

Strengthening the correctional system through electronic supervision of prisoners: A comparative legal study for reforming Indonesia's penitentiary law

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Abstract

Introduction to the Problem: The practice of criminal law in a country should evolve technologically, as in Indonesia, where electronic surveillance of prisoners has been adopted. Indonesia has correctional facilities that are experiencing tremendous overcrowding, and this trend not only hinders the effective rehabilitation of inmates but also burdens the state coffers. Countries with well-organised biobanks have used this surveillance technology to prevent this malfunction.

Purpose/Study Objectives: This research aims to analyze whether there is a possibility of introducing electronic monitoring of prisoners in Indonesia as a possible amendment to the Criminal Sanctions Implementation Act by conducting an international review of the experience of similar practices in several countries with civil law (Latvia, Iceland, France, Norway, Croatia, Kosovo), common law (England and Wales), and mixed law (Thailand) systems.

Design/Methodology/Approach: This research utilises qualitative approaches, especially normative legal analysis and comparison. The data was collected by way of thorough analysis of legal documents from different jurisdictions that have varying legal traditions, such as civil law countries like Latvia, Iceland, France, Norway, Croatia, and Kosovo, common law countries of England and Wales, and Thailand, which has a mixed legal system. The comparison of these legal systems assists in constructing possible integration of electronic surveillance systems in the criminal law system in Indonesia.

Findings: Research shows that electronic monitoring of prisoners in Indonesia has potential despite the lack of legislation for such tracking due to the relevance of

implementation, especially for low-risk prisoners and first-time offenders. Concerns are identified, such as inadequate infrastructure, lack of comprehensive legislation and resistance from various groups. However, the promising benefits outweigh those concerns, as well as features such as a 40% reduction in prison overcrowding and improvements in recidivism rates of inmate rehabilitation.

Paper Type: Research Article

Keywords: Electronic Supervision; Prisoners; Penitentiary Law Reform



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Introduction

The legal system in Indonesia has been dynamically modified and improved to adjust to and keep up with the significant changes brought about by technology in the global development space ([Herwantono et al., 2023](#)). Part of the novelty in reforming the prison system is the replacement of some forms of supervision of inmates with electronic ones. The use of this technology aims to easily deal with issues such as the overcrowding of prison centres, which has become a problem in most parts of the world, including Indonesia ([Saputra & Isnawati, 2022](#)). One of the important innovations in correctional system reform is the replacement of some forms of inmate supervision with electronic monitoring systems. This implementation of electronic monitoring has become a strategic solution to address the overcrowding problem in correctional facilities, which has become a crucial issue in Indonesia. The latest Directorate General of Corrections report shows that prison utilisation rates exceed 200% of designed capacity, creating conditions that are not conducive to rehabilitation, increasing security threats and making possible human rights violations a daily reality ([Sutoyo et al., 2023](#)).

According to Barda Nawawi Arief. Substantial, structural and cultural aspects must be considered to build a legal system. About building an integral criminal enforcement system model, at the legislative policy stage, a new building is sought in the form of legal provisions that regulate the existence of criminal enforcement institutions/bodies that carry out criminal enforcement. Legislative policy (formulation stage) is the most strategic initial stage of criminal law's functionalization/operationalisation/concretisation. It is fundamental to the application and execution stages ([Arief, 1998](#)). Electronic surveillance is one solution to address this specific issue ([Plet-Hansen et al., 2019](#)). To determine the practicality of employing electronic monitoring technology in Indonesia, it is vital to deeply comprehend the existing inmate supervision system. The Indonesian correctional facilities still implement the traditional supervision system, which heavily depends on the direct attention of an officer. This approach faces numerous



challenges regarding overcrowding, effective rehabilitation, and social integration. Implementing an electronic monitoring system requires a nuanced understanding of Indonesia's socio-cultural, legal, ethical, and exceptional social value systems ([Altobelli et al., 2024](#)).

Sudarto stated that the reform of criminal law has a high level of urgency and effectiveness because each country has its own law, called national law. Each country also wants the law to reflect the attitude, values, morals, and culture of its country. Each country wants the law in its country to use the original language of its country and not one translated from another country ([Sudarto, 1981](#)). This is strengthened by the opinion of Barda Nawawi Arief, who stated that the criminal law reform is a form of reform in the broad realm as a rational effort in overcoming various forms of crime, improving legal substances, and various other social and legal problems ([Garcia, 2020](#)).

Penal reform is criminal law Reform, part of the criminal law policy itself ([Garcia, 2020](#)) Overcrowding is more than just a management problem; it is a multifaceted issue that seriously hinders proper inmate rehabilitation, creates unnecessary costs for the state, and jeopardises prisoners' rights. In a modern state, police functions are managed by the executive branch, with specific divisions overseeing law enforcement. The judiciary plays a role by issuing warrants, determining guilt, sentencing, and supervising policing activities, ensuring legal jurisdiction is upheld. This system of checks and balances allows government agencies to enforce laws while legislative bodies ensure compliance with fundamental principles ([Widyawati, et al., 2025](#)). The problem can be tackled immediately through electronic monitoring systems, which provide an effective and more humane method of detention. The reform of criminal law is a manifestation of changes in various aspects and policies of criminal law in a better direction than before ([Noorda, 2021](#)). This is because criminal law reform is a form of reform and reorientation of criminal law by various socio-philosophical, sociocultural and sociopolitical legal values that underline various legal policies, be it social, legal, criminal and national law enforcement policies.

The importance of comparative criminal law in reconstructing a criminal law system nationally is to study various other legal systems, along with other legal concepts with characteristics almost similar to national law. This is done to create even better criminal law reforms in the future ([Widyawati, et al., 2025](#)). The urgency of implementing electronic monitoring in Indonesia is becoming more pressing alongside increasing international standards on inmate treatment and human rights concerns related to inhumane prison conditions. The electronic monitoring system also aligns with the global trend toward more restorative and rehabilitative sentencing approaches, which positions Indonesia to meet these international standards.

This study investigates the feasibility of using electronic monitoring of prisoners in Indonesia to complement implementing criminal sanctions. A comparative analysis of other countries with similar practices was conducted to achieve this goal, including jurisprudential countries such as Latvia, Iceland, France, Norway, Croatia, Kosovo, Common Law countries such as England and Wales, and Judicial countries such as Thailand. The strategic objective is to change the type of sentencing to minimise prison expenditure while encouraging rehabilitation and enabling electronic monitoring systems within Indonesia's legislative framework by identifying several areas for policy and legislative change.

In Latvia, the implementation of electronic supervision has succeeded in reducing the prison population by 22% within five years of its implementation in 2015 ([Skrypnyk & Titko, 2019](#)). The system is mainly applied to prisoners serving parole who have demonstrated high compliance. Iceland, too, has introduced electronic supervision to the penitentiary system in a flexible, supportive framework targeting the rehabilitation and reintegration of offenders ([Marder et al., 2021](#)). Since the early 2000s, France has been one of the pioneer countries in Europe in implementing a comprehensive electronic monitoring system. Besides tracking prisoners' locations, end-to-end oversight is ensured by combining geofenced supervision with a broad network of social and psychological support programs. Evaluation concluded that recidivism rates had fallen, and social reintegration was more successful ([Widyawati, Latifiani, et al., 2024](#)).

This study will focus on the legal and policy challenges of electronic monitoring techniques that are just beginning in Indonesia. This research will analyse the need for revisions to applicable laws, one of which is Law Number 22 of 2022 concerning Corrections. This research will also investigate how electronic monitoring should be integrated into Indonesia's criminal law reform agenda. Norway, Croatia, and Kosovo see electronic supervision gains – but on differing scales. One of the countries that led in its use was Norway, which, along with a rehabilitation-focused penitentiary philosophy, is responsible for having one of the lowest recidivism rates in the entire world ([Loeffler & Nagin, 2021](#)).

An important part of this research is examining how the electronic monitoring system can be modified to fit within Indonesia's social values and norms. This includes looking at the concept of 'shame' and its potential influence on the use and success of electronic monitoring in Indonesia ([Widyawati, et al., 2024](#)). The study will also investigate the extent to which electronic supervision can be used in combination with traditional forms of supervision, as well as the whereabouts and behaviour of prisoners without undermining families and communities that are expected to play a significant role in 'rehabilitating' offenders. Another additional effort that will be considered is using an innovative form of electronic supervision to complement current mentoring programs; this may include both boarding and acculturation and assimilation-type efforts. This study aims to investigate how these



technologies can enable the scaling and enhancement of programs within key features characterising Indonesia's penitentiary philosophy (Nugroho et al., 2023).

This study aims to investigate the feasibility of using electronic monitoring of incarcerated prisoners in Indonesia as an adjunct to the implementation of criminal sanctions. To that end, a comparative analysis of other countries with similar practices was conducted, including jurisprudential countries such as Latvia, Iceland, France, Norway, Croatia, Kosovo, Common Law countries such as England and Wales, and Judicial countries such as Thailand. The strategic objective is twofold: to change the type of sentencing to minimise prison expenditure while encouraging rehabilitation, and to enable electronic monitoring systems within Indonesia's legislative framework by flagging several policy and legislative change areas.

Methodology

This research uses a qualitative legal approach of normative doctrine to identify and analyse the legal issues surrounding electronic monitoring (Irwansyah, 2021). The method used is a comparative approach, which serves as a way to compare legal practices and legal policies from different countries that have different legal paradigms (Marzuki, 2005).

There is an approach followed through this research; thus, there is a method used for the study. This research adopts a specific approach that informs the methodological choices made throughout the study. Legal texts, policy documents, research papers, and other publications from the countries under examination were listed at the beginning for effective data collection. Furthermore, civil law representatives (Latvia, Iceland, France, Norway, Croatia and Kosovo), common law representatives (England and Wales) and representatives of mixed legal systems (Thailand). For data collection, this study reviewed several legal texts, policy documents, research papers, and publications from the countries of interest. This research used secondary data sources of 4 books and 46 accredited journal articles relevant to addressing electronic monitoring systems in various jurisdictions. The countries included contributors of civil law (Latvia, Iceland, France, Norway, Croatia, Kosovo), a representative of common law (England and Wales), and a representative of a mixed system of law (Thailand). These countries were chosen based on the differences in discrimination in their legal systems and successes in deploying electronic surveillance systems.

Results and Discussion

Availability of Electronic Supervision Regulations for Prisoners in Indonesia

Indonesia does not yet have regulations related to electronic supervision, but some of the following regulations allow, as general rules, to further enable the formulation of special rules as an effort to reform the Law on the Execution of Criminal Sanctions in Indonesia, especially regarding penitentiary law

1. Law Number 1 of 2023 concerning the Criminal Code

Based on Article 65 of Law Number 1 of 2023 concerning the Criminal Code (hereinafter referred to as KUHP), supervision crimes are regulated as one of the principal forms. Supervision is an alternative form of punishment regulated in Articles 75-77 of Law Number 1 of 2023 concerning the Criminal Code. This type of crime can be applied to perpetrators who are committing a criminal act for the first time (not recidivists). Although it is placed as a type of principal crime, this supervisory crime is not explicitly included in formulating a criminal act. Supervision crimes can be applied to criminal acts threatened with a maximum prison sentence of five years. Supervision criminal arrangements prevent prisoners from being negatively influenced by the prison environment, which sometimes becomes a "prison as a criminal school". Prison environments can worsen convict behavior and increase the likelihood of recidivism. The recidivism rate in Indonesia was relatively high in 2020. Of the total 268,001 prisoners and inmates, the recidivism rate in Indonesia reached 18.12 % (Arif, 2020). The Indonesian Prosecutor's Office uses electronic detection devices as a form of electronic supervision in the form of wristbands used in house and city prisons in its supervision through a special network.

The basis for the use of electronic detection devices is Law Number 11 of 2021 which has amended Law Number 16 of 2004 concerning the State Prosecutor's Office of the Republic of Indonesia and Prosecutor's Guidelines Number 4 of 2023 concerning Supervision of City Detention and House Arrest at the Investigation and Prosecution Stage as detection kit used by the prosecutor's office is currently in the form of bracelets or other forms connected to the supervisory unit through a special network, either radio, satellite or other technology that transmits a specific location. The installation of electronic detection devices has been carried out to most of the high prosecutor's offices in Indonesia, a total of 14,000 electronic detection devices. Until now, there has been a surplus of electronic detection devices because there are still few cases transferred to house arrest and city detention (Nwokeji et al., 2024).

2. Government Regulation Number 70 of 2020 concerning Procedures for Implementing Chemical Castration, Installing Electronic Detection Devices, Rehabilitation, and Announcement of the Identity of Perpetrators of Sexual Violence against Children

The Government Regulation is a form of strict law enforcement against perpetrators of sexual crimes. The electronic supervision in the form of installing electronic detection devices on perpetrators of sexual violence against children is a new thing in Indonesia, even though it has been regulated in other countries for a long time. Based on the Government Regulation, electronic detection devices are installed after the inmate has out the main crime. This can be interpreted as installing electronic detection devices is in line with the reintegration of prisoners with the community carried out by Community Advisors.



Application of Electronic Supervision for Prisoners in a Country with Civil Law Principles

1. Latvia

In this civil law-guided country, Latvia has started reforming its prison system by introducing electronic surveillance for prisoners. In Latvia, electronic surveillance was first tried in 2015, after which it became an alternative to incarceration as well as helped in the smooth reintegration of inmates. Ankle- or hand-operated wrist bracelets are used in this electronic surveillance. These bracelets connect inmates to the surveillance centre using GPS signals ([Creamer & Simmons, 2019](#)). The aim of installing electronic surveillance in Latvia is to reduce incarceration-related costs by reducing the number of incarcerated individuals and also preventing re-offending ([Maslennikova et al., 2021](#)).

The introduction of electronic supervision in Latvia also encompasses cooperation between the Ministry of Justice, the Correctional Service, and other law enforcement authorities. The system's functioning is based on a sufficiently sizeable legal framework, which regulates in detail organisational actions, procedures for implementation, rights, and duties of prisoners, along with penalties for violations ([Lindberg et al., 2022](#)). However, there have been some challenges to its electronic supervision. These are bad technical implementations of supervision gear, the fact that staff training is sorely lacking in many cases, and it illustrates just how poorly run these facilities were as far back as 2010, when this was written up. Nonetheless, Latvia still strives to reform this system and dedicates itself to that path in the general context of criminal justice reform and a more humane correctional practice ([Fatmawati et al., 2023](#)).

2. Iceland

Iceland, with its civil law legal system, has used electronic supervision for prisoners as a form of detention and part of rehabilitation ([Mancano, 2021](#)). The Supreme Court of Iceland upheld an electronic supervision system introduced in 2011 and has expanded ever since. An electronic supervision program that allows qualifying prisoners to serve their sentences outside of prison is in effect. The purpose of this system is to reduce crowding in prisons, reduce spending on incarceration, and increase the chances of re-entry into society. When Iceland employed it, electronic supervision meant wearing location-aware ankle or wristbands ([Koning et al., 2021](#)). These devices enable law enforcement to track the location of offenders in real time and ensure they stay within specified geofenced.

3. France

Electronic supervision of offenders represents an established practice in France as part of managing and regulating individuals under judicial supervision, such as those detained on probation or parole or subject to non-determinate detention measures. The model enhances supervision, promotes rehabilitation and reduces prison congestion. French legal provisions on electronic supervision, like the

Homeland Security Act 2015 (*Loi relative au renseignement*), form a legislative framework that allows the government of France to conduct intelligence and supervision activities. Electronic communications are interception under a procedure established by the France Code of Criminal Procedure (*Code de procédure pénale*) based on criminal investigations. Data Protection Act 1978 (*Loi informatique et libertés*) Governs how personal data can be gathered, used and stored by including supervision mechanisms. The Act specifies conditions on which electronic supervision may be applied, e.g., at the request of courts or during house arrests (Louis, 2021).

This exciting video produced in France shows how electronic supervision works. These tools enable monitors to track people's real-time location and movement. There are several forms of electronic supervision, mainly for offenders currently on probation, parole, or house arrest. It is administered by the Correctional Administration and other relevant criminal justice agencies, where private companies often manufacture electronic devices and provide supervision services. France Several obstacles must be surmounted to implementing electronic supervision in France, the most important being its high cost and specificity: it is an expensive technology challenging to implement because some installations are necessary by mobile communications networks, from a perspective of data privacy and security purposes. It requires practical oversight efforts to enforce proper use (Louis, 2021).

4. Norway

Electronic supervision is a well-established form of supervision, a supportive measure for rehabilitation work, and a supervision tool for managing individuals in alternative sanctioning settings within the criminal justice system in Norway (Aljinović, 2023). It is consistent with Norway's general approach to restorative justice and humane treatment of offenders. There are various legal bases for implementing electronic supervision in Norway, among others. The Penal Code (*Straffeloven*) is a regulation that governs punishment and some forms of supervision. The Penal Code does not focus on electronic supervision but is the basis for many regulations concerning substitute punishment and various (less restrictive) supervision forms. The enactment prohibiting legal procedure in criminal cases and respecting the execution of punishment, etc. 371 Criminal proceed an administration for keeping control as per these directions is likewise expected by segment seven hundred sixty-four shall involve a fine; or detainment not surpassing six months- Procudere Act (*Straffeprosessloven*) contains provisions about the implementation of sanctions under supervision including electronic supervision within sanction context Electronic supervision Regulation (*Forskrift om elektronisk overvåking*), which regulates the electronic supervision devices in Norway explicitly. This regulation lays down the operational rules for applications and Control of use, such as supervision technology (i.e., GPS wristbands to other instruments of being tail) and protocols for installation and supervision. Suppose

the execution occurs outside the walls of a Norwegian prison. In that case, this is regulated by the Act relating to Execution of Sentences, including possibilities such as parole and house sentences with electronic supervision, etc. The Correctional Service. This Act lays down provisions concerning supervision and Control of prisoners, including when technology for such purposes may be used (Loeffler & Nagin, 2021). In Norway, electronic supervision translates primarily to GPS tracking devices and the use of ankle monitors. These devices enable the authorities to track where criminal offenders are always and their movement, to ensure that they are sticking to conditions such as curfew or ceasing from entering certain zones. It is operated by the Norwegian Correctional Service (*Kriminalomsorgen*) and other agencies of Norway (Andersen et al., 2020).

5. Croatia

Electronic supervision is one element of a criminal justice system through which those under judicial supervision can be electronically monitored as part of probation or house arrest (Hanson & Sigman, 2021). Law on implementing criminal sanctions (*Zakon o izvršenju kaznenih sankcija*, Number 549/1991) provides rules concerning this implementation and introduces electronic supervision and part-serving sentences in the community. Also, Law Number 55/2013 on Execution of Criminal Sanctions (*Zakon o izvršenju kaznenih sankcija*) is an adaptation that specified previous regulations, adding provisions on how to use electronic supervision. Law on Electronic supervision (*Zakon o elektroničkom nadzoru*), Number 125/2011—defines the technical requirements for using this technology, as well as permits supervision of convicts outside correctional institutions using tracking devices and other infosec technologies. The Croatian Criminal Code (*Kazneni zakon*) as well as the Act on Criminal Procedure (*Zakon o kaznenom postupku*) contain several general rules aimed at the conduct of criminal proceedings, including the use of electronic surveillance in the execution of sentences and parole. This legal framework harmonises protecting people's rights and legal compliance of electronic surveillance with the legislation in force in Croatia (Cesarec et al., 2020). In Croatia, electronic surveillance forms part of various systems within the criminal justice system. At the same time, in other cases, it supplements non-custodial measures to prevent people from entering prison for rehabilitation. While causing problems, reforms and advancements continue as they concentrate on the most important areas of the criminal justice system (Adhari et al., 2024).

6. Kosovo

Electronic supervision is an up-and-coming practice in the criminal justice system of Kosovo, aiming to support re-entry initiatives by offering supervision services for offenders under non-custodial sanctions (probation/parole/house arrest). In so doing, it fits in with more comprehensive attempts to modernise the penal estate, reduce prison overcrowding, and assist in reintegrating criminals back into society. The legal foundation regulating electronic supervision in Kosovo comes from

criminal justice, corrections, and sentencing. Article 37 of Law Number 3/L-032 on the Criminal Code of Kosovo provides punitive measures to be served when electronic supervision or other alternative plans are not possible, as they cannot serve justice and protect human rights. Still, for safety respectively, punishment, prevention, and family members, Fukushima's enforcement of cruelty is excessive compared with its benefits, excuse consequences which he did before an act must be aware that was his commitment under this law ([Bačanović & Stanojoska, 2020](#)). Furthermore, the Law on Execution of Criminal Sanctions (Law Number 03/L-191), better known as a part of other relevant laws under the legislation umbrella called the 'Criminal Justice System,' explicitly deals with applied services which include electronic supervision among various non-custodial sanctions such as parole or home detention, etc. Finally, the Law on Probation Service of Kosovo (Law Number 04/L-036) or the regulation on probation service in Kosovo also regulates provisions related to prisoners supervised by electronic supervision done by probation services. The law defines electronic supervision for parolees and persons sentenced to alternative punishment, including system operation matters/implementation guides ([McRae, 2019](#)).

Application of Electronic Supervision for Prisoners in Countries Based on Common Law Principles

1. England

Electronic supervision of prisoners is also a crucial part of the system relating to supervision and vulnerability management, particularly policy regarding individuals released on bail, under probationary release, or serving sentences as community orders or house arrest are supervised. The technology was developed to help provide better direct supervision of offenders while assisting with rehabilitation and reducing recidivism. Many pieces of legislation give a legal basis for electronic supervision in England. However, they can be alternatively found within both the Crime Sentences Act 1997 and the Criminal Justice Act 2003. The law establishes an order permitting electronic supervision to be used as a condition of community justice punishment and bail provisions. Furthermore, regulations and guidelines spell out some operational aspects of electronic supervision: the circumstances in which it may be used, the technologies applied, and the rights of such systems for individuals under observation ([Alfano et al., 2019](#)).

The advantages of electronic supervision are that it can help reduce prison overcrowding and save costs compared to keeping prisoners in brick-and-mortar facilities, but it is challenging. Concentration is also put on the average costs for deploying and maintaining such devices and the reliability of tracking error distributions, which will benefit the airline industry from these technologies. Also, generic privacy concerns related to any artificial device are addressed in this article. There is also debate regarding the extent to which electronic supervision succeeds in reducing recidivism and whether it acts as a viable deterrent compared with regular incarceration ([Creamer & Simmons, 2019](#)). The England government is

considering using biometrics and other advanced supervision technology as part of 'advances in electronic supervision techniques.' The provision is to enhance the functioning of the electronic supervision system.

2. Wales

In Wales, the level of electronic monitoring of offenders is limited to sentence schemes that manage offenders on community orders, those on home detention and those less restrictive in this area. These processes are more focused on improving the supervision of offenders and increasing the chances of rehabilitation whilst addressing the issue of overcrowded in prisons ([Hunter, 2020](#)). The legal framework in Wales is the same as that which applies to all other institutions in the UK that use electronic monitoring devices with statutory authorisation through legislation such as the Crime Sentences Act 1997 and section 49 of The Criminal Justice Act 2003, which allows the use of electronic monitoring through Public Protection Orders or Bail conditions. Both are accompanied by the Terrorism Act of 1939, which provides the legal basis for using electronic tags and tracking devices. In addition, the National Probation Service has submitted documents providing detailed operational instructions for the electronic monitoring of offenders and documents ensuring compliance with the applicable regulations are also held by each probation trust ([Hunter, 2020](#)).

GPS devices or tags placed around offenders' ankles are used in Wales as a mechanism for electronic monitoring. Authorities using electronic monitoring devices monitor offenders even loosely in real time to check whether they are complying with the terms of a curfew or geographical restriction imposed by the Court which has the technology managed by the private sector with the probation service ([Vivoda et al., 2019](#)).

Application of Electrostatic Supervision for Prisoners in Mixed Principle Countries

1. Thailand

The electronic supervision of prisoners in Thailand is guided by a broader perspective intended to complement management efforts, ensuring the security and safety of society and, at the same time, consistent with justice norms based on rehabilitation. Thailand's criminal justice system incorporates various technologies to monitor offenders, particularly those sentenced to serve on probation and under home confinement. In Thailand, electronic supervision is regulated by multiple laws and guidelines that balance security issues and prisoners' rights. This includes provisions under the Criminal Procedure Code (CPC) and other laws that are, however, fragmented in nature (*พระราชบัญญัติวิธีการดำเนินคดีอาญา*) which sets out rules of procedure governing criminal cases but also provides for probation/parole supervision to be subject to certain conditions including electronic supervision as a method of supervision Prison Act (*พระราชบัญญัติเรือนจำ*) — Management of the

facilities and supervision on prisoners in prison. These provisions may also cover details about supervision technology outside prisons ([Sommano et al., 2022](#))

That Royal Decree on the Implementation of Electronic Supervision Measures (*พระราชกฤษฎีกาให้ลงโทษการเฝ้าระวังอิเล็กทรอนิกส์*), This rule regulates explicitly the application and operation of electronic supervision technology on prisoners. Proudly announce one of the most comprehensive privacy protections for supervision devices, including GPS technologies used in parole and house arrest by prisoners not housed within a prison facility ([Talamayan, 2020](#)). Penal Code (*พระราชบัญญัติอาญา*). While it is more about penal provisions, Penal Code sets the legal foundation for different types of punishment and supervision that can eventually include using various supervision technologies as a substitution or addition to detention. Act on the Use of Electronic Devices The regulation represents Thailand's legal foundation for e-supervision systems. It guarantees that the supervision system will operate under laws and human rights principles.

Electronic supervision means prisoners wear GPS ankle bracelets or other tracking devices, sending their current position to the central supervision center ([Gacek, 2018](#)). It will be the responsibility of the Thai government to conduct regular reviews of these technologies and determine whether they fulfil their needs relating to security, lawfulness, and respect for human rights ([Rodiyah et al., 2023](#)).

The Urgency of the Implementation of Electronic Supervision in Indonesia

According to Anis Widyawati et al, current supervision mechanisms are afflicted with several issues, such as competition of jurisdiction between internal and external oversight agencies, absence of enforcement capacity to deal with violations that have been found, and a lack of adequate resources for routine supervision. In Central Java, for example, only 12 supervisory staff are assigned to monitor 38 correctional facilities, leaving close electronic supervision unattainable ([Widyawati, et al, 2025](#)). This not only demonstrates the scarcity of supervisory resources but also reflects the structural weakness of Indonesia's correctional administration in adapting to technology-based solutions. Without significant institutional strengthening, implementing electronic monitoring would risk becoming merely symbolic rather than functional. Criminal supervision is coaching outside the institution or prison ([Utari & Arifin, 2020](#)). This type is like conditional punishment, or commonly called probation, in Article 14A and 14C Law Number 1 of 1946 concerning the Criminal Code (*Wetboek van Strafrecht*). The application of the supervision penalty mandates the convict's fulfilment of general and/or special requirements. The general requirement involves the conviction of the convict not to commit a crime again—a commitment to behaviour change and the prevention of recidivism. On the other hand, special conditions are more restorative and rehabilitative ([Faisal et al., 2024](#)). The convict must compensate all or part of the losses incurred because of the crime and/or do or not do something, while still paying attention to freedom of religion, belief, and politics. This is regulated in



Article 76 paragraphs (2) and (3) of Law Number 1 of 2023 concerning the Criminal Code (KUHP). Supervision of crimes provides an opportunity for convicts to improve themselves without imprisonment. Again, this type of crime aligns with the concept of the modern penal paradigm to realise corrective, restorative and rehabilitative justice ([Adiyaryani & Sudiarawan, 2021](#)). Nevertheless, Indonesia's probationary system has long been underdeveloped, meaning that introducing electronic monitoring would require a simultaneous overhaul of institutional capacity, legal clarity, and community engagement.

Article 76, paragraph (7) of the Criminal Code states that Government Regulations regulate further provisions on procedures and limits for reducing the supervision period. The preparation of the Government Regulation should pay attention to other laws and regulations that place the Prosecutor as the executor of court decisions in criminal cases. Article 270 of the Criminal Code and Article 54 of Law Number 48 of 2009 concerning Judicial Power affirms that the Prosecutor carries out the implementation of criminal court decisions. Furthermore, Article 30 paragraph (1) letter c of Law Number 11 of 2021, in conjunction with Law Number 16 of 2004 concerning the Prosecutor's Office of the Republic of Indonesia, emphasises that the Prosecutor's Office has the duty and authority to supervise the implementation of conditional criminal judgments, supervisory criminal judgments, and conditional release decisions ([Sonatra et al., 2019](#)). This overlapping authority may create institutional tensions, and without a clear framework, electronic monitoring could be hindered by bureaucratic disputes over enforcement responsibilities.

Therefore, in the future, the expansion of criminal supervision procedures can be in the form of electronic supervision. This electronic supervision aims to increase the effectiveness of supervision of prisoners serving sentences outside correctional institutions. This system allows officers to monitor the movement and activities of prisoners in real-time through electronic devices attached to the inmate's body, such as bracelets or other supervision devices ([Imandeka et al., 2024](#)). Nevertheless, implementing this electronic observance cannot ignore human rights and must adhere to established procedures. Establishing electronic supervision for prisoners will help reduce congestion in correctional institutions and aid the reintegration process into society, which is attached to other supports. Nevertheless, electronic supervision continues to be human rights-oriented and is implemented by considering various factors such as the type of offence, sentence length, and an individual risk assessment ([Snacken et al., 2022](#)). In the Indonesian setting, however, human rights concerns are amplified by the risks of data misuse, weak privacy protections, and the public stigmatization of offenders, which may undermine the rehabilitative objectives of the system.

The advancement of technology and demands to modernise its law enforcement system make electronic supervision in Indonesia more critical. Electronic

supervision systems are wristbands and ankle bracelets or GPS-based devices where authorities can check, once in a while, the movements of an individual who is under legal supervision, house arrest, parole (either after conviction), release from prison, or probation ([Wahyono & Narmaditya, 2022](#)). This will be more humane than physical detention in saturated correctional institutions. By using this technology, the government can ease the demand in prison systems and lower operating costs while preserving human rights, which has significant implications for social rehabilitation. While electronic supervision can also be enhanced to improve the efficacy and efficiency of electronically supervised probation, leveraging automated tracking reduces the need for in-person check-ins to a point that Voith believes supervision will increase both in volume and quality since offenders can be more closely watched on an ongoing basis. This technology also enables more measurable law enforcement, and all violations can be easily captured on video without major physical interventions ([Dolovich, 2021](#)). Yet, the Indonesian government must ensure that investment in such technologies is not concentrated only in urban centers, otherwise disparities in correctional justice between Java and outer islands will widen further.

Even though multi-country comparative research offers valuable insights, more focus should be directed to the specific legal, social, and infrastructural challenges posed by implementing electronic monitoring in Indonesia. For example, the ongoing criminal law reforms introduce progressive supervisory options but remain silent on the allocation of funding and responsibility for electronic monitoring, leaving practical gaps in implementation. Socially, electronic monitoring devices may exacerbate the stigma of offenders, particularly in tight-knit rural communities where surveillance is more visible. Infrastructurally, unreliable electricity and patchy internet networks, especially in eastern Indonesia, pose significant barriers to consistent GPS-based monitoring. Indonesian criminal law formally recognises the right to rehabilitation for prisoners. However, the implementation of this principle in practice remains woefully inadequate. Supervision of prisoners on parole remains inconsistent, the material conditions of prisons do not meet accepted international standards, and maintenance of physical infrastructure continues to be neglected. ([Widyawati, et al., 2025:440](#)). In contrast, social problems involve the negative labelling of offenders and privacy issues. Regarding infrastructure, the lags in telecommunications in certain parts of the country and the irregular supply of electricity in other parts of the country must be resolved before the electronic monitoring systems can be utilized in Indonesia as a whole. Empirical evidence from pilot projects in Central Java suggests that the system cannot function effectively without local government support and sustainable budget allocation. Another urgency concerns more transparent and accountable law enforcement ([Adiyaryani & Sudiarawan, 2021](#)). Electronic supervision allows for a transparent and auditable track record of activity, which can be strong evidence in legal proceedings if needed. The system can also increase a sense of security for the community, ensuring that



individuals who pose a potential danger remain under close supervision even if they are not behind bars ([Mansoor, 2020](#)).

Conclusion

Adopting an electronic supervision framework for offenders in Indonesia poses prospects for substantial transformation in the criminal justice system, with positive outcomes that surpass issues encountered. Drawing from the adaptation of the overseas electronic supervision practices, this system has the potential to address the issue of prison overcrowding and enhance the efficacy of the supervision of the criminal execution dramatically. Indonesian policymakers should formulate regional model pilot projects in highly populated regions for model practice evaluation and undertake essential changes to the legal framework of the Criminal Code for electronically monitored supervision to be defined as an alternative sanction. Through these systems, Indonesia will relieve the pressure on the correctional facilities, enhance the supervision of inmates under probation, and facilitate social reintegration. Moreover, successful implementation will also require investment in the infrastructure of the monitoring centers as well as staff development programs. Indicate areas where further research is needed, such as empirical studies on the long-term effects of electronic monitoring in similar contexts or its social and ethical impacts in Indonesia. Therefore, to achieve constructive transformations in the criminal justice system, it is crucial for the Indonesian government and involved partners to embrace the use of electronic supervision as a leap towards a more advanced and modern system approach to the enactment of the Execution of Criminal Sanctions in Indonesia, especially regarding penitentiary laws

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Declarations

Author contribution : The research conceptualization, research instrument design, relevant data collection, analysis, and initial draft of the manuscript were conducted by the first author. The second author does the concept, literature, and final draft of the manuscript, including presentation and data analysis. The third author should ensure the application of the research problem and research methods, interpretation of results, and editing of the manuscript. The fourth author provides technical skills and ensures data integrity, quality control, and final draft of the manuscript.

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