law and Ethics* (Cambridge University Press 2022) 132. https://doi.org/10.1017/9781009072168.015

[49] Article 5(1) and 6(1) of the GDPR

[50] On March 23, 2016, Microsoft released Tay to the public on Twitter. Tay is designed to mimic a stereotypical high school girl. Microsoft hoped that Tay would discover patterns in language through "her" interactions with Twitter users and then utilize similar patterns to create her own tweets. At first, Tay engaged harmlessly with her growing number of followers with banter and lame jokes. However after only a few hours, Tay started tweeting highly offensive things. Within 16 hours of her release, Tay posted over 95,000 tweets, a troubling number of which were abusive and offensive.
See it: Oscar Schwartz, 'Microsoft's Racist Chatbot Revealed the Dangers of Online Conversation' (2016) https://spectrum.ieee.org/in-2016-microsofts-racist-chatbot-revealed-the-dangers-of-online-conversation accessed 1 March 2025.

[51] Jeffrey Dastin, 'Insight - Amazon Scraps Secret AI Recruiting Tool That Showed Bias Against Women' (Reuters, 2018) https://www.reuters.com/article/world/insight-amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK0AG accessed 1 March 2025.

women, children, older adults, economically disadvantaged individuals, members of the LGBT community, persons with disabilities, and racial, ethnic, or religious groups[52]. To achieve this aim, some regulations were enacted and need to be strictly applied:

First, related to the data sets, Recital 67 addresses the management of input data to mitigate possible biases in the data sets. If there are biases in underlying data sets, the outputs could be influenced and thereby perpetuate and amplify existing discrimination. Thus, the data sets should be as complete and free of errors as possible. This requirement should not affect the use of privacy-preserving techniques in the context of the development and testing of AI systems. The requirements related to data governance, such as verification of data governance, data set integrity, and data training, validation and testing practices, can be fulfilled by relying on third parties that offer certified compliance services.

Second, according to Recital 80, as part of implementing the United Nations Convention on the Rights of Persons with Disabilities, persons with disabilities are ensured the right to access and use AI systems on an equal basis with others. Nowadays, AI systems are becoming increasingly important. Thus, the application of universal design principles to all new technologies and services should ensure that everyone potentially affected by AI technologies, including persons with disabilities, is protected in their inherent dignity and diversity. This is one of the indications of equality and non-discrimination. As a result, providers need to meet the requirements of ensuring full compliance with these requirements by design. In particular, the necessary measures should be integrated into the design of the high-risk AI system wherever possible.

Third, the design and development of AI systems must ensure that natural persons can exercise oversight during the operation period. This method partly prevents and minimises the risks of violating fundamental rights as well as discrimination. The high-risk AI system shall be managed through oversight measures that are commensurate with the risks, level of autonomy, and context of use. According to Article 14(3), high-risk AI systems shall be ensured through one or both of the following types of measures: (i). measures identified and built, when technically feasible, into the high-risk AI system by the provider before it is placed on the market or put into service; (ii). measures identified by the provider before placing the high-risk AI system on the market or putting it into service and that are appropriate to be implemented by the deployer.

Moreover, Recital 27 focuses on the connection between the AI Act and seven principles of the 2019 Ethics guidelines for trustworthy AI, developed by the independent AI HLEG appointed by the Commission. Among these principles, related to diversity, non-discrimination, and fairness, all stakeholders, including

[52] Council of Europe Commissioner for Human Rights (n 2).

industry, academia, civil society, and standardisation organisations, are encouraged to develop AI systems to enhance this standard. These systems should diversify actors and promote equal access, gender equality, and cultural diversity, while avoiding discriminatory impacts and unfair biases that are prohibited by Union or national law.

The AI Act also addresses AI systems identifying or inferring the emotions or intentions of individuals based on biometric data, which may lead to discriminatory outcomes. Thus, the placing on the market, development, or use of these systems for detecting emotional states in the workplace and education environment should be prohibited. Furthermore, according to Recital 56, AI systems used in education or vocational training, in particular for determining access or admission, for assigning persons to educational and vocational training institutions or programmes at all levels, for evaluating learning outcomes of persons, for assessing the appropriate level of education for an individual, must be categorized as high-risk systems, as they may pose discrimination based on historical patterns, such as against women, certain age groups, persons with disabilities, or persons of certain racial or ethnic origins or sexual orientation. It is a significant danger since the educational and professional course of a person's life may be affected, especially their ability to secure a livelihood.

On the other hand, public and Union funding is allocated to support and promote research and development of AI solutions that contribute to socially and environmentally beneficial outcomes, such as AI-based solutions to enhance accessibility for persons with disabilities and address socio-economic inequalities. In addition, projects should be based on the principle of interdisciplinary cooperation between AI developers, experts on inequality and non-discrimination, accessibility, consumer rights, environmental rights, digital rights, and academics to enhance efficiency.

However, AI systems used by law enforcement agencies, such as the police, carry the particular risk of significant interference with individual rights. In particular, the State may misuse or abuse AI systems for religious, ethnic, racial persecution or political opinion. For example, real-time facial recognition technology (FRT) might be run on footage from live CCTV systems. Police in Moscow have used FRT to detain a girl preventively, holding her for a few hours for protesting Russia's war in Ukraine.[53] Moreover, the accuracy of FRT is known to be unequally distributed among different demographic groups and biased against already marginalized populations.[54] Several studies have shown that FRTs carry

[53] Darren Loucaides, 'The Changing Face of Protest' (2024) https://restofworld.org/2024/facial-recognition-government-protest-surveillance/#/an-end-to-privacy accessed 1 March 2025.
[54] Lukas Arnold, 'How the European Union's AI Act Provides Insufficient Protection Against Police Discrimination' (2024) https://www.law.upenn.edu/live/news/16742-how-the-european-unions-ai-act-provides accessed 1 March 2025.

racial bias. Misidentification by AI systems also adds to the risk that a government could abuse AI systems to silence dissent and persecute opponents.

Thirdly, *AI systems can affect freedom of expression and access to information rights*. The right to freedom of expression is both a fundamental human right in itself and is also core to the exercise of other rights. The UDHR declared that *everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers* (Article 19).

AI systems may seriously impact access to, search for, and sharing of information. In fact, the scope of access to information is a key element of the right to freedom of expression.[55] A variety of AI systems are designed to search for information as well as to support study and work (such as ChatGPT, Claude AI, etc.), which are becoming increasingly popular. Meanwhile, generative AI can create false content or misleading content that appears human-generated and authoritative at scale and may pose risks to the right to freedom of expression in various ways.[56] On the other hand, if people are prevented from accessing information, this may violate their rights to freedom of expression and access to information.

Therefore, the State has the responsibility for creating a diverse and pluralistic information environment. Concurrently, AI-driven content may have negative effects on freedom of expression, access to information, and freedom of opinion. Therefore, it must be strictly controlled. One of the fundamental requirements is to ensure reliable data sources, comply with Union Law on copyright, related rights, and authenticity standards. According to Article 13, the provider and deployer must ensure transparency and fulfill their obligation to provide information. High-risk AI systems must ensure transparent operation to allow deployers to interpret the system's output appropriately. This Article also requires that systems have instructions for use, either in an appropriate digital format or another accessible form with concise, complete, correct, and clear information that deployers can easily access and understand.[57] In particular, the characteristics and capabilities of the high-risk AI system can provide information to explain its output. Moreover, it must include the identity and contact details of the provider and, where applicable, of its authorized representative. In Article 16, one of the obligations of providers of high-risk AI systems is to indicate on the high-risk AI system or, where that is not possible, on its packaging or its

[55] Irene Khan, *Disinformation and Freedom of Opinion and Expression: Report of the Special Rapporteur on the Promotion and Protection of the Right to Freedom of Opinion and Expression* (UN Doc A/76/258, 2021) https://documents-dds-ny.un.org/doc/UNDOC/GEN/G21/085/64/PDF/G2108564.pdf accessed 1 March 2025.

[56] United Nations Human Rights Office of the High Commissioner (n 61).

[57] Balázs Hohmann, Adrián Fábián and Gergely László Szőke, 'The Shades of the Concept of Transparency on the Horizon of European Technology Law and Platform Regulation' (2025) 15(1) *Juridical Tribune* 53-54. https://doi.org/10.62768/TBJ/2025/15/1/03

accompanying documentation, as applicable, their name, registered trade name or registered trade mark, the address at which they can be contacted. These tools enable individuals to verify the source of information, helping them to avoid manipulation and misinformation.

On the other hand, according to Recital 134, besides requiring transparency obligations for AI-generated content, the regulation respects the freedom to express ideas creatively. The transparency requirement does not hinder the enjoyment, display, or exploitation of the work. In other words, compliance with the transparency obligation is required, provided that the use of the AI system or its output does not infringe upon the right to freedom of expression and the right to freedom of the arts and sciences. Through this regulation, the rights to access information and freedom of expression are upheld.

Last but not least, Article 5(1)(a) regulates the prohibition of AI practices that intentionally employ manipulative or deceptive techniques. These AI systems significantly distort individuals' ability to make informed decisions. As a result, it is possible that the right to freedom of expression can be seriously infringed upon. Natural persons may be manipulated by misinformation from AI sources, leading to misunderstanding or holding a biased view of an issue. Thus, the regulation to prohibit this type of AI Act proves to be highly protective of this human right.

AI systems can affect the right to work and to gain a living. It is an essential human right as it can decide the livelihood of a person in particular and even that of a family in general. It cannot be denied that AI tools play a significant role in enhancing labor productivity and replacing humans in hazardous work environments. However, the right to work can be seriously affected by the development of AI, as well as drastically altering economic and labor markets. As the capability of AI to accelerate automation increases, various types of jobs may be replaced by AI. As a result, it reduces the amount of labor in the market. For example, companies and factories may replace workers with AI tools or pause hiring for roles that may be performed by generative AI in the future.

In the meantime, in Article 23 of UDHR, everyone has the right to work, to free choice of employment, to just and favourable conditions of work and to protection against unemployment. And everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection.

In the AI Act, AI systems used in employment, workers' management, and access to self-employment are classified as high-risk. Especially under Annex III, Section 4 clarifies two groups, including (i). AI systems are intended to be used for the recruitment or selection of natural persons, in particular to place targeted job advertisements, to analyse and filter job applications, and to evaluate candidates. (ii). AI systems are intended to be used to make decisions affecting terms of work-related relationships, the promotion or termination of work-related contractual

relationships, to allocate tasks based on individual behaviour or personal traits or characteristics, or to monitor and evaluate the performance and behaviour of persons in such relationships. These AI systems directly affect employment and promotion opportunities. These are also used to evaluate the performance of employees in the workplace and even to terminate them. Thus, they must be strictly regulated. According to Article 9 of the AI Act, high-risk AI systems must have risk management systems - a continuous iterative process planned and run throughout the entire lifecycle of a high-risk AI system, which aims to eliminate or reduce risks related to the use of high-risk AI systems.

Moreover, AI systems underwent rapid development during this period, which poses potential risks to the labor market. Therefore, the authorities need to frequently track and evaluate trends in the labor market, such as the number and types of jobs created and lost due to AI; give suggestions on methods to improve personal skills and knowledge, as well as invest in developing a high-quality labor market. The government should update education curricula to ensure access to jobs requiring competencies related to AI systems. Focus on training the workforce in 'low automation' job sectors to mitigate job losses or unemployment. Reassigning jobs is also necessary to protect the right to work and to gain a living. Thereby fully exploiting the advantages while safeguarding human rights.

In short, the development of technology has had a prolonged effect on human rights, starting from the Industrial Revolution in general and the introduction of artificial intelligence in particular. Most of the impacts are undoubtedly positive and productive in nature.[58] However, the negative effects could become colossally unprecedented if the state does not implement and enforce appropriate regulations. The AI Act and relevant regulations are an important step in the process of protecting human rights. During this period, the protection of human rights is not a challenge for any single country; rather, it is a multinational issue.

[58] Somesh Sankhala and Falguni Mundhra, 'Artificial Intelligence vs Human Rights' (2023) 3(2) *Jus Corpus Law Journal* 401.

CONFLICTS OVER THE CONDITION AND MANAGEMENT OF GREEN SPACES AND THEIR POSSIBLE SOLUTIONS

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ABSTRACT

Green spaces play a crucial role in ensuring ecological sustainability, urban liveability, and public well-being. However, increasing urbanisation, land-use pressures, and conflicting stakeholder interests have led to a rise in disputes over the condition, use, and planning of these areas. This study explores the most common types of conflicts related to urban green spaces, including tensions between conservation goals and development plans, accessibility concerns, and differing community expectations. Drawing on case studies from Central and Eastern Europe, the paper analyses the root causes of such conflicts and categorises them by actor involvement, spatial scale, and legal framework. The second part of the study focuses on conflict resolution mechanisms. The findings underline the importance of transparent governance, inclusive dialogue, and adaptive planning in mitigating conflicts and promoting the sustainable management of green areas.

KEYWORDS

Conflict resolution, green space, community mediation.

ARTICLE HISTORY

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I. Introduction

The quality, accessibility, and sustainable management of green spaces have become among the most complex and pressing issues in 21st-century urban planning.[1] Green infrastructure represents not only aesthetic, recreational, or ecological value, but plays an essential role in urban quality of life, public health, social cohesion, and climate change adaptation.[2] Despite this, conflicts increasingly emerge in the maintenance, development, and use of green areas, often rooted in diverging stakeholder interests, competing interpretations, and disputes over the distribution of resources.[3]

Conflicts associated with urban green spaces can be highly diverse in nature. They may arise between local community needs and municipal priorities, among various professional actors (such as landscape architects, environmental experts, or public space managers), or from the tension between development goals and conservation interests. Community use, sustainable maintenance, biodiversity protection, and the pursuit of social justice often coexist—frequently in a state of tension.[4] These conflicts are frequently symptoms of deeper structural issues, institutional deficiencies, or communication gaps.

The aim of this study is to explore the typical nature of conflicts related to urban green areas, to identify the main actors involved, and to analyse the mechanisms through which such conflicts can be constructively addressed. Particular attention is paid to mediation techniques and participatory planning methods, which are presented as alternative instruments of conflict resolution.[5] Based on empirical experience, it is argued that green space disputes are not only legal or technical issues but often value-based conflicts that require mutual understanding, trust, and a search for common ground among stakeholders.[6] In this regard, the mediator plays a crucial role in facilitating structured dialogue and helping the parties arrive at constructive solutions.

[1] Michael C Kondo, Jaime M Fluehr, Thomas McKeon and Charles C Branas, 'Urban green space and its impact on human health' (2018) 15(3) *International Journal of Environmental Research and Public Health* 445 https://doi.org/10.3390/ijerph15030445

[2] Jennifer R Wolch, Jason Byrne and Joshua P Newell, 'Urban green space, public health, and environmental justice: The challenge of making cities "just green enough"' (2014) 125 *Landscape and Urban Planning* 234–244 https://doi.org/10.1016/j.landurbplan.2014.01.017

[3] Annegret Haase, 'Inequalities and Injustices of Urban Green Regeneration: Applying the Conflict Analysis Perspective' (2024) 13(3) *Land* 296 https://doi.org/10.3390/land13030296

[4] Christine Bertram and Katrin Rehdanz, 'The role of urban green space for human well-being' (2015) 120 *Ecological Economics* 139–152 https://doi.org/10.1016/j.ecolecon.2015.10.013

[5] Yiwen Cui, Morten Gjerde and Bruno Marques, 'Mapping and Assessing Effective Participatory Planning Processes for Urban Green Spaces in Aotearoa New Zealand's Diverse Communities' (2024) 13(9) *Land* 1412 https://doi.org/10.3390/land13091412

[6] Haase (n 3)

This research starts from the premise that green space conflicts are not avoidable anomalies, but rather a natural consequence of a pluralistic urban society.[7] Instead of being dismissed, such conflicts should be approached as opportunities to foster cooperation, mutual learning, and the creation of more sustainable urban environments.[8] Accordingly, the study is structured around three main analytical dimensions: first, it examines the main types and causes of green space conflicts; second, it analyses resolution strategies, with a special focus on mediation practices; and third, it presents a case study to demonstrate the practical applications and insights of conflict resolution in the urban context.

The condition and use of urban green spaces thus constitutes not only a matter of environmental policy, but increasingly also one of social and legal relevance. Ensuring livable, healthy, and equitable urban environments calls for integrated approaches that are capable of addressing challenges not only on a technical but also on a societal level.[9]

II. The sources of conflict

Urban green spaces, as multifunctional and open-access areas, serve as mirrors of social diversity, where differing lifestyles, expectations, and values converge.[10] While in theory, the ecological, recreational, and communal functions of green areas should reinforce one another, in practice they often lead to tensions among users, developers, and maintenance actors. The sources of conflict can be understood along several dimensions, stemming partly from divergent needs and partly from value-based differences.

Identifying and systematically analysing these types of conflicts is essential for developing effective conflict resolution strategies, particularly if the goal is to achieve a sustainable, multi-stakeholder, and cooperative model of green space governance.

Urban green areas serve a wide variety of functions, which frequently gives rise to conflicts among stakeholders. These conflicts may be rooted not only in competing uses but also in conflicting values, legal interpretations, or environmental concerns, and they demand complex and context-sensitive solutions.[11] Demand for green space has significantly increased in recent decades, while the total area of such spaces has in many cases stagnated or declined. Consequently, various social

[7] Koen De Ridder and others, 'An integrated methodology to assess the benefits of urban green space' (2004) 334 *Science of the Total Environment* 489–497 https://doi.org/10.1016/j.scitotenv.2004.04.054

[8] Benjamin Daniels and others, 'Assessment of urban green space structures and their quality from a multidimensional perspective' (2018) 615 *Science of the Total Environment* 1364–1378 https://doi.org/10.1016/j.scitotenv.2017.09.167

[9] Ibid

[10] Jasper Jan Schipperijn, *Use of Urban Green Space* (Forest & Landscape 2010)

[11] Shah Md Atiqul Haq, 'Urban green spaces and an integrative approach to sustainable environment' (2011) 2(5) *Journal of Environmental Protection* 601–608 https://doi.org/10.4236/jep.2011.25069

groups—differing in life circumstances, preferences, and values—often find themselves in competition over the use and control of green areas.

1. Users and citizens conflicts

The most common type of conflict occurs between different user groups whose activities disturb or exclude one another.[12] A classic example involves tensions between dog walkers and families with small children, or between those seeking quiet relaxation and those engaging in active sports. In such cases, the conflict often extends beyond mere physical space use, reflecting divergent behavioural norms and expectations. For instance, disputes between runners and dog owners are not only about who uses which path, but also about whether dogs should be leashed, whether they disturb runners, and who has priority on a narrow trail.

2. Functional conflicts

Functional conflicts arise when plans for future development or use of a green area clash with residents' expectations.[13] For example, a municipality may plan to develop a park into a venue for public events, while local residents regard it as a tranquil, nature-oriented space. These conflicts frequently result from a lack of public participation in the planning process; if the community is not involved in time and to a sufficient extent, resistance may surface in the form of protest or even legal action.

3. Environmental and Value-Based Conflicts

Environmental and value-based conflicts represent another major source of tension.[14] These include situations where biodiversity conservation, ecological integrity, or environmental values come into conflict with recreational, economic, or urban development goals. In such cases, professionals (such as ecologists or landscape architects) and civil society actors often find themselves opposed to political decision-makers or investors. A typical example is the paving over or repurposing of ecologically valuable grassland for event infrastructure.

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[12] Alex YH Lo and Chi Yung Jim, 'Citizen attitude and expectation towards greenspace provision in compact urban milieu' (2012) 29(3) *Land Use Policy* 577–586 https://doi.org/10.1016/j.landusepol.2011.09.011

[13] Marthe L Derkzen and others, 'Shifting roles of urban green space in the context of urban development and global change' (2017) 29 *Current Opinion in Environmental Sustainability* 32–39 https://doi.org/10.1016/j.cosust.2017.10.001

[14] Philipp Andreas Unterweger, Nicolas Schrode and Oliver Betz, 'Urban nature: perception and acceptance of alternative green space management and the change of awareness after provision of environmental information. A chance for biodiversity protection' (2017) 1(3) *Urban Science* 24 https://doi.org/10.3390/urbansci1030024

4. Institutional and Legal Conflicts

Institutional and legal conflicts often underpin green space disputes. These occur when responsibilities for the maintenance, development, or governance of a green area are unclear or overlapping among institutions.[15] Protracted decision-making processes, opaque accountability structures, and regulatory gaps all contribute to public mistrust and exacerbate conflicts.[16]

Green space conflicts, therefore, are diverse and usually unfold on multiple levels simultaneously. It is important to recognise that such conflicts are not merely problems to be solved but also represent social situations that—if addressed constructively—can strengthen community ties and enhance the functional and ecological value of urban green spaces.

Conflicts surrounding urban green areas become particularly pronounced when the land in question is not officially designated as a public park or green space but instead appears as an abandoned, unmanaged, or weedy plot. These areas often exist as privately owned or corporate-held properties that are not actively maintained, yet the public frequently associates them with communal or aesthetic expectations. This mismatch can lead to highly polarised and emotionally charged conflict situations.[17]

Such conflicts are often situational and destructive in nature, fuelled by intense emotions, which makes them especially difficult to manage.[18] On-site mediation is one of the most challenging forms of intervention, as high emotional tension may hinder meaningful negotiation. Nonetheless, in practice, operational field managers—who may not be formally trained as mediators but have gained extensive experience—can often defuse tensions effectively and manage situations that the academic literature would classify as barely or non-mediable.

III. Fundamental Types of Conflict in the Use of Urban Green Spaces

Conflicts associated with urban green spaces are not only functional or role-based in nature but may also be rooted in deeper layers as described by conflict theory. The following section presents the main types of such conflicts in the context of urban green space use, illustrated with practical examples.

[15] Anqi Wang and Edwin Chan, 'Institutional factors affecting urban green space provision – from a local government revenue perspective' (2019) 62(13) *Journal of Environmental Planning and Management* 2313–2329 https://doi.org/10.1080/09640568.2018.1541231

[16] Balázs Hohmann, 'Integrity Advisors and the Development of Administrative Communication Culture' (2019) 4(1) *European Journal of Multidisciplinary Studies* 29–33 https://doi.org/10.26417/ejms-2019.v4i1-527

[17] Bo Mu and others, 'Conceptual planning of urban–rural green space from a multidimensional perspective: A case study of Zhengzhou, China' (2020) 12(7) *Sustainability* 2863 https://doi.org/10.3390/su12072863

[18] István Bereczki, 'Környezetvédelmi közvetítés Németországban [Environmental Mediation in Germany]' (2020) 7(1) *Pro Futuro* 60–63 https://doi.org/10.26521/Profuturo/2017/1/4748

1. Information-Based Conflicts

Conflicts often arise from the lack or distortion of information.[19] When residents are not informed about a planned tree removal, or if the justification is poorly communicated, this can lead to resistance and protest. Conversely, an overload of unstructured information—such as a lengthy municipal resolution written in inaccessible legal language—can result in misunderstandings.

Example: In a district park, three old trees were cut down. Residents perceived this as "yet another act of environmental destruction," even though the municipality had previously published that the trees were hazardous. Although the information was technically available, it had not been effectively conveyed to those affected.

2. Relationship-Based Conflicts

When parties have a history of negative experiences, personal grievances, or deep mistrust, communication often breaks down entirely.[20] These conflicts are typically long-lasting and may resurface regardless of the actual issue at hand.

Example: Years earlier, a conflict emerged between a local civil society group and the municipal maintenance department over decisions surrounding a community garden. Since then, every new green initiative is met with suspicion—even when it might otherwise be seen as beneficial.

3. Value-Based Conflicts

Differing worldviews, upbringing, or generational divides often surface in how green spaces are perceived and used.[21] While some people prefer wild, natural landscapes, others favour orderly, "clean" parks.

Example: A group of residents opposed the transformation of a park section into a wildflower meadow. For them, the area appeared neglected and unattractive, whereas the initiators emphasized its ecological and conservation value.

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[19] Nicholas J Marantz and Nicola Ulibarri, 'The tensions of transparency in urban and environmental planning' (2022) 42(3) *Journal of Planning Education and Research* 401–412 https://doi.org/10.1177/0739456X19827638
Balázs Hohmann, 'The Interpretation of Transparency from the Legal Point of View' in Tamás Haffner (ed), *4th Youth in Europe Conference – Proceedings* (Sopianae Cultural Association 2018) 155–163

[20] Madeleine Wagner and others, 'Conflicts about urban green spaces in metropolitan areas under conditions of climate change: A multidisciplinary analysis of stakeholders' perceptions of planning processes' (2019) 3(1) *Urban Science* 15 https://doi.org/10.3390/urbansci3010015

[21] Kaiwen Su and others, 'Do value orientations and beliefs play a positive role in shaping personal norms for urban green space conservation?' (2022) 11(2) *Land* 262 https://doi.org/10.3390/land11020262
Justine Palliwoda and Janine A Priess, 'What do people value in urban green? Linking characteristics of urban green spaces to users' perceptions of nature benefits, disturbances, and disservices' (2021) 26(1) *Ecology and Society* 28 https://doi.org/10.5751/ES-12204-260128

4. Structural Conflicts

These conflicts arise from systemic failures, power asymmetries, or institutional barriers to cooperation.[22] A typical case involves a green space owned by a private company that is used informally as a public park, even though the municipality lacks legal authority to intervene.

Example: A decommissioned industrial site that has spontaneously "re-greened" is regularly used by locals for jogging and dog walking. When the owner erects a fence, residents protest, but the municipality is legally unable to take sides.

5. Interest-Based Conflicts

This type of conflict stems from scarce resources, differing objectives, and incompatible usage patterns.[23] It concerns not values but concrete rights and functions.

Example: Joggers wish to create a circular running trail in a park, while dog owners are asking for a fenced dog run in the same area. The two functions are mutually exclusive, and compromise through spatial planning is required.

6. Situation-Based Conflicts

These are spontaneous, often unforeseen, and arise from momentary interactions between strangers. A typical scenario involves a verbal altercation in a park due to a dog being walked without a leash.

Example: An elderly woman becomes frightened by a large, playful dog running loose. A heated argument ensues between her and the dog's owner, drawing the attention of other park-goers.

7. Needs-Based Conflicts

Such conflicts arise when basic human needs—safety, rest, control—are in tension.[24] These are deeply rooted, often emotionally charged conflicts that are difficult to verbalize.

Example: Residents living near a playground complain that the noise prevents them from resting, while parents advocate for more benches, additional play equipment, and extended opening hours. Both parties seek to assert fundamental needs—rest and child development, respectively.

[22] Viniece Jennings and others, 'The dynamic relationship between social cohesion and urban green space in diverse communities: Opportunities and challenges to public health' (2024) 21(6) *International Journal of Environmental Research and Public Health* 800 https://doi.org/10.3390/ijerph21060800

[23] Haase (n 3)

[24] Elizabeth A Schrammeijer, Žiga Malek and Peter H Verburg, 'Mapping demand and supply of functional niches of urban green space' (2022) 140 *Ecological Indicators* 109031 https://doi.org/10.1016/j.ecolind.2022.109031

IV. Stages of Conflict in Urban Green Space Disputes

Conflicts surrounding urban green spaces can not only be classified by type but also by their temporal development and dynamic evolution. Typically, conflicts unfold in several clearly distinguishable stages, each marked by different levels of tension, communication, and escalation.[25] n the context of green space governance, it is particularly important that each phase is matched with appropriate communication and intervention strategies. The success of conflict resolution often depends on whether the parties—or third-party facilitators—recognize which phase the dispute is in and whether they adopt methods tailored to that phase.[26]

1. Latent Phase

This is the early and often imperceptible stage of the conflict, in which parties have not yet recognized the disagreement. The origin of the conflict frequently dates back to the past and is difficult to trace.

Urban green space example: Residents observe the increasing deterioration of an overgrown vacant lot with growing concern but do not yet raise the issue with the property owner or the authorities.

2. Manifestation Phase

At this point, the parties begin to recognize the conflict, though their perceptions may be exaggerated or distorted. The elements of the conflict become amplified and emotional framing dominates.

Example: A resident posts on social media about "the most neglected site in the city," drawing broader public attention to the issue, despite the fact that the site is no more neglected than many other urban green spaces.

3. Signalling Phase

This marks the first communicative appearance of the conflict. The parties express their concerns, but the method of communication—such as a formal letter, public complaint, or media criticism—can significantly influence the course of the dispute.

Example: The municipality sends a notice to the owner demanding site cleanup, while residents submit official complaints or publish an open letter in the local press. The issue becomes publicly acknowledged.

[25] Louis R Pondy, 'Organizational Conflict: Concepts and Models' (1967) 12(2) *Administrative Science Quarterly* 296–320 https://doi.org/10.2307/2391553

[26] Haoyu Chen, "'Conflict" or "Cooperation": A Study on the Spontaneous Order of Urban Public Space Development from the Perspective of Stakeholders' in *Proceedings of the 2020 International Conference on Materials Science and Engineering* (IOP Publishing 2020) vol 960, 042043 https://doi.org/10.1088/1757-899X/960/4/042043

4. Articulation or Debate Phase

This is the most intense phase of the conflict, where parties clearly articulate their interests and needs. Although rational discussion and solution-seeking are still possible, emotions often dominate the discourse.

Example: At a public forum, residents, environmentalists, and representatives of the property owner debate the future of a wooded private lot. Arguments and counterarguments are presented, but resolution remains open.

5. Polarization Phase

Positions harden, and communication deteriorates. Parties listen only for contradictions and rejections from the other side. Strategic "games" begin to emerge, and symbolic gestures or slogans replace constructive dialogue.

Example: Protests against any form of tree removal escalate, where stakeholders refuse to consider professional justifications and reject interventions on purely emotional or ideological grounds.

6. Isolation or Separation Phase

Communication ceases entirely, and each party relies solely on their own narrative, seeking solutions in isolation. Without external mediation, resolution in this phase becomes nearly impossible.

Example: The property is declared off-limits by the owner, while residents file a petition with the local council. There is no direct communication between the parties.

7. Destructive or Hatred-Based Phase

The conflict becomes toxic, aiming not at resolution but at discrediting or harming the other party—whether through legal action, public shaming, or physical acts. At this point, mediation is no longer a viable option.

Example: An environmental group files a legal complaint and mobilizes public opinion against the property owner, who in turn files a countersuit. The conflict devolves into personal attacks on social media.

8. Exhaustion or Last-Chance Phase

Parties become emotionally and mentally depleted, lacking the energy for further confrontation. If the conflict has not reached a fully destructive state, this stage may offer an opportunity for renewed mediation—especially if initiated externally.

Example: Months later, as part of a new urban development grant program, a fresh round of consultations is launched. After multiple failed attempts, the stakeholders are now willing to re-engage in dialogue.

V. Case studies

1. Storm Damage – A Constructive Response to a Crisis Situation

A significant proportion of interventions concerning urban green areas are not the result of pre-planned actions but arise from sudden, crisis-like events that demand immediate response.[27] Among these, storm damage represents a particularly critical scenario—not only due to the physical harm it may cause to urban infrastructure, but also because it often brings underlying social tensions to the surface or creates new ones.

One case study illustrates a situation where a tree branch, broken off by a storm, fell near the fence of a local dog park. The need for immediate intervention was undeniable, as the incident posed a direct threat to human safety—particularly in a location that is used daily by local residents. Hungarian regulatory frameworks, such as Government Decree No. 346/2008 (XII.30.) on the planting and maintenance of woody plants, provide clear legal obligations for the removal of dangerous elements.

While the official notice issued by authorities referenced the property user's legal responsibilities, the situation in practice involved more than mere compliance. It presented a latent conflict potential that—if mismanaged—could have undermined public trust. This conflict can be classified as both interest- and needs-based, as it directly affected the perceived safety and environmental comfort of the community.

From the perspective of mediation, this case serves as an instructive example of how crisis situations can be transformed into opportunities for strengthening community relations. The municipality's swift and professional response not only addressed the immediate problem, but also helped foster a positive memory among residents: *"this time they really paid attention to us and acted quickly."* Such interventions can later serve as points of reference—success stories in community collaboration—to be recalled in future disputes or development processes.

At the same time, the incident revealed the sensitivity surrounding green space interventions. During the tree removal process, members of the public approached the on-site workers with concerns, interpreting the activity—based on prior experience and ingrained assumptions—as an act of environmental harm. Public resistance to tree cutting is not solely driven by ecological values but often stems from deeply emotional and symbolic associations—the "destruction of green" in the urban fabric. The conflict evolved into a situational dispute that unfolded during the articulation phase—residents posed specific questions and

[27] Christoph DD Rupprecht, 'Informal urban green space: Residents' perception, use, and management preferences across four major Japanese shrinking cities' (2017) 6(3) *Land* 59 https://doi.org/10.3390/land6030059

expected clear responses. Fortunately, the escalation was effectively mitigated in time. The foreman's calm and detailed explanation, coupled with a thorough assessment of the tree's condition, helped reassure residents about the legality and necessity of the intervention. The dialogue that took place on-site, although informal, functioned effectively as a form of informal mediation. It helped re-establish communication and reinforce mutual accountability between stakeholders.

In sum, this case highlights how the constructive resolution of a direct hazard can enhance not only the physical safety of a public space but also long-term cooperative relationships between residents, municipal authorities, and operational service providers.[28] Lessons from such experiences can be intentionally integrated into local development and participatory planning processes—as shared narratives of successful collaboration.

2. Urban Aesthetics – Conflicts over the Appearance of Green Spaces

The second case study explores a conflict that emerged in relation to an unused urban green area, where the primary tension stemmed from differing expectations regarding visual appearance and land management between the local municipality and the property owner. A site inspection conducted by municipal representatives concluded that the plot was overgrown and neglected—characterised by excessive suckers, uncollected green waste, rampant climbers, fallen trees, and a general lack of mowing. As a result, a formal request was issued by the authorities, urging the landowner to restore and maintain the property, with the goal of establishing a more managed, bush-and-tree dominated aesthetic.

The source of the conflict clearly lies in diverging aesthetic and functional expectations.[29] While the municipality prioritises a uniform, well-maintained urban image, the landowner perceives no problem with the spontaneous vegetation—in fact, they may even value it as a form of low-intervention biodiversity, a "natural" green space. This constitutes a relationship- and interest-based conflict that remains in the signalling phase; no direct dispute has yet arisen, but the first formal expression of disagreement has occurred.

At this early stage, the potential for mediation is particularly important. Effective mediation would aim to establish communication between the parties before the conflict escalates. This is especially relevant, given that such recurrent notifications often become routine administrative practices—possibly evolving into a form of quasi-customary law in enforcement. The mediator's role would thus be

[28] Adriano Bressane and others, 'Community Engagement in the Management of Urban Green Spaces: Prospects from a Case Study in an Emerging Economy' (2024) 8(4) *Urban Science* 188 https://doi.org/10.3390/urbansci8040188

[29] Isabella M Mambretti and Isabella Margherita Mambretti, *Urban Parks between Safety and Aesthetics: Exploring Urban Green Space Using Visualisation and Conjoint Analysis Methods* (vdf Hochschulverlag AG 2011)

to initiate a dialogue that not only addresses the current issue, but also surfaces and addresses long-term differences in underlying perspectives.

However, during the actual site intervention, the conflict extended beyond the municipality–owner relationship to include third parties. The clearing work—pruning, thinning, and brush removal—elicited objections from two distinct groups. One was a homeless individual living among the shrubs, who had built a makeshift shelter. For him, the intervention was not simply a matter of landscape maintenance but a need-based conflict tied to his basic survival. Although his presence was unknown to the maintenance team prior to the intervention, the situation was handled with sensitivity: he was given time to relocate, and the interaction remained respectful and open. Here, mediation occurred implicitly and informally—and yet effectively.

In contrast, the response from residents living on the opposite side of the street was far more contentious. They viewed the intervention as an act of environmental destruction, even though it was legally justified and properly executed. This highlights how a value-based conflict can quickly become situational—and, in some cases, drift toward a destructive phase. The protesters attempted to obstruct the workers and even filed a complaint, although municipal enforcement officers confirmed the legality of the intervention. While tensions did not escalate irreversibly, the situation exposed a critical issue: the communication channels between residents and the municipality are weak, and preliminary information-sharing or participatory engagement is often lacking.[30]

From the mediator's perspective, one of the key takeaways is that interventions in urban green spaces related to aesthetics are never merely technical matters. Residents' emotional attachments, value systems, and sense of safety are all potential sources of tension if disregarded. Moving forward, these types of conflicts could be better managed through early and multi-modal communication—including visual cues (such as signage, maps, or social media updates), as well as participatory green space management programs (e.g. adoption schemes, volunteer pruning days).

Ultimately, this case exemplifies how what initially appears to be a purely technical issue may in fact reflect deep-seated structural and attitudinal divergences. The municipality's role must therefore go beyond enforcing maintenance obligations—it must act as a facilitator, interpreter, and conflict manager. In this, the methodology of mediation offers substantial support.

3. Invisible Conflict Behind Urban Green Space Management

The third case study addresses a particularly sensitive social issue: a municipal intervention, officially justified as a maintenance action on overgrown vegetation,

[30] Balázs Hohmann, 'The Principles and Fundamental Requirements of the Transparency on the Public Administrative Proceedings' in Suresh P (ed), *Proceedings of the IIER International Conference, Dubai, UAE* (International Institute of Engineers and Researchers 2019) 1–4

ultimately masked an underlying social conflict—homelessness.[31] The formal notice instructed the land user to trim back excessive plant growth, citing urban aesthetic standards. However, both the mode of communication and the physical context of the conflict suggested that vegetation management was not the sole driver of the enforcement.

The actual catalyst for the intervention was the presence of a homeless couple who had temporarily settled on the site. While the formal grounds for action referenced disorderly vegetation that disrupted the visual coherence of the neighbourhood, the substance of the conflict was rooted in structural and need-based dimensions. During the on-site inspection, the maintenance team encountered a carefully arranged, makeshift shelter comprising a couch, basic furniture, and personal belongings, nestled in the shade of the overgrown shrubbery. The couple openly acknowledged their situation, explained they were unhoused, and had chosen the site as a temporary summer refuge. The atmosphere remained calm throughout the interaction; far from confrontational, the couple expressed appreciation for being heard and treated respectfully.

Although the conflict appeared in official communication during the signalling phase, the interaction on the ground reflected characteristics of the exhaustion phase. The couple had already begun preparations to relocate and had even started establishing a new temporary shelter elsewhere. This case illustrates the complex social and human factors that may lie beneath what appears to be a simple green space maintenance order.

Mediation opportunities in such cases are inherently limited. A mediator—especially in the context of spatial planning or aesthetic disputes—can only work with the information that parties are willing to disclose. Here, the official complaint made no mention of the homeless individuals; the actual goal was their removal from the area. For mediation to be meaningful, it is essential that underlying interests and needs are surfaced early, rather than obscured by formal rationales.

Nevertheless, the story also offers a positive example of how even socially sensitive situations can be addressed with dignity. The homeless couple were not forcibly removed, nor subjected to coercive policing. Instead, they were granted a grace period and chose to leave the site of their own accord. While this incident did not solve the broader issue of homelessness, it demonstrated that respecting human dignity during public interventions can make a tangible difference.

As a case study, this situation underscores that conflicts over urban green spaces often extend beyond questions of environmental protection or urban design. In such instances, mediators—if included—must be prepared to engage with complex social and ethical considerations. Some conflicts are not about interests in the traditional sense but reflect the visibility or invisibility of socially marginalised

[31] Viniece Jennings and Omoshalewa Bamkole, 'The relationship between social cohesion and urban green space: An avenue for health promotion' (2019) 16(3) *International Journal of Environmental Research and Public Health* 452 https://doi.org/10.3390/ijerph16030452

populations. The maintenance of public spaces must not become a mechanism of exclusion—and if it does take on such a role, this reality must be acknowledged and made visible to both decision-makers and the wider community.

This example highlights how unspoken intentions and the avoidance of direct confrontation can, in certain cases, create the space for a quiet, humane resolution. However, it also makes clear that the structural social tensions underlying such conflicts cannot be resolved without systemic, policy-level responses.

4. Physical Sites and Sensitive Social Situations

Conflicts concerning the condition of urban green spaces often do not stem from the actual physical state of the area, but rather from differing perceptions regarding its appearance, usage, and the underlying values and norms. Official notices issued by municipalities frequently reflect more than just the tangible reality of a site; they often convey expectations shaped by structural, relational, or status-driven motivations.

The first example illustrates how green areas located at intersections receive heightened scrutiny. Even a seemingly minor infraction—such as a few centimetres of overgrowth—may trigger an immediate enforcement response. On the surface, such swift and strict action may appear to support goals like preserving urban aesthetics or ensuring traffic safety. However, it also raises critical questions about proportionality and timing: does the intervention truly correspond to a genuine safety threat? Pre-emptive actions, especially when they precede any tangible risk, can generate unnecessary tension, potentially straining the relationship between the parties involved in the long term.

The second case unfolded during winter, a period outside the regular vegetation cycle. Here, the designation of the site as "weedy and neglected" was made when plant life had naturally receded due to the season. The notice issued in this context is questionable not only from a technical standpoint but also in terms of underlying intent. It raises the possibility that the complaint may have been driven by personal frustration, an attempt to assert power, or even malice. Formally, such a conflict may remain in the signalling phase, but in practice, it may already exhibit features of a destructive or separation phase—especially when the purpose of the notice is not to initiate dialogue but to suppress or punish the other party.

Both cases highlight the limitations of the current practice, wherein obligations are mechanically communicated through formal enforcement letters. This approach offers only the illusion of resolution. Conflicts of this kind are rarely resolved; rather, they are suppressed or delayed, only to resurface repeatedly. Therefore, there is a pressing need to develop and implement new mediation techniques and conflict management methods that enable genuine mutual understanding and foster sustainable agreements.

These scenarios point to the necessity for municipalities to go beyond compliance-based enforcement and adopt a more relational, communicative role. In doing so, public authorities would not only maintain urban order but also contribute to the social sustainability of urban life by recognising the emotional and symbolic dimensions embedded in public green spaces.

VI. Mediation techniques for urban conflict resolution

1. Evaluative Mediation: Providing an Expert Framework

When a conflict between parties—such as a municipality and a private landowner—partly revolves around professional or technical questions (e.g. what qualifies as a neglected green space), the application of evaluative mediation is particularly appropriate.[32] This mediation model entails the involvement of a neutral third party who, beyond acting as a facilitator, also possesses subject-matter expertise. The mediator is thus equipped to formulate informed opinions and propose technically sound and mutually acceptable solutions. In cases where environmental concerns, biodiversity preservation, or the timing of mowing activities are at issue, the complexity of these topics often exceeds the knowledge or interpretive capacity of the parties involved. Here, the evaluative mediator acts as a compass—guiding the stakeholders toward outcomes that are not only legally compliant and aesthetically acceptable in terms of urban design, but also environmentally sustainable.

This approach combines conflict resolution with expert consultation, allowing the process to address both relational tensions and factual uncertainties. The mediator's role therefore expands from mere facilitation to interpretation and orientation, offering a knowledge-based framework in which informed dialogue can unfold.

2. Narrative Mediation Approach: Reframing Stories and Relationships

As illustrated in the preceding examples, conflicts often stem from divergent worldviews and value systems. One party perceives an "overgrown jungle" as something that needs to be tamed to restore order, while the other views that same area as a symbol of naturalness, biodiversity, and non-intervention. The goal of narrative mediation is precisely to surface and articulate these differing stories and then reshape them into a shared narrative that redefines the relationships involved.[33] In this method, the primary aim is not immediate agreement, but rather to help the parties see each other—and themselves—from a fresh perspective, thus laying the foundation for long-term collaboration.

[32] Bereczki (n 16) 65-70.

[33] Toran Hansen, 'The Narrative Approach to Mediation' (2004) 4(2) *Pepperdine Dispute Resolution Law Journal* 1–20

3. Transformative Mediation Tools: Reframing Relational Patterns

Transformative mediation goes even further:[34] it not only re-narrativizes the story but also rebuilds the relationship between parties. This approach emphasizes helping the parties recognize each other's communication styles and needs, and develop new interaction patterns that empower them to resolve future conflicts independently. For instance, in the case where the official objective was to manage the green space, while the real intention was to displace homeless individuals, transformative mediation can assist stakeholders (municipality, residents, landowner) to co-create humanely and dignity-respecting solutions—rather than addressing merely the symptoms.

4. Applying the Methods to a Case Study

In one particularly instructive situation, beehives were illegally placed in a mowed area. The workers—though they had every right to continue mowing—recognized the ecological and physical risk posed to the bees and refrained from intervention, reporting the issue instead. This instinctive cooperation, which we might call an implicit, situational mediation practice, exemplifies how conflict avoidance can also be a deliberate decision that preempts future tensions. Such an approach builds relational capital among the parties that endure over time.

Urban green spaces adjacent to major transport junctions often bear a dual character: they could serve important ecological and urban design functions, but when neglected, they become sources of social tension. This case study explores a currently unused and partly enclosed green space next to a heavily trafficked transport intersection in Budapest, demonstrating the multifaceted nature of conflicts, their root causes, and potential communal solutions.

The area, a disused plot encircled by concrete walls and overgrown with trees and shrubs, is perceived differently by residents, passersby, and homeless individuals. The vegetation's cover and secluded nature make it a makeshift restroom for some, and a temporary shelter for others. Meanwhile, residents complain about declining public safety, unpleasant aesthetics, and property value losses. Thus, the conflicts here arise not only from aesthetics or sustainability concerns, but also deeper social and economic pressures.

The issue can be understood on multiple levels: as a values- and interest-based conflict, where parties—including residents, municipality, landowner, and indirectly the homeless—prioritize differing concerns; and as a relational conflict driven by mutual distrust and poor communication. In this case, the conflict sits between the notification (jelzési) and articulation (artikulációs) phases: the issues are identified and voiced but not yet escalated.

[34] Ibid

Narrative mediation offered one of the most compelling pathways forward. A widely promoted resident forum was organized, bringing together locals, municipal representatives, the landowner, and other stakeholders. The facilitator set an inclusive seating arrangement and began the session with a "opening circle" aimed at easing initial tension and establishing a safe space for diverse perspectives. Invoking "positive memories from the past" and sharing personal needs and experiences created a platform to envision a collective future.

Proposals raised—such as community gardens, flower beds, public toilets, mobile surveillance cameras, and less frequent but targeted maintenance—were captured by the mediator and examined in small-group discussions. This collaborative planning fostered a sense of ownership among participants, increasing their commitment to implementation. Indirect outcomes were also notable: communications between residents and the municipality improved following the forum, enabling conflict resolution at earlier stages. While the deeper issue—homelessness—remained unresolved (as it extends beyond a single site's redesign), the forum effectively reduced mistrust and seeded a shared problem-solving mindset.

However, another initiative by residents created new tension: the condominium residents requested trimming of trees shading their lower-floor apartments. This situation shifted from the articulation phase into a separation phase: frustrated by non-cooperative responses, the residents threatened legal action. The landowner, however, supported by independent diagnostics, confirmed that neither legal nor scientific grounds justified tree removal. This conflict was both values- and structurally-based: the shade's impact on property values conflicted with urban greening and environmental protection principles.

Evaluative mediation could have been valuable here: a specialist in urban green space management could have mediated the technical, ecological, and social aspects to guide the parties toward a mutually acceptable solution. Because mediation did not occur, the conflict escalated destructively when unknown individuals forcibly cut down healthy trees. This outcome highlights the necessity for mediation not only before escalation, but also afterward—either to redefine the relationship between the perpetrator and the community or to prevent similar future events.

Overall, this example demonstrates that even seemingly neglected urban green spaces carry layered significance and social roles. Rather than superficially addressing issues, long-term, sustainable solutions hinge on community-based, mediation-supported approaches.

VII. Conclusion

The case studies and analyses presented in this study clearly demonstrate that conflicts surrounding the use and management of urban green spaces are far more complex than surface-level phenomena—such as overgrown vegetation, the presence of unhoused individuals, or shading trees—might initially suggest. These situations are not merely clashes of interest; they involve intersecting needs, identities, values, and power relations. The way people relate to urban green spaces serves as a kind of social mirror, reflecting not only what we perceive as beautiful, natural, or valuable, but also who is entitled to shape the fate of a space, whose voice is heard, and who remains invisible.

All major types of conflict—use-based, functional, environmental, and value-driven—were present in the cases examined. Tensions between joggers and dog owners, between municipal maintenance goals and nature advocates, or between residents concerned about public safety and unhoused individuals, illustrate that green spaces are not neutral grounds. They are contested urban arenas saturated with meanings and expectations, where broader societal hierarchies and inequalities become visible.

The study emphasized the applicability of various mediation techniques—narrative, evaluative, and transformative mediation—as alternative conflict resolution approaches. These techniques foreground different aspects of the process: narrative mediation focuses on reframing relationships and stories between the parties; evaluative mediation relies on expert knowledge to support technically grounded outcomes; while transformative mediation aims to reconstruct the relationship itself, assuming that true resolution only becomes possible through re-establishing mutual understanding and communication patterns.

The individual cases revealed that conflict intervention is necessary not only when tensions have escalated into destructive or separating phases but also in early stages—when conflicts are still latent or emerging.[35] Recognizing the signs of conflict, opening communication channels, articulating divergent perspectives, and fostering an environment conducive to mutual understanding are essential components of successful intervention.

One of the shared characteristics of green space-related conflicts is that most actors involved do not perceive themselves as decision-makers, or are excluded from the decision-making process altogether. Dialogue between property

[35] Tünde Ferik (ed), *Konfliktuskezelési, mediációs módszerek alkalmazása a településfejlesztésben [Mediation Methods in Urban Planning]* (Völgyzugoly Műhely 2014) 12

owners, municipal bodies, residents, maintenance contractors, and marginalized groups such as unhoused individuals is rarely complete—and even more rarely sustained. This highlights the importance of regular, pre-announced public forums which—when well-facilitated and supported by trained mediators—can serve as effective arenas for consensus-building, information sharing, and collective responsibility. Participation strengthens not only legitimacy but also fosters long-term commitment to implementation.

A central lesson of this study is that current practices in green space management—often reactive, sanction-driven, and focused on compliance—are not sustainable in the long term. Routine mowing, interventions triggered by complaints, or unilateral municipal decisions frequently fail to take into account the ecological, social, and emotional realities of a site. As the case studies have shown, such practices not only threaten biodiversity but also exacerbate social tensions. A multi-actor, collaborative model built on shared knowledge and co-creation would be a more viable and inclusive alternative.

In summary, there is no universal solution to urban green space conflicts. Different situations call for different mediation strategies. What remains essential in every case, however, is the uncovering of the true nature of the conflict, the cultivation of trust between stakeholders, and the establishment of a forward-looking, collective approach. Addressing green space conflicts is not solely a technical or legal task—it is fundamentally a social and communicative challenge. At the same time, it presents an opportunity to redefine the foundations of urban coexistence.

THE IMPACT OF TECHNOLOGICAL DEVELOPMENTS ON THE EVOLUTION OF SPECIFIC FIELDS OF LEGISLATION: A COMPARATIVE ANALYSIS OF INDONESIA AND HUNGARY

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ABSTRACT
This article examines how technological advancements have influenced the evolution of legislative frameworks in Indonesia and Hungary, focusing on data protection and e-government initiatives. The comparative analysis reveals that while both countries acknowledge similar challenges, they have adopted distinctly different regulatory approaches. Hungary's legislation demonstrates deep integration with European Union frameworks, resulting in comprehensive harmonization, while Indonesia has developed a more autonomous approach tailored to its unique context. This comparison provides valuable insights into how different legal systems navigate the complex intersection of technology and law, offering lessons for jurisdictions facing similar challenges.

KEYWORDS
Digital legislation, comparative law, data protection, e-government, administrative digitalization.

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I. Introduction

The accelerating pace of technological innovation presents unprecedented challenges to legal systems worldwide, compelling legislators to develop new regulatory frameworks that balance innovation with protection of rights and societal interests. Technology often outpaces legal development, creating regulatory gaps that require responsive and adaptive legislative approaches.[1]

This article examines how Indonesia and Hungary—two countries with distinct historical, cultural, and legal backgrounds—have evolved their legislative frameworks in response to technological developments. Through comparative legal analysis of two critical domains—data protection and e-government initiatives—this study identifies convergences and divergences in legislative approaches, evaluates the effectiveness of different regulatory strategies, and extracts valuable lessons for other jurisdictions. These domains represent fundamental aspects of the modern digital state and demonstrate the intersection between technological change and legal evolution.

II. Theoritical Framework and Methodology

1. Theoretical Framework

This study is grounded in the theoretical perspective of legal evolution in response to technological change, drawing upon Teubner's concept of reflexive law, which suggests that legal systems must develop mechanisms to respond adaptively to rapid societal and technological changes.[2] The research employs comparative law methodology focusing on functional equivalence rather than mere textual similarities in legal provisions.[3] The theoretical framework also incorporates legal transplant theory[4] and regulatory convergence concepts[5] to analyze how global standards influence domestic legislation, while employing digital constitutionalism[6] and digital state theory[7] to examine rights reconceptualization and administrative transformation in digital contexts.

[1] Roger Brownsword and Karen Yeung (eds), *Regulating Technologies: Legal Futures, Regulatory Frames and Technological Fixes* (Hart 2008).
[2] Gunther Teubner, *Law as an Autopoietic System* (Zenon Bankowski ed, 1st edn, Blackwell 1993).
[3] Konrad Zweigert and Hein Kötz, *Introduction to Comparative Law* (Tony Weir tr, 3rd revised edition, Oxford University Press 1998).
[4] Alan Watson, *Legal Transplants: An Approach to Comparative Law* (2nd edn, Univ of Georgia Press 1993).
[5] John Braithwaite and Peter Drahos, *Global Business Regulation* (Cambridge University Press 2000). https://doi.org/10.1017/9780521780339
[6] Edoardo Celeste, 'Digital Constitutionalism: A New Systematic Theorisation' (2019) 33 International Review of Law, Computers & Technology 76. https://doi.org/10.1080/13600869.2019.1562604
[7] Jane E Fountain, *Building the Virtual State: Information Technology and Institutional Change* (Brookings Institution Press 2004).

2. Methodology

The research employs qualitative comparative legal analysis of primary legal sources and secondary materials, examining four key aspects for each domain: 1) current legal frameworks and their relationship to international standards, 2) implementation mechanisms and regulatory institutions, 3) practical effectiveness and societal impact, and 4) challenges and ongoing legislative developments.

III. Brief Comparative Context

Indonesia and Hungary represent contrasting approaches to technological regulation shaped by their distinct legal traditions and external influences. Indonesia has experienced explosive digital growth, with internet penetration increasing from 0.9% in 2000 to over 73.7% in 2023,[8] creating pressure for accelerated legislative responses within its autonomous regulatory tradition. Hungary's digital transformation has progressed more gradually through structured EU accession processes that required extensive harmonization with European directives and regulations.

IV. Data Protection and Privacy Legislation

1. Current Legal Framework and International Standards Relationship

Indonesia and Hungary represent fundamentally different approaches to data protection legislation. Indonesia enacted its comprehensive Personal Data Protection Law (Law No. 27/2022) in September 2022 after years of fragmented sectoral regulations, marking a significant advancement in its regulatory approach.[9] This law demonstrates selective adaptation of international frameworks, incorporating concepts like data controllers and processors, data subject rights, and impact assessments while modifying implementation timelines to align with domestic institutional capacities.[10] The Indonesian approach balances international harmonization with contextual adaptation, recognizing both cross-border data flow imperatives and unique domestic circumstances.[11]

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[8] Asosiasi Penyelenggara Jasa Internet Indonesia (APJII), 'Laporan Survei Internet APJII 2022-2023 (APJII 2023)' <https://survei.apjii.or.id/survei/group/8> accessed 19 June 2025.

[9] Hunter Dorwart and others, 'Indonesia's Personal Data Protection Bill: Overview, Key Takeaways, and Context - Future of Privacy Forum' (*Future of Privacy Forum*) <https://fpf.org/blog/indonesias-personal-data-protection-bill-overview-key-takeaways-and-context/> accessed 19 June 2025.

[10] Sinta Dewi Rosadi and others, 'Indonesia's Personal Data Protection Bill, 2020: Does It Meet the Needs of the New Digital Economy?' (2023) 37 *International Review of Law, Computers & Technology* 78 https://doi.org/10.1080/13600869.2022.2114660.

[11] Hardy Salim, 'Indonesia's Comprehensive Personal Data Protection Law Guide - Indonesia Guide | Doing Business in Indonesia' (*ASEAN Briefing*) <https://www.aseanbriefing.com/doing-business-guide/indonesia/company-establishment/personal-data-protection-law> accessed 19 June 2025. ("In

Hungary's data protection framework exemplifies deep European integration, beginning with its pioneering 1992 law establishing the Parliamentary Commissioner for Data Protection.[12] The Hungarian Information Act of 2011 consolidated data protection and freedom of information provisions, creating a foundation subsequently adapted to implement the GDPR in 2018.[13] Hungary has also implemented complementary legislation, including Act CCXXII of 2015 transposing the EU eIDAS Regulation and specialized provisions for law enforcement data processing through implementation of the Law Enforcement Directive.[14]

The comparative analysis reveals contrasting approaches to international standards adoption—Hungary's direct implementation of EU requirements creating high harmonization and cross-border compatibility, versus Indonesia's selective incorporation maintaining greater regulatory autonomy for contextual adaptation.[15] The divergent approaches evident in these frameworks reflect broader tensions between regulatory autonomy and international harmonization that characterize the global digital governance landscape. Indonesia's approach demonstrates what can be termed "selective convergence"—a purposeful adoption of international best practices while preserving policy space for distinctive national priorities.[16] This approach potentially creates a more contextually appropriate framework but raises

shaping the PDP Law, Indonesian lawmakers adapted principles from global standards like the EU GDPR to address both international compliance needs and local challenges").

[12] United Nations High Commissioner for Refugees (UNCHR) and TÁRKI Social Research Institute, 'Hungary Multi-Sector Needs Assessment (MSNA): Data Protection & Privacy Notice' <https://data.unhcr.org/en/documents/details/101298> accessed 19 June 2025 ("The protection of data and the freedom of information in Hungary has been the responsibility of the Parliamentary Commissioner for Data Protection and Freedom of Information (Ombudsman) since 1995... Act LXIII of 1992, which entered into law on 1 May 1993, provides for the protection and dissemination of personal information"); 'EPIC --- Privacy and Human Rights Report 2006 - Republic of Hungary' <https://worldlii.org/int/journals/EPICPrivHR/2006/PHR2006-Republic-11.html> accessed 19 June 2025 ("The Parliamentary Commissioner for Data Protection and Freedom of Information oversees the 1992 Act").

[13] DLA Piper, 'Data Protection Laws of the World' <https://www.dlapiperdataprotection.com/index.html?t=law&c=HU> accessed 19 June 2025 ("The Hungarian Parliament implemented the GDPR into Hungarian laws by amending Act CXII of 2011 on the Right of Informational Self-Determination and on Freedom of Information").

[14] Dóra Petrányi, 'Data Protection and Cybersecurity Laws in Hungary' <https://cms.law/en/int/expert-guides/cms-expert-guide-to-data-protection-and-cyber-security-laws/hungary> accessed 18 June 2025 ("Act CXII/2011 on the Right of Informational Self-Determination and the Freedom of Information... implementing the EU Law Enforcement Directive").

[15] Salim (n 11).

[16] Ruben De Bruin, 'A Comparative Analysis of the EU and U.S. Data Privacy Regimes and the Potential for Convergence' [2022] SSRN Electronic Journal <https://www.ssrn.com/abstract=4251540> accessed 19 June 2025 ("With such divergent underlying interests and foundational rationales at play, working towards a harmonized international data transfer framework becomes increasingly difficult to achieve") https://doi.org/10.2139/ssrn.4251540.

questions about international interoperability and adequacy determinations for cross-border data flows. Hungary's EU-integrated approach, while providing clear benefits for regional interoperability, represents what some scholars identify as "externally-induced convergence," where normative pressure from supranational entities shapes domestic law more than indigenous policy preferences.[17] This tension between autonomy and harmonization manifests across multiple dimensions, including implementation timelines, enforcement mechanisms, and institutional design choices. Both approaches reveal differing conceptualizations of digital sovereignty—Indonesia emphasizing jurisdictional autonomy while Hungary pursuing integration-based influence within EU policy development processes.[18]

2. Implementation Mechanisms and Regulatory Institutions

Indonesia's implementation framework remains in a formative stage, with the Personal Data Protection Authority still being established and interim oversight responsibilities distributed across multiple agencies.[19] This institutional fragmentation creates coordination challenges and potential enforcement inconsistencies.[20] Implementation mechanisms established under the law include requirements for Data Protection Impact Assessments and breach notification protocols, though detailed implementing regulations remain under development.[21] Hungary's implementation mechanisms demonstrate greater maturity, with the National Authority for Data Protection and Freedom of Information (NAIH) serving as an independent supervisory authority with clearly defined powers and substantial operational experience.[22] NAIH's independence is structurally reinforced through constitutional provisions and specific appointment

[17] Benjamin Farrand, Helena Carrapico and Aleksei Turobov, 'The New Geopolitics of EU Cybersecurity: Security, Economy and Sovereignty' (2024) 100 International Affairs 2379 https://doi.org/10.1093/ia/iiae231.

[18] Julia Pohle and Thorsten Thiel, 'Digital Sovereignty' (2020) 9 Internet Policy Review <https://policyreview.info/concepts/digital-sovereignty> accessed 19 June 2025 https://doi.org/10.14763/2020.4.1532.

[19] Adinova Fauri, 'Implementation of Personal Data Privacy Law in Indonesia: Examining Benefits and Key Challenges' (*Tech For Good Institute*, 13 March 2023) <https://techforgoodinstitute.org/blog/expert-opinion/implementation-of-personal-data-privacy-law-in-indonesia-examining-benefits-and-key-challenges/> accessed 19 June 2025.

[20] Salim (n 11).

[21] Abadi Abi Tisnadisastra and Prayoga Mokoginta, 'Data Protection Laws and Regulations Indonesia 2024-2025' (*International Comparative Legal Guides International Business Reports*) <https://iclg.com/practice-areas/data-protection-laws-and-regulations/indonesia> accessed 19 June 2025.

[22] National Authority for Data Protection and Freedom of Information (NAIH), 'Annual Report of the National Authority for Data Protection and Freedom of Information 2022' <https://www.naih.hu/files/NAIH_annual_report_2022.pdf> accessed 18 June 2025.

procedures.[23] Hungary has also established specialized judicial expertise in data protection cases, with constitutional jurisprudence recognizing privacy as a fundamental right deserving robust protection.[24]

The contrasting implementation frameworks reveal distinct evolutionary pathways with significant implications for regulatory effectiveness. Indonesia's distributed oversight model, while potentially allowing greater adaptability across sectors, creates risks of regulatory arbitrage and inconsistent enforcement standards that may undermine the law's overall effectiveness.[25] This approach resembles what regulatory theorists term "polycentric governance"—characterized by multiple decision centers with overlapping jurisdictions—which can enhance innovative problem-solving but requires strong coordination mechanisms to prevent fragmentation.[26] Hungary's consolidated authority model aligns with what governance scholars identify as a "regulatory state" paradigm, where independent regulatory agencies exercise substantial discretion within legislatively defined parameters.[27] The structural independence of NAIH represents a critical differentiating factor, as research consistently demonstrates correlations between regulatory independence and enforcement effectiveness in data protection contexts.[28] The different institutional trajectories also reflect varying levels of what regulatory scholars term "administrative capacity"—the organizational resources, expertise, and processes necessary for effective implementation. Indonesia's capacity-building challenges are particularly evident in specialized technical domains like data breach response and cross-border transfer mechanisms, where implementation requires both legal expertise and technical knowledge not yet fully developed within the administrative system.[29]

[23] Adam Liber and Tamás Bereczki, 'Data Protection & Privacy 2025 - Hungary | Global Practice Guides | Chambers and Partners' <https://practiceguides.chambers.com/practice-guides/data-protection-privacy-2025/hungary/trends-and-developments> accessed 19 June 2025.

[24] Dóra Petrányi (n 14).

[25] DLA Piper, 'Data Protection Laws of the World: Indonesia' <https://www.dlapiperdataprotection.com/?t=law&c=ID> accessed 19 June 2025.

[26] Carolina Aguerre, Malcolm Campbell-Verduyn and Jan Aart Scholte (eds), *Global Digital Data Governance: Polycentric Perspectives* (Taylor & Francis 2024). https://doi.org/10.4324/9781003388418

[27] J Black, 'Decentring Regulation: Understanding the Role of Regulation and Self-Regulation in a "Post-Regulatory" World' (2001) 54 Current Legal Problems 103 https://doi.org/10.1093/clp/54.1.103.

[28] NAIH (Hungary), 'NAIH (Hungary) - NAIH-85-3/2022' (*GDPRhub*) <https://gdprhub.eu/index.php?title=NAIH_(Hungary)_-_NAIH-85-3/2022> accessed 19 June 2025.

[29] Valentina Ancillia Simbolon and Vishnu Juwono, 'Comparative Review of Personal Data Protection Policy in Indonesia and The European Union General Data Protection Regulation' (2022) 11 Publik (Jurnal Ilmu Administrasi) 178 https://doi.org/10.31314/pjia.11.2.178-190.2022.

3. Practical Effectiveness and Social Impact

Indonesia's recently enacted framework faces significant implementation challenges that affect its practical effectiveness.[30] The transitional status creates uncertainty for organizations, leading to inconsistent implementation practices.[31] Compliance levels vary significantly, with large multinational corporations demonstrating higher adoption rates while small enterprises struggle with awareness and implementation capacities.[32] Despite implementation challenges, the law has catalyzed important conversations about privacy and data protection in Indonesian society.[33]

Hungary's data protection framework demonstrates more established effectiveness after decades of implementation experience.[34] Compliance levels are generally higher, reflecting stronger enforcement mechanisms and greater organizational familiarity with requirements.[35] NAIH actively enforces the legal framework through investigations, administrative fines, and guidance materials.[36][37] Public awareness of data protection rights is more developed, with greater media coverage of privacy issues and more accessible mechanisms for exercising data subject rights.[37]

The effectiveness disparities between these frameworks illustrate the complex relationship between formal legal provisions and practical implementation outcomes. Indonesia's implementation challenges demonstrate what legal sociologists identify as an "implementation gap"—the disconnect between legislative intent and operational reality that often characterizes new regulatory regimes, particularly in rapidly evolving technological domains.[38] This gap manifests in Indonesian contexts through inconsistent organizational compliance practices, limited awareness among smaller entities, and nascent public understanding of

[30] Rosadi and others (n 10).

[31] Muhammad Deckri Algamar and Noriswadi Ismail, 'Data Subject Access Request: What Indonesia Can Learn And Operationalise In 2024?' (2023) 2 Journal of Central Banking Law and Institutions 481 https://doi.org/10.21098/jcli.v2i3.171, discussing implementation challenges and noting that "similar failure scenario might occur in Indonesia when PDP Law grace period ended in 2024 – if the causes are not addressed and mitigated.".

[32] Adinova Fauri (n 19).

[33] Salim (n 11). ("In shaping the PDP Law, Indonesian lawmakers adapted principles from global standards like the EU GDPR to address both international compliance needs and local challenges")

[34] Dóra Petrányi (n 14). ("Act CXII/2011 on the Right of Informational Self-Determination and the Freedom of Information... implementing the EU Law Enforcement Directive")

[35] National Authority for Data Protection and Freedom of Information (NAIH) (n 22).

[36] Liber and Bereczki (n 23).

[37] Dóra Petrányi (n 14).

[38] Filippo Lancieri, 'Narrowing Data Protection's Enforcement Gap Narrowing Data Protection's Enforcement Gap' (2022) 74 Maine Law Review Maine Law Review 15. https://doi.org/10.2139/ssrn.3806880

newly established rights.[39] The effectiveness differences also highlight the critical role of implementation sequencing in determining regulatory outcomes. Hungary's gradual evolution through multiple legislative iterations allowed for institutional learning and adaptation that Indonesia's more accelerated approach necessarily compresses.[40] The societal impact dimension reveals important distinctions in what privacy scholars term "privacy cultures"—the social norms, expectations, and practices surrounding personal information. Hungary's longer engagement with data protection concepts has facilitated the development of a more robust privacy culture characterized by greater public awareness and more established mechanisms for rights assertion.[41] Indonesia's emerging privacy culture shows promising signs of development, particularly among younger demographics and in urban centers, but remains at an earlier evolutionary stage.[42] These cultural dimensions significantly influence practical effectiveness, as regulatory success depends not only on formal compliance but also on the degree to which data protection principles become integrated into organizational practices and social expectations.[43]

4. Challenges and Ongoing Legislative Developments

Indonesia faces substantial implementation challenges in operationalizing its framework, including establishing the dedicated authority, developing comprehensive implementing regulations, and addressing resource constraints.[44] Cross-border data transfer provisions require particular attention, as Indonesia navigates tensions between data localization preferences and international data flow needs.[45] Ongoing legislative developments focus on developing implementing regulations and establishing international data transfer mechanisms.[46]

Hungary's challenges reflect its more mature implementation environment, focusing on keeping pace with evolving EU initiatives including the AI Act, Data

[39] Adinova Fauri, 'Strengthening Indonesia's Personal Data Protection Framework' (*Tech For Good Institute*, 21 March 2025) <https://techforgoodinstitute.org/blog/expert-opinion/strengthening-indonesias-personal-data-protection-framework/> accessed 20 June 2025.

[40] James B Rule and Graham Greenleaf (eds), *Global Privacy Protection: The First Generation* (Elgar 2008). https://doi.org/10.4337/9781848445123

[41] Sungjin Lim and Junhyoung Oh, 'Navigating Privacy: A Global Comparative Analysis of Data Protection Laws' (2025) 2025 IET Information Security 5536763 https://doi.org/10.1049/ise2/5536763.

[42] Fitriah Faisal, Wa Ode Zuliarti, and Law Faculty, Universitas Halu Oleo, Kendari, 'The Awareness Gap in Personal Data Privacy in Indonesia's Cyberspace' (2024) 7 International Journal of Social Science and Human Research <https://ijsshr.in/v7i7/84.php> accessed 20 June 2025 https://doi.org/10.47191/ijsshr/v7-i07-84.

[43] Helen Nissenbaum, 'Privacy as Contextual Integrity' (2004) 79 Washington Law Review 119.

[44] Adinova Fauri (n 19).

[45] Abadi Abi Tisnadisastra and Prayoga Mokoginta (n 21).

[46] Rosadi and others (n 10).

Act, and amendments to existing frameworks.[47] Balancing EU compliance with national priorities creates tension in certain areas, while resource constraints still affect comprehensive enforcement.[48] Recent legislative developments include amendments addressing artificial intelligence applications, enhanced enforcement mechanisms, and implementation of evolving EU frameworks.[49]

The divergent challenges facing these frameworks reveal distinctive evolutionary trajectories and implementation priorities that reflect broader governance approaches. Indonesia's implementation challenges embody what public administration scholars term the "implementation deficit"—the gap between policy ambition and administrative capacity that often characterizes comprehensive regulatory initiatives in developing governance contexts.[50] This deficit manifests particularly in specialized technical areas requiring domain expertise not yet fully developed within administrative structures. The cross-border data transfer provisions represent a critical test case for Indonesia's regulatory approach, requiring sophisticated balancing of competing imperatives including digital economy development, national security considerations, and international trade commitments.[51] Indonesia's approach to these provisions reveals an emerging "digital sovereignty" doctrine that emphasizes jurisdictional control while recognizing economic imperatives for certain cross-border data flows.[52] Hungary's challenges demonstrate a different evolutionary stage focused on "regulatory refinement" rather than fundamental implementation. The tensions between EU compliance and national priorities reflect broader political dynamics within European integration processes, where member states navigate complex politics of alignment and differentiation.[53] Hungary's approach to artificial intelligence regulation illustrates these dynamics, with implementation approaches that formally comply with EU frameworks while preserving space for national prioritization in

[47] Dóra Petrányi (n 14). ("Act CXII/2011 on the Right of Informational Self-Determination and the Freedom of Information... implementing the EU Law Enforcement Directive")
[48] Liber and Bereczki (n 23).
[49] Dóra Petrányi (n 14).
[50] Hernawan and Indra Dharma Wijaya, 'An Analysis of the Challenges and Opportunities for Governance in Indonesia during the Digital Transformation of Public Organisations' (2024) 2 Proceeding of Research and Civil Society Desemination 236 https://doi.org/10.37476/presed.v2i1.45.
[51] Xirui Li, 'Indonesia Won't Go with the Flow on Data | East Asia Forum' (*East Asia Forum*, 10 August 2022) <https://eastasiaforum.org/2022/08/10/indonesia-wont-go-with-the-flow-on-data/> accessed 20 June 2025.
[52] Andreyka Natalegawa and Gregory B Poling, 'The Indo-Pacific Economic Framework and Digital Trade in Southeast Asia' <https://www.csis.org/analysis/indo-pacific-economic-framework-and-digital-trade-southeast-asia> accessed 20 June 2025.
[53] Ido Sivan-Sevilla, 'Europeanisation on Demand: The EU Cybersecurity Certification Regime between Market Integration and Core State Powers (1997–2019)' (2021) 41 Journal of Public Policy 600 https://doi.org/10.1017/S0143814X20000173

application domains considered strategically important.[54] Both countries' resource constraints highlight a persistent challenge in data protection governance—the asymmetry between regulatory mandates and implementation resources that affects even mature regulatory systems.[55] This asymmetry creates what regulatory theorists term "enforcement discretion," requiring sophisticated prioritization strategies to maximize regulatory impact within resource limitations.[56]

V. E-Government Initiatives and Administrative Digitalization

1. Current Legal Framework and International Standards Relationship

Indonesia has established a comprehensive legal foundation for e-government through Presidential Regulation No. 95/2018 on Electronic-Based Government Systems, establishing a framework for coordinated electronic government development.[57] This was enhanced by Presidential Regulation No. 39/2023 on National Digital Transformation Acceleration, outlining an integrated approach to digital public service delivery.[58] Indonesia's approach to international e-government standards has been selectively adaptive rather than comprehensively integrative, incorporating elements from UN-DESA, World Bank, and ASEAN frameworks while maintaining significant autonomy in implementation approaches.[59]

Hungary's e-government legal framework has developed through deep integration with European Union digital government initiatives.[60] The foundational legislation is Act CCXXII of 2015 on the General Rules of Electronic Administration and Trust Services, which provides comprehensive provisions while

[54] Gergely Horváth, 'Understanding the EU AI Act in Practice: 10+1 Questions and Answers for Hungarian Companies' (*schonherr*) <https://www.schoenherr.eu/content/understanding-the-eu-ai-act-in-practice-10plus1-questions-and-answers-for-hungarian-companies> accessed 20 June 2025.

[55] Nuala O'Connor, 'Reforming the U.S. Approach to Data Protection and Privacy | Council on Foreign Relations' <https://www.cfr.org/report/reforming-us-approach-data-protection> accessed 20 June 2025.

[56] Aguerre, Campbell-Verduyn and Scholte (n 26).

[57] Betty Purwandari and others, 'Factors Affecting Switching Intention from Cash on Delivery to E-Payment Services in C2C E-Commerce Transactions: COVID-19, Transaction, and Technology Perspectives' (2022) 6 Emerging Science Journal 136 https://doi.org/10.28991/esj-2022-SPER-010.

[58] Kementerian Komunikasi dan Digital Republik Indonesia, 'Rencana Strategis Kementerian Komunikasi dan Informatika 2020 - 2024' <https://www.komdigi.go.id/kinerja/rencana-strategis> accessed 20 June 2025.Kementerian Komunikasi dan Digital, *Rencana Strategis Kementerian Komunikasi dan Informatika 2020 - 2024*, (KOMDIGI 2021-02, 83)

[59] Mireille Hildebrandt, 'Privacy and Data Protection' in Mireille Hildebrandt, *Law for Computer Scientists and Other Folk* (1st edn, Oxford University PressOxford 2020) https://doi.org/10.53116/pgaflr.2022.2.3.

[60] Cabinet Office of the Prime Minister of Hungary, 'National Digitalisation Strategy 2022-2030' <https://www.digitaliskeszsegek.hu/wp-content/uploads/2024/08/National-Digitalisation-Strategy.docx.pdf>.

transposing key EU directives including the eIDAS Regulation.[61] This is complemented by the General Administrative Procedure Act (Act CL of 2016), which establishes streamlined procedures for electronic administrative actions.[62] Hungary's approach to international standards is characterized by comprehensive alignment with the EU Digital Single Market framework and European Interoperability Framework.[63]

The contrasting approaches to e-government frameworks reflect fundamental differences in conceptualizing the relationship between technological innovation and administrative law principles. Indonesia's framework embodies what administrative law scholars describe as "framework legislation"—establishing broad principles and coordination mechanisms while preserving substantial implementation discretion for administrative entities.[64] This approach reflects Indonesia's decentralized governance structure and accommodates significant variation in institutional capacities and local contexts. The framework demonstrates what e-government researchers identify as an "adaptive pathway" to digital transformation that accommodates heterogeneous implementation environments rather than imposing standardized solutions.[65] Hungary's approach, by contrast, exemplifies what public administration scholars term "administrative constitutionalism"—the integration of fundamental rights and procedural guarantees directly into administrative processes through explicit legislative provisions.[66] This approach reflects deeper institutionalization of administrative procedure principles in European legal traditions and provides greater predictability for citizens and organizations interacting with public authorities. The integration with EU frameworks demonstrates what governance scholars identify as "networked governance"—where domestic administrative systems become

[61] Tamás Szádeczky, 'Enhanced Functionality Brings New Privacy and Security Issues – An Analysis of eID' (2018) 12 Masaryk University Journal of Law and Technology 3 https://doi.org/10.5817/MUJLT2018-1-1.

[62] Attila Badó and Gábor Feleky, 'Public Perception of the Hungarian Local Government Reform: Results of an Empirical Study' (2023) 7 Public Governance, Administration and Finances Law Review 59 https://doi.org/10.53116/pgaflr.2022.2.3.

[63] 'Interoperability Initiatives - Hungary | Interoperable Europe Portal' <https://interoperable-europe.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/interoperability-initiatives-hungary> accessed 20 June 2025.

[64] Seok-Jin Eom and Jooho Lee, 'Digital Government Transformation in Turbulent Times: Responses, Challenges, and Future Direction' (2022) 39 Government Information Quarterly 101690 https://doi.org/10.1016/j.giq.2022.101690.

[65] Stavros Sindakis and Gazal Showkat, 'The Digital Revolution in India: Bridging the Gap in Rural Technology Adoption' (2024) 13 Journal of Innovation and Entrepreneurship 29 https://doi.org/10.1186/s13731-024-00380-w.

[66] Giovanni De Gregorio and Roxana Radu, 'Digital Constitutionalism in the New Era of Internet Governance' (2022) 30 International Journal of Law and Information Technology 68 https://doi.org/10.1093/ijlit/eaac004.

embedded within transnational regulatory networks that share standards and implementation practices.[67] These different approaches reflect not only technical choices but fundamental perspectives on administrative discretion, citizen rights, and the proper relationship between international standards and domestic governance systems.[68]

2. Implementation Mechanisms and Regulatory Institutions

Indonesia's implementation framework reflects its decentralized governance system, with responsibility distributed across multiple agencies and government levels.[69] The Ministry of Administrative and Bureaucratic Reform serves as policy coordinator, while the Ministry of Communication and Information Technology provides technical implementation guidance.[70] At subnational levels, provincial and municipal governments maintain significant implementation autonomy, with dedicated e-government units varying substantially in capability and resourcing.[71] This multi-level governance approach produces innovative local solutions but creates fragmentation in service quality and technical standards.[72]

Hungary's implementation mechanisms demonstrate greater institutional consolidation within the EU e-government framework.[73] The Ministry of Interior, through the Deputy State Secretariat for E-Government, serves as the primary coordinating body, with specialized agencies including the National Info communications Service Company providing centralized infrastructure.[74] This institutional consolidation facilitates more consistent service deployment and strategic alignment.[75] Hungary's Client Gate (Ugyfelkapu) provides unified access to over 2,500 different e-government services through a single authentication

[67] Anne-Marie Slaughter and Thomas Hale, 'A Summit Caught Between Past and Future' (*Project Syndicate*, 24 September 2024) <https://www.project-syndicate.org/commentary/no-breakthroughs-un-summit-of-the-future-but-still-promising-by-thomas-hale-2-and-anne-marie-slaughter-2024-09> accessed 20 June 2025.

[68] Sandi Lubis and others, 'Electronic Governance in Advancing Sustainable Development Goals through Systematic Literature Review' (2024) 2 Discover Global Society 77 https://doi.org/10.1007/s44282-024-00102-3.

[69] Mireille Hildebrandt (n 59).

[70] Faisal, Zuliarti, and Law Faculty, Universitas Halu Oleo, Kendari (n 42).

[71] Andi Fitri Rahmadany, 'Literature Study of Electronic Government Implementation in the Perspective of Indonesia's Electronic Government Ranking Dimensions' (2021) 13 Jurnal Bina Praja 281 https://doi.org/10.21787/jbp.13.2021.281-292.

[72] Hafiez Sofyani, Hosam Alden Riyadh and Heru Fahlevi, 'Improving Service Quality, Accountability and Transparency of Local Government: The Intervening Role of Information Technology Governance' (2020) 7 Cogent Business & Management 1735690 https://doi.org/10.1080/23311975.2020.1735690.

[73] David Ramiro Troitiño, Viktoria Mazur and Tanel Kerikmäe, 'E-Governance and Integration in the European Union' (2024) 27 Internet of Things 101321 https://doi.org/10.1016/j.iot.2024.101321.

[74] Cabinet Office of the Prime Minister of Hungary (n 60).

[75] Gergely Cseh-Zelina, 'Digital Economy And Society Index - From The Perspective Of Hungary' (2023) 92 Curentul Juridic, The Juridical Current, Le Courant Juridique 21.

mechanism, significantly reducing authentication friction compared to Indonesia's fragmented identity mechanisms.[76]

The implementation architectures demonstrate contrasting approaches to what e-government scholars term "institutional design choices" with significant implications for service delivery outcomes and technological governance. Indonesia's decentralized implementation model represents an example of what administrative theorists describe as "experimentalist governance"—where local implementation units have substantial autonomy to develop context-specific solutions within broadly defined policy frameworks.[77] This approach creates opportunities for innovation through parallel experimentation while creating challenges for interoperability and standardization. The distributed governance model aligns with Indonesia's broader political decentralization reforms that emphasize local autonomy, but creates sustainability challenges as implementation success becomes heavily dependent on local leadership commitment and technical capacity.[78] Hungary's more consolidated approach exemplifies what public administration scholars identify as "whole-of-government" implementation—characterized by centralized coordination mechanisms, shared infrastructure, and standardized interfaces.[79] This approach creates advantages for service consistency and interoperability while potentially reducing adaptability to specialized local contexts. The authentication mechanisms represent a particularly significant point of divergence, with Hungary's unified Client Gate demonstrating what identity management researchers term "federated identity architecture"—where a single trust framework enables access across multiple service domains.[80] This approach significantly reduces friction in citizen-government interactions by eliminating redundant authentication requirements. Indonesia's more fragmented identity ecosystem creates higher transaction costs for citizens who must navigate multiple authentication systems across different government services, though recent

[76] 'Interoperability Initiatives - Hungary | Interoperable Europe Portal' (n 63).

[77] Dennis Shoesmith, Nathan Franklin and Rachmat Hidayat, 'Decentralised Governance in Indonesia's Disadvantaged Regions: A Critique of the Underperforming Model of Local Governance in Eastern Indonesia' (2020) 39 Journal of Current Southeast Asian Affairs 359 https://doi.org/10.1177/1868103420963140.

[78] World Bank, 'Beyond Unicorns: Harnessing Digital Technologies for Inclusion in Indonesia' <https://ideas.repec.org/a/pmu/cjurid/v92y2023p21-34.html> accessed 20 June 2025.

[79] Tom Christensen and Per Lægreid, 'The Whole-of-Government Approach to Public Sector Reform' (2007) 67 Public Administration Review 1059 https://doi.org/10.1111/j.1540-6210.2007.00797.x.

[80] Karishini Ramamoorthi and others, 'The Implementation of Federated Digital Identifiers in Health Care: Rapid Review' (2024) 26 Journal of Medical Internet Research e45751 https://doi.org/10.2196/45751.

initiatives under the One Indonesia Data framework are beginning to address these challenges.[81]

3. Practical Effectiveness and Societal Impact

Indonesia's implementation effectiveness shows significant variation across functional domains and geographic regions.[82] Implementation has achieved notable success in specific domains, particularly tax administration, public procurement, business registration, and trade facilitation.[83] However, effectiveness remains inconsistent across the broader administrative landscape, with many services still limited in functionality and adoption.[84] Geographic disparities are particularly pronounced, with more advanced digital service availability in major urban centers compared to smaller cities and rural areas.[85]

Hungary's e-government implementation demonstrates more consistent effectiveness across administrative domains.[86] The country has achieved above-EU-average scores in the European Commission's Digital Economy and Society Index for digital public services.[87] Particularly successful implementations include tax administration, company registration, property registration, and social security administration.[88] The societal impact extends beyond administrative efficiency to include transparency enhancements, corruption reduction through automated processes, and accessibility improvements for citizens with mobility limitations.[89]

The effectiveness variations between these implementations highlight critical factors that determine digital government outcomes beyond formal legislative frameworks. The sectoral variations in Indonesia's implementation success demonstrate what implementation theorists term "domain-specific factors"—where characteristics particular to specific administrative domains significantly influence digitalization outcomes.[90] Domains with centralized administrative structures, specialized user populations, and financial resources (such

[81] Mochamad Azhar, 'How Does the Satu Data Indonesia Secretariat Improve Data Governance?' (*GovInsider*, 20 August 2024) <https://govinsider.asia/intl-en/article/how-does-the-satu-data-indonesia-secretariat-improve-data-governance> accessed 20 June 2025.

[82] Nurhidayat Nurhidayat, Achmad Nurmandi and Misran Misran, 'Evaluation of the Challenges of E-Government Implementation: Analysis of the E-Government Development Index in Indonesia' (2024) 8 Jurnal Manajemen Pelayanan Publik 371 https://doi.org/10.24198/jmpp.v8i2.52759.

[83] Braithwaite and Drahos (n 5).

[84] Azhar (n 81).

[85] Sofyani, Riyadh and Fahlevi (n 72).

[86] European Commission, 'The Digital Economy and Society Index (DESI)' <https://digital-strategy.ec.europa.eu/en/policies/desi> accessed 20 June 2025.

[87] Cseh-Zelina (n 75).

[88] ibid.

[89] Badó and Feleky (n 62).

[90] J Ramón Gil-García and Theresa A Pardo, 'E-Government Success Factors: Mapping Practical Tools to Theoretical Foundations' (2005) 22 Government Information Quarterly 187. https://doi.org/10.1016/j.giq.2005.02.001

as taxation and procurement) have achieved substantially higher implementation success than domains serving general populations through decentralized structures.[91] This pattern aligns with broader findings in e-government research regarding the relationship between administrative structure and digital transformation outcomes.[92] The geographic disparities in Indonesia highlight what digital inclusion researchers identify as the "digital divide reproduction effect"—where digitalization initiatives without explicit equity mechanisms tend to reproduce or amplify existing socioeconomic and geographic disparities.[93] These disparities create significant challenges for equitable service delivery and potentially undermine citizen trust in governance institutions. Hungary's more consistent implementation effectiveness demonstrates advantages of what administrative scholars term "implementation maturity"—the accumulated organizational learning and capability development that emerges through sustained engagement with transformation processes.[94] The broader societal impacts evident in Hungary's implementation reveal important secondary effects beyond transactional efficiency, including transparency enhancement through standardized and trackable administrative processes, corruption reduction through automated procedures that eliminate discretionary human decision points, and accessibility improvements that expand service access for populations with mobility constraints.[95] These broader impacts highlight how e-government initiatives, when effectively implemented, can advance democratic governance objectives beyond narrow administrative efficiency improvements.[96]

[91] Nurhidayat, Nurmandi and Misran (n 82).

[92] Balázs Hohmann, 'Integrity Advisors and the Development of Administrative Communication Culture' (2019) 4(1) *European Journal of Multidisciplinary Studies* 29–33 https://doi.org/10.26417/ejms-2019.v4i1-527

[93] Polyxeni Vassilakopoulou and Eli Hustad, 'Bridging Digital Divides: A Literature Review and Research Agenda for Information Systems Research' (2023) 25 Information Systems Frontiers 955. https://doi.org/10.1007/s10796-020-10096-3

[94] Kim Normann Andersen and others, 'The Forgotten Promise of E-Government Maturity: Assessing Responsiveness in the Digital Public Sector' (2011) 28 Government Information Quarterly 439. https://doi.org/10.1016/j.giq.2010.12.006

[95] Ricardo Matheus and others, 'Digital Transparency and the Usefulness for Open Government' (2023) 73 International Journal of Information Management 102690. https://doi.org/10.1016/j.ijinfomgt.2023.102690

Balázs Hohmann, 'The Principles and Fundamental Requirements of the Transparency on the Public Administrative Proceedings' in Suresh P (ed), *Proceedings of the IIER International Conference, Dubai, UAE* (International Institute of Engineers and Researchers 2019) 1–4.

[96] Yaser Hasan Al-Mamary and Mohammad Alshallaqi, 'Making Digital Government More Inclusive: An Integrated Perspective' (2023) 12 Social Sciences 557 https://doi.org/10.3390/socsci12100557.

4. Challenges and Ongoing Legislative Development

Indonesia confronts substantial infrastructural and institutional challenges affecting implementation consistency.[97] Digital infrastructure disparities represent a primary constraint, with significant variation in connectivity quality between urban centers and rural areas.[98] Institutional capacity limitations compound these challenges, with substantial variation in technical expertise and implementation resources across government levels. Ongoing legislative developments focus on addressing these challenges through expanded infrastructure development, institutional capacity building, and interoperability enhancement through the One Data Indonesia initiative.[99]

Hungary faces different challenges focused on refinement, technological evolution, and balancing EU compliance with national prioritization.[100] Digital skills gaps remain substantial, particularly among older demographics and rural populations.[101] Resource constraints affect implementation capacity despite more developed institutional structures.[102] Ongoing legislative developments focus on addressing these refinement challenges through continuous updates to the Digital Success Programme, enhanced interoperability frameworks, and expanded implementation of automated administrative procedures.[103]

The distinctive challenges facing these implementations reveal different evolutionary stages in digital government development with important implications for future legislative development. Indonesia's challenges exemplify what digital transformation researchers identify as "foundational constraints"—fundamental limitations in infrastructure, human capital, and institutional capacity that must be addressed before advanced digitalization initiatives can succeed at scale.[104] These constraints create implementation sequencing imperatives that necessitate prioritization of foundational elements before proceeding to more sophisticated integration. The One Data Indonesia initiative represents a promising approach to addressing interoperability challenges through what information systems researchers describe as "middleware-enabled integration"—where shared data standards and exchange protocols enable integration across heterogeneous systems

[97] Nurhidayat, Nurmandi and Misran (n 82).
[98] Purwandari and others (n 57).
[99] Azhar (n 81).
[100] CSEH-ZELINA (n 75).
[101] European Commission (n 86).
[102] Badó and Feleky (n 62).
[103] Caroline Fischer, Moritz Heuberger and Moreen Heine, 'The Impact of Digitalization in the Public Sector: A Systematic Literature Review' (2021) 14 der moderne staat – Zeitschrift für Public Policy, Recht und Management 3 14. https://doi.org/10.3224/dms.v14i1.13..
[104] Alessandro Cenderello and Arnauld Bertrand, 'How Governments in Developing Countries Can Close the Digital Divide' (*EY*, 4 October 2022) <https://www.ey.com/en_gl/insights/international-development/how-governments-in-developing-countries-can-close-the-digital-gap> accessed 20 June 2025.

without requiring comprehensive system replacement.[105] This approach recognizes the practical impossibility of uniform system deployment across Indonesia's diverse administrative landscape and instead focuses on creating integration layers that enable interoperability while preserving local adaptation. Hungary's refinement challenges represent a different evolutionary stage focused on what e-government researchers term "transformational implementation"—moving beyond digitization of existing processes to fundamental redesign of administrative relationships.[106] The digital skills challenges highlight important social dimensions of technological integration that transcend technical system deployment. These challenges manifest particularly in demographic patterns, with significant variations in digital service adoption between younger urban populations and older rural citizens.[107] This pattern creates important equity considerations that influence service design decisions and implementation strategies. The resource constraints affecting even Hungary's more developed implementation highlight a persistent challenge in digital government initiatives—the tension between innovation imperatives and operational sustainability requirements.[108] This tension manifests in difficult prioritization decisions between developing new capabilities and maintaining existing systems, particularly as technology cycles accelerate and create ongoing adaptation pressures.[109]

VI. Conclusion and Lessons for Legislative Development

The comparative analysis of Indonesia and Hungary reveals significant insights for legislative development in the technological era. Both countries demonstrate convergence in recognizing similar fundamental challenges while diverging substantially in implementation approaches.[110] Hungary's EU-integrated approach provides benefits of regional harmonization and established regulatory models but constrains policy autonomy, while Indonesia's more autonomous approach enables

[105] Hans J (Jochen) Scholl and Ralf Klischewski, 'E-Government Integration and Interoperability: Framing the Research Agenda' (2007) 30 International Journal of Public Administration 889 https://doi.org/10.1080/01900690701402668.

[106] Shan L Pan and others, 'Digital Sustainability, Climate Change, and Information Systems Solutions: Opportunities for Future Research' (2022) 63 International Journal of Information Management 102444 https://doi.org/10.1016/j.ijinfomgt.2021.102444.

[107] Koen Salemink, Dirk Strijker and Gary Bosworth, 'Rural Development in the Digital Age: A Systematic Literature Review on Unequal ICT Availability, Adoption, and Use in Rural Areas' (2017) 54 Journal of Rural Studies 360 https://doi.org/10.1016/j.jrurstud.2015.09.001.

[108]. Ilaria Guandalini, 'Sustainability through Digital Transformation: A Systematic Literature Review for Research Guidance' (2022) 148 Journal of Business Research 456 https://doi.org/10.1016/j.jbusres.2022.05.003.

[109] Sascha Kraus and others, 'Digital Transformation: An Overview of the Current State of the Art of Research' (2021) 11 Sage Open 21582440211047576 https://doi.org/10.1177/21582440211047576.

[110] Braithwaite and Drahos (n 5).

greater contextual adaptation but creates challenges for international interoperability.[111]

Five key lessons emerge from this comparative analysis:

First, effective technological regulation requires balanced approaches to international harmonization—neither complete regulatory autonomy nor uncritical adoption of international standards represents an optimal approach.[112] Second, institutional capacity development is essential alongside legislative enactment, as the effectiveness of technology-related legislation depends significantly on implementation mechanisms rather than merely formal provisions.[113] Third, policy coherence across related technological domains is crucial given the increasingly interconnected nature of digital technologies and potential for contradictions between regulatory frameworks.[114] Fourth, legislative frameworks must incorporate adaptability mechanisms to accommodate the accelerating pace of technological change while maintaining sufficient certainty for stakeholders.[115] Finally, implementation sequencing and prioritization represent critical considerations, particularly for jurisdictions with resource constraints or limited regulatory experience in technological domains.[116]

Beyond these specific lessons, the comparative analysis reveals deeper patterns in technological regulation with significant implications for legislative theory and practice. The experiences of both countries demonstrate what regulatory theorists identify as "regulatory co-evolution"—where technological innovation and legislative responses develop through interactive processes rather than simple cause-effect relationships.[117] This co-evolutionary perspective highlights the importance of iterative regulatory approaches that maintain sufficient flexibility to adapt to technological trajectories that cannot be fully anticipated at the point of legislative enactment. The comparative experiences also illuminate what legislative scholars term the "implementation gap paradox"—where jurisdictions with more developed implementation capacity often maintain more modest legislative ambitions, while jurisdictions with greater implementation challenges sometimes adopt more expansive legislative frameworks.[118] This pattern suggests important considerations regarding the relationship between legislative ambition and implementation realism

[111] Algamar and Ismail (n 31).
[112] Rosadi and others (n 10).
[113] Dóra Petrányi (n 14). ("Act CXII/2011 on the Right of Informational Self-Determination and the Freedom of Information... implementing the EU Law Enforcement Directive")
[114] World Bank (n 78).
[115] Szádeczky (n 61) 3–25.
[116] Badó and Feleky (n 62).
[117] Pohle and Thiel (n 18).
[118]. Bob Hudson, David Hunter and Stephen Peckham, 'Policy Failure and the Policy-Implementation Gap: Can Policy Support Programs Help?' (2019) 2 Policy Design and Practice 1https://doi.org/10.1080/25741292.2018.1540378.

that should inform technological regulation approaches. The contrasting approaches also demonstrate differing conceptualizations of what governance theorists term "digital sovereignty"—the capacity of jurisdictions to maintain meaningful control over digital activities affecting their citizens and territories.[119] Hungary's approach emphasizes integration-based influence through participation in EU policy development processes, while Indonesia's approach emphasizes jurisdictional autonomy through distinctive national frameworks. These different sovereignty conceptualizations reflect not only technical or legal choices but fundamental perspectives on the proper relationship between national governance systems and transnational digital ecosystems. Finally, the comparative experiences highlight the critical importance of what implementation researchers identify as "adaptive implementation"—the capacity to modify implementation approaches based on operational experience and changing technological contexts.[120] Both countries demonstrate this adaptability in different ways—Hungary through continuous refinement within EU frameworks, and Indonesia through pragmatic implementation sequencing that prioritizes domains where success is most feasible. This adaptability represents perhaps the most essential characteristic for effective technological regulation in an era of accelerating innovation and unpredictable technological trajectories.

These insights highlight how different jurisdictions can navigate the complex terrain of technological regulation while accommodating their unique legal traditions, institutional capacities, and development priorities. The comparison demonstrates that while digital transformation creates certain universal regulatory imperatives, effective implementation requires contextual adaptation that respects distinctive governance systems and societal values.

[119] Pohle and Thiel (n 18).

[120] Giovanni De Grandis, Irina Brass and Suzanne S Farid, 'Is Regulatory Innovation Fit for Purpose? A Case Study of Adaptive Regulation for Advanced Biotherapeutics' (2023) 17 Regulation & Governance 810 https://doi.org/10.1111/rego.12496.