

PLANNED OBSOLESCENCE IN WEARABLE HEALTH DEVICES: LEGAL GAPS AND SUSTAINABLE DEVELOPMENT IN INDIA

AYAN BANERJEE^{1*}

Wearable health devices such as fitness trackers and smartwatches are generally helpful in the promotion of preventive healthcare in India. However, these devices are affected by planned obsolescence, which reduces the lifespan of the devices to 2 to 3 years even though the technical potential is 3 to 5 years. This narrative review explores India's legal provisions on addressing obsolescence of wearable health devices. The study based on 38 peer-reviewed articles, government documents, and legal sources has identified significant gaps in the regulation of the issue. India does not have any specific law that prohibits planned obsolescence or provides a statutory right to repair. The Consumer Protection Act 2019 is not enforced as no cases have been brought to court. Patent and trademark laws hinder repair work by limiting software access and making it difficult for third-party services. These practices are inconsistent with India's SDG commitments as they result in the maximum generation of waste, the increase of emissions from the manufacturing process, and the creation of barriers to health equity for the lower-income groups. It is imperative to have a complete overhaul of the legal system that would feature among other things, enforceable Right to Repair laws, compulsory disclosures, repairability standards, copyright exceptions, and stronger Extended Producer Responsibility provisions to promote healthcare ecosystems that are sustainable and equitable.

Introduction

Health monitoring gadgets like fitness trackers and smartwatches have become widely popular among India's urban population, raising the country's profile in preventive healthcare, which is in alignment with SDG 3¹. These devices, by permitting round-the-clock health monitoring, activity tracking, and chronic disease management, pave the way for the decentralization of preventive care. Nevertheless, the promise of such devices is dampened due to issues of device lifespan, price, and user engagement which in turn affect the rate of device adoption significantly². The problem of device obsolescence, which is mainly characterized by features of unsupported software, batteries with a limited number of charge cycles, and design aspects that limit the

reparability of the device, lies at the core of the issues surrounding these devices³. These manufacturer-oriented tactics serve to decrease the lifespan of a device to 2-3 years artificially, even though technically, it is possible for the device to function for 3-5 years⁴. Planned obsolescence is in opposition to the concept of circular economy since it works by intentionally reducing the lifespan of products and in this way, encouraging their early replacement, thus, going against the Sustainable Development Goals of India⁵. These operations are at odds with SDG 12.5 as they lead to the maximization of waste generation rather than the achievement of reduction targets, hinder SDG 13.2 by increasing the emission of manufacturing as a result of the accelerated replacement cycles, and contravene SDG 9.4 by not allowing the upgrade of the products and, thus, forcing complete product replacements which are less resource-efficient⁶. The regulation system in India is at the point of crisis. There is no particular legislation that would give consumers the right to repair in the technology

* Assistant Professor, Hospital Management Department, Brainware University, Kolkata, India
e-mail: ayanbanerjee764@gmail.com

sector in the country, and the existing consumer protection measures have not led to any enforcement actions against practices that lead to obsolescence⁷. The envisioned Right to Repair scheme by which the manufacturers were to share the repair-related resources with the consumers is the only thing that the current portal does provide: it gives information but without any legal requirements or penalties.

In an attempt to prevent repairs, manufacturers, under the cover of copyright and trademark laws, accuse the repair activities of being violations hence they obstruct them. By not fixing this legal loophole, which allows for planned obsolescence in the wearable sector, the manufacturers infringe on the consumers' rights, contravene environmental sustainability, and health equity. There is no research that addresses the issue of planned obsolescence in wearable health devices under India's legal framework, thus by far, the most pressing issue that needs policy intervention.

Objectives of the Study

1. To review and analyze Indian laws in force, regarding issues of planned obsolescence in consumer electronics.
2. To find loopholes in regulations which facilitate the implementation of the strategy of obsolescence by the manufacturers.
3. To measure the inconsistencies between the implementation of the obsolescence and India's Sustainable Development Goals (SDG) commitments.
4. To draft detailed legislative and policy suggestions conducive to the sustainable development of a wearable device ecosystem.

Methodology

This narrative review brings together the legal, environmental, and technological aspects of planned obsolescence in India's wearable health device market. Narrative reviews are suitable for newly emerging interdisciplinary topics that need a thorough integration of several domains. The literature searches were carried out on PubMed, Scopus, Google Scholar, Indian legal repositories, and the legal information websites (2017-2025) using the following keywords: "planned obsolescence," "wearable health devices," "right to repair India," "consumer protection electronics," "circular economy," and "e-waste management." The initial search resulted in 163 sources. After title and abstract screening, 94 sources were

kept. Full-text assessment of 38 sources selected for meeting the inclusion criteria: peer-reviewed studies, legal analysis articles, government policy documents (Nidhi Khare Committee Report 2022, E-Waste Management Rules 2016), and legal information portals dealing with product obsolescence, Indian consumer protection legislation, e-waste policies, and SDG implementation. The analysis integrated the results from four domains related to the study objectives.

Results and Discussion

Firstly, India does not have any laws that specifically prohibit planned obsolescence or give the right to repair by statute in the technology sector. In connection with this, the Consumer Protection Act 2019, which defines under its Section 2(47) unfair trade practice, remains a paper tiger as it has not been implemented at all, and no court cases are reported to have been instituted in this regard. The act further describes defects very narrowly in Section 2(10) and talks only about the quality of goods at the time of sale, leaving post-sale obsolescence through software discontinuation or spare parts unaccounted for. Besides, the Right to Repair framework by the Nidhi Khare Committee is simply there as non-binding directions without any statutory support, whereas the portal 2022 is meant for disseminating information rather than implementing legal requirements or issuing sanctions. Copyright and trademark laws are main barriers to repairs. The Copyright Act 1957 bans software changes, as the Trademark Act 1999 is used by manufacturers for filing complaints against third-party services. Given the frail regulatory setting, manufacturers resort to three obsolescence tactics to shield themselves. Functional obsolescence occurs when software support for a certain version is stopped making the devices unable to be connect to each other although the hardware is still working. Quality obsolescence is when the batteries are non-replaceable, and the product has some kind of proprietary fasteners. Desirability obsolescence employs marketing strategies to convince consumers that their functional devices are outdated so that they will purchase new ones. These methods cause environmental damage since waste production is accelerated resulting in the mixing of heavy metals, rare earth elements, and persistent organic pollutants with the e-waste. India's E-Waste Management Rules 2016 stipulate Extended Producer Responsibility, but the main focus of the measures is on the collection of materials at the end of their lifecycle, rather than on designing products that do not generate waste. Consequently, these malpractices are deliberately doing

away with India's SDG commitments. For instance, SDG 12.5 is geared towards significantly cutting down on the amount of waste generated by virtue of prevention and recycling by the year 2030, yet obsolescence is maximizing waste because gadgets respites are 2 to 3 years while they can last technically for 3 to 5 years. Climate action is expected to be integrated into policies according to SDG 13.2, however, the faster replacement cycles lead to an increase in emissions from manufacturing, resulting from the energy-consuming rare-earth mining and production. According to SDG 9.4, it is necessary for the infrastructure to be more sustainable and resource-efficient, but due to design flaws that cause obsolescence, consumers cannot upgrade their devices and are forced to replace them in full. Income is the factor that decides the purchase of a wearable device. Those who belong to lower-income groups are compelled to stop the use of health tracking due to the frequent replacement costs. As a result, they are left out of the preventive care that they need the most.

Recommendations

India needs to implement far-reaching legal changes if it wants to effectively control planned obsolescence in the case of wearable health devices. It would be best if a law directly compelled a manufacturer to supply a repair manual, spare parts, and diagnostic tools for a reasonably long time after the sale, just like European rules require that spare parts should be available for up to ten years with penalties that can be enforced¹⁰. It would be a good idea if there was a planned obsolescence ban in the Consumer Protection Act, which would automatically treat the manufacturer as the one responsible when products fail within the given timeframe due to non-replaceable components or discontinued software⁵. It would be better if copyright laws allowed us to repair and access the software without violating them, as they currently act as a barrier to repair because of granting exclusive rights to repair manuals and issuing technological protection measures for controlling embedded software¹⁷. The software in a wearable device should be regularly updated for at least a specified minimum period such as five years, and a warranty should be extended if support is withdrawn earlier¹⁸. There should be a ban on the devices that come with batteries that cannot be replaced, and e-waste regulations should determine Extended Producer Responsibility fees based on repairability indices¹⁹. The government procurement agencies shall set the criteria for green purchasing if they require devices to meet at least certain repairability score. Open health data standards

should become national norms while, at the same time, efforts toward consumer education and repair technician training should be intensified.

Conclusion

Deliberately limited lifespan of wearable health devices impairs lifestyle in India and causes a multitude of serious problems - legal, environmental, and health equity ones, which demand government intervention without delay. Present laws are not enforced, and intellectual property rules serve as a barrier to manufacturer control over repairs. These loopholes contribute to the occurrence of India SDG commitments violations and, consequently, the most vulnerable groups of people, who happen to be in the greatest need of continuous health monitoring, suffer the most. It is vital to overhaul the legal system thoroughly, amongst other things, by introducing enforceable Right to Repair laws, compulsory product disclosures, repairability standards, copyright exceptions for repairs, and more stringent Extended Producer Responsibility rules. India must convert voluntary frameworks into binding laws with proper enforcement mechanisms to create sustainable and equitable ecosystems aligned with public health and environmental goals. □

References

1. Z. Qadrie, H. Ashraf, M. Maqbool, and S. Farooq, *Smart Wearable Technology* 2025, (2025). doi:10.47852/bonviewSWT52025578.
2. V. A. Adepoju, S. Jamil, M. S. Biswas, and A. A. Chowdhury, *Chronic Dis. Transl. Med.*, **11**, 117 (2024). doi:10.1002/cdt3.156.
3. L. Sierra-Fontalvo, A. Gonzalez-Quiroga, and J. A. Mesa, *Heliyon* **9**, e21856 (2023). doi:10.1016/j.heliyon.2023.e21856.
4. M. Cordella, F. Alfieri, C. Clemm, and A. Berwald, *J. Clean. Prod.* **286**, 125388 (2020). doi:10.1016/j.jclepro.2020.125388.
5. J. Malinauskaite and F. B. Erdem, *Oxf. J. Leg. Stud.*, **41**, 719 (2021). doi:10.1093/ojls/gqaa061.
6. C. G. Júnior, J. S. Saraiva, and L. L. Aylon, *Beijing Law Rev.*, **15**, 1430 (2024). doi:10.4236/blr.2024.153084.
7. Scrollwell and R. Kumar, in *2-Day Capacity Building Programme on AI Applications in Academics and Research*, Japture (2025).
8. D. Zongwe, M. GS, and M. R., *Int. J. Consumer Law Pract.*, **11**, Article 6 (2023). Available at: repository.nls.ac.in/ijclp/vol11/iss1/6.
9. *GNLU J. Law Econ.*, "Assessing a Cross-Legislational Framework to Address Exploitative-Planned Obsolescence in India" (2023). Available at: gjle.in/2023/08/09/assessing-a-cross-legislational-framework-to-address-exploitative-planned-obsolescence-in-india/.

10. T. Subramanya and N. Saroj, *Int. J. Consumer Law Pract.* 11, Article 9 (2023). Available at: repository.nls.ac.in/ijclp/vol11/iss1/9.
11. G. K. Chaudhary, *Trademark – India* (2024). Available at: mondaq.com/india/trademark/1485206/the-conundrum-of-intellectual-property-rights-and-right-to-repair.
12. M. Zallio and D. Berry, *Des. J.*, **20**, S3749 (2017). doi:10.1080/14606925.2017.1352879.
13. O. A. Alabi, Y. M. Adeoluwa, X. Huo, X. Xu, and A. A. Bakare, *J. Environ. Health Sci. Eng.*, **19**, 1209 (2021). doi:10.1007/s40201-021-00654-5.
14. A. Borthakur, *Environ. Sci. Pollut. Res.*, **30**, 8672 (2022). doi:10.1007/s11356-022-18836-5.
15. M. Bengtsson, E. Alfredsson, M. Cohen, S. Lorek, and P. Schroeder, *Sustain. Sci.*, **13**, 1533 (2018). doi:10.1007/s11625-018-0582-1.
16. R. Chandrasekaran, P. Sharma, and E. Moustakas, *Rev. Cardiovasc. Med.* 24, Article 307 (2023). doi:10.31083/j.rcm2411307.
17. A. D. Rosborough, L. Wiseman, and T. Pihlajarinne, *J. Intellect. Prop. Law Pract.*, **18**, 344 (2023). doi:10.1093/jiplp/jpad034.
18. A. Maurushat and K. Nguyen, *Int. Cybersecur. Law Rev.*, **3**, 437 (2022). doi:10.1365/s43439-022-00059-6.
19. P. S. Karagiannopoulos, N. M. Manousakis, and C. S. Psomopoulos, *Environ. Sci. Pollut. Res.*, **31**, 17546 (2023). doi:10.1007/s11356-022-25077-z.