

Bicycle theft and the Energy Performance of Buildings Directive

ECF Analysis
June 2023



ECF gratefully acknowledges financial support from the LIFE Programme of the European Union



Cycling Industries Europe

ECF gratefully acknowledges financial support from the cycling industry via Cycling Industries Europe



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Executive Summary

The lack of safe and accessible bicycle parking is one of the main barriers to regular cycling, the most-energy efficient of all transport modes. The European Cyclists' Federation (ECF) therefore strongly welcomes the position of all three institutions with respect to bicycle parking in residential and non-residential buildings as part of the recast of the Energy Performance of Buildings Directive (EPBD). If implemented, it would require new and renovated residential buildings over a certain size to have two bike parking spaces per dwelling, and non-residential buildings over a certain size to offer sufficient bike parking for 15% of total (or average) user capacity. The position of the three EU institutions aligns closely with our original recommendations for bicycle parking in the EPBD¹.

The Energy Performance of Buildings directive is an important piece of legislation that will promote the use of sustainable modes of transport.² It has the potential to reduce the energy required needed to build parking infrastructure in buildings, as it would set limits on car parking requirements and instead require more bicycle parking. Bicycle owning occupants not only use less energy in their transport use, but also use less energy in total. The availability of secure bicycle parking in buildings is a crucial way to encourage more people to cycle, knowing that they can safely store their bicycles when not in use.

Bicycle theft is a major issue that affects millions of Europeans. Our research shows that up to 1.3 million bicycles are stolen each year; for comparison, around 20 million bicycles are sold each year

¹ Original arguments for inclusion of bicycle parking and analysis of the current directive and its implementation can be seen here <https://www.ecf.com/what-we-do/making-buildings-fit-cycling>

² For more information on the EPBD and ECF work on it please visit: <https://www.ecf.com/what-we-do/making-buildings-fit-cycling>

across the Europe. Bicycle theft discourages cyclists and acts as a barrier to the uptake of cycling. By requiring bicycle parking in European buildings, the EU will be promoting the use of the bicycle, reducing energy emissions within the transport system and reducing energy use in buildings.

Bicycle theft in the EU-27

According to official police statistics there are around **1.3 million bicycles** reported as stolen annually in the EU-27 (see Annex I for data sources). These statistics are likely to significantly underestimate the number of bicycles that are actually stolen, as there are several limitations to the data.

First, police data on the share of bicycle theft in official theft statistics is not always publicly available in every member state. We were not able to obtain reliable police for more than half of the member states. For the sake of consistency, this research uses police data obtained from government sources wherever available, only falling back on media articles or other internet reporting sites if other sources if none is available.

Second, not every incident of theft is reported. In the Netherlands, for example, only 77,580 bicycles were reported as stolen to the police many reported in official statistics.³ This is unsurprising as it also emerges from the limited data available that the vast majority of bicycle theft cases remain unresolved, which is frequently cited by victims as a reason not to report theft.⁴ In the Netherlands, authorities were only successful in resolving 2.7% of theft cases in 2022, but even in the countries that resolved more, the figure does not exceed 35%. The high unlikelihood of resolving cases of bicycle theft after the fact makes their prevention even more important.

We conducted research on bike theft for the years 2020 to 2022 to limit issues with data availability or preliminary data. Nevertheless, the gaps in availability could not be closed completely as some countries do not collect and/or provide separate statistics on bicycle theft. In some countries, the figures for the most recent year were still preliminary. There might also be issues with comparability of the figures. Finally, the numbers of thefts reported do not contain further information about prosecutions of bicycle theft.

Nevertheless, the numbers gathered are official figures and most certainly underestimate the challenge that the EU has with bicycle theft. Considering the estimate for the Netherlands alone, the actual figure of bicycles that are stolen every year is likely to be magnitudes larger.

Bicycle theft, bicycle parking and modal choice

Because of the prevalence of bicycle theft as laid out above, the importance of secure bicycle parking for cyclists cannot be overstated. A 2015 study from Montreal showed that half of all bicycles stolen are from 'fly-parking' locations (i.e., bicycles parked at locations not intended for it,

³ Eshuis, Nina. "Diefstal van fietsen met 735 duizend per jaar veel hoger dan gedacht: vooral goedkope fietsen gestolen." de Volkskrant, October 3, 2022, sec. Topverhalen vandaag. <https://www.volkskrant.nl/nieuws-achtergrond/diefstal-van-fietsen-met-735-duizend-per-jaar-veel-hoger-dan-gedacht-vooral-goedkope-fietsen-gestolen~b54cde3c/>

⁴ Kuppens, Jos, Joey Wolsink, Joey Van Esseveldt, and Henk Ferwerda. "Fietsdiefstal in Nederland." Bekereeks, 2020.

such as lampposts and fences).⁵ Recent industry research conducted by Cycling Industries Europe (CIE) shows that 40% of victims of theft had a bicycle stolen from a residential location,⁶ but only 3% of people surveyed in the Netherlands indicated that a bicycle was stolen from a garage or shed,⁷ illustrating the importance of secure bicycle parking. A Belgian study on bicycle theft also found that bicycles were more likely to be stolen if they were parked in public.⁸ Those who park their bicycles in private spaces often report that their bicycle was not locked to a fixed point (21%) at the incident of theft.⁹ A likely explanation for this is that they were simply unable to do so due to lack of convenient infrastructure. It is therefore particularly important that cycle parking requirements in the EPBD take this into consideration by ensuring that there is ample space for bicycles to be locked to a secure point at their parking spot and setting the right standards for bicycle parking infrastructure in the implementation of the EPBD.

Another factor that should not be disregarded is the psychological importance of the perceived security of indoor bicycle parking for the cyclist, as well as other benefits, such as less damage to bicycles due to weather.¹⁰ Three quarters of people surveyed in the Netherlands indicated that when available, they park their bicycles indoors with the motive of preventing theft.¹¹

This issue will continue to grow in importance, as cargo bikes and e-bikes become more popular and widespread, and the value and corresponding cost of replacing them increase as a result. E-bikes had already accounted for 17% of stolen bicycles in a 2020 survey from the Netherlands¹² and 23% of stolen bicycles in a recent survey from France.¹³ The surge in e-bike use is very positive for the growth of cycling, as it makes cycling more inclusive and increases the for cycling to replace car trips, which is why it is important to eliminate barriers to their use. A recent study shows that theft security and weather protection is even more important for people with high-value bicycles.¹⁴ A report from the University of British Columbia demonstrates that lack of safe storage at home and resulting fear of theft are a barrier for people to consider e-bikes as their mode of transportation to university.¹⁵

A survey examining obstacles for the use of “specialty bicycles”, i.e., tricycles or bicycles with trailers, found that adequate parking is a common issue more generally. As regards parking at

⁵ Van Lierop, Dea, Michael Grimsrud, and Ahmed El-Genedy. “Breaking into Bicycle Theft: Insights from Montreal, Canada.” *International Journal of Sustainable Transportation* 9, no. 7 (October 3, 2015): 490–501. <https://doi.org/10.1080/15568318.2013.811332>

⁶ CIE, “CIE 8 market Consumer Research 2023” <https://cyclingindustries.com/news/details/public-release-of-cies-bridging-the-gap-research-project-into-bicycle-sector-supply-chains>

⁷ Kuppens et al., “Fietsdiefstal in Nederland,” 76. https://bureaubeke.nl/wp-content/uploads/2020/08/Download_Bekereeks_Fietsdiefstal-in-Nederland_20aug.pdf

⁸ Guillaume, Michele, and Isabel Verwee. “Fietsdiefstal als probleem in België.” Brussel: Vias institute, 2022.

⁹ ADMA. “Le vol de vélos en France,” mai 2023. <https://www.mobilites-actives.fr/etudes-techniques/8>

¹⁰ Kohlrantz, David, and Tobias Kuhnimhof. “A Joint Model of Cyclist Choice of Bicycle Parking Facilities.” EasyChair, June 23, 2023. <https://easychair.org/publications/preprint/q7W2>

¹¹ Kuppens et al., “Fietsdiefstal in Nederland,” 76. https://bureaubeke.nl/wp-content/uploads/2020/08/Download_Bekereeks_Fietsdiefstal-in-Nederland_20aug.pdf

¹² Ibid.

¹³ ADMA. “Le vol de vélos en France,” mai 2023. <https://www.mobilites-actives.fr/etudes-techniques/8>

¹⁴ Kohlrantz, David, and Tobias Kuhnimhof. “A Joint Model of Cyclist Choice of Bicycle Parking Facilities.” EasyChair, June 23, 2023. <https://easychair.org/publications/preprint/q7W2>

¹⁵ Chen, Peng, Qian Liu, and Feiyang Sun. “Bicycle Parking Security and Built Environments.” *Transportation Research Part D: Transport and Environment* 62 (July 2018): 169–78. <https://doi.org/10.1016/j.trd.2018.02.020>

home, being able to park securely and conveniently at home correlates with ownership of specialty bicycles. Although the study did not specifically examine the reasons for, or barriers to, the purchase of a specialty bicycle, the authors speculate that those who already have access to secure and convenient parking facilities are more likely to buy one.¹⁶

A 2007 study of university students found a positive association between high safety from theft and regular cycling.¹⁷ In a French survey conducted by FUB and ADMA, 11% of victims report stopping cycling following theft and 23% a reduction in cycling. This points toward a negative effect of bicycle thefts on willingness to cycle for a third of victims. Similarly, industry research by CIE also found that 13% of respondents gave up cycling after theft and estimates that when extrapolating for the entirety of Europe, theft could lead to a million people giving up cycling.¹⁸

According to the Académie Des Mobilités Actives thirty-nine percent of victims of bicycle theft did not buy another bicycle following theft, and of those who did buy another bicycle, about a third of victims bought a bicycle that was lesser in value than the one that had been stolen, highlighting the impact on the European bicycle industry.¹⁹ These findings are mirrored in the responses to the Dutch survey from 2020. The Dutch survey also sheds light on the emotional impact: People are emotionally attached to their bicycles and perceive it as highly annoying to have their bicycles stolen.²⁰ These factors deter people from cycling after an incident of theft.

A 2018 systematic review of scientific literature on parking behavior, parking preferences, and their influence on cycling and travel behavior found that even in the limited literature on residential locations, the availability of bicycle parking was still found to be a factor influencing mode choice. For public transport hubs and educational and professional buildings, there is strong evidence to that effect.²¹ As bicycles spend much of the time parked in residential locations, it seems highly likely that this would apply equally or even more so to residential buildings.

A number of studies have shown that the fear of bicycle theft plays a role in people's preference for bike sharing or leasing solutions over riding private bicycles.²² A Spanish study from Valencia, where significant gains in cycling mode share have been realised in recent years, also identified a lack of parking facilities and theft as the main obstacles inhibiting a switch from shared bicycles to

¹⁶ Gaffga, Gregor, and Carmen Hagemeister. "Space for Tricycles and Bike Trailers: Necessary Provisions." *Proceedings of the Institution of Civil Engineers - Engineering Sustainability* 169, no. 2 (April 1, 2016): 67–75. <https://doi.org/10.1680/ensu.14.00062>.

¹⁷ Titze, Sylvia, Willibald J. Stronegger, Susanne Janschitz, and Pekka Oja. "Environmental, Social, and Personal Correlates of Cycling for Transportation in a Student Population." *Journal of Physical Activity and Health* 4, no. 1 (January 2007): 66–79. <https://doi.org/10.1123/jpah.4.1.66>

¹⁸ CIE, "CIE 8 market Consumer Research 2023".

¹⁹ ADMA. "Le vol de vélos en France," mai 2023. <https://www.mobilites-actives.fr/etudes-techniques/8>

²⁰ Kuppens et al., "Fietsdiefstal in Nederland," 76. https://bureaubeke.nl/wp-content/uploads/2020/08/Download_Bekereeks_Fietsdiefstal-in-Nederland_20aug.pdf

²¹ Heinen, Eva, and Ralph Buehler. "Bicycle Parking: A Systematic Review of Scientific Literature on Parking Behaviour, Parking Preferences, and Their Influence on Cycling and Travel Behaviour." *Transport Reviews* 39, no. 5 (September 3, 2019): 630–56. <https://doi.org/10.1080/01441647.2019.1590477>

²² Ji, Yanjie, Yingling Fan, Alireza Ermagun, Xuening Cao, Wei Wang, and Kirti Das. "Public Bicycle as a Feeder Mode to Rail Transit in China: The Role of Gender, Age, Income, Trip Purpose, and Bicycle Theft Experience." *International Journal of Sustainable Transportation* 11, no. 4 (April 21, 2017): 308–17. <https://doi.org/10.1080/15568318.2016.1253802>

private ones.²³ Although the outcome is still desirable as these people are choosing the bicycle as their mode of transport, it indicates that the potential of theft plays a role in modal choice and use of private bicycles would likely increase if there were less fear of theft.

Conclusion

In summary, despite some problematic access to good data from some countries, and issue of under-reporting, the available evidence points towards a link between (the perceived) security of bicycle parking facilities and individuals' readiness to cycle, with people often stating that fear of theft plays a role in whether they consider a certain mode of transportation. A person's previous experience with bicycle theft almost certainly negatively impacts their readiness to cycle and their bicycle purchasing patterns. Having ambitious and progressive bicycle parking requirements in the EPBD could have a major impact on the use and uptake of active transport across the EU.

²³ Castillo-Manzano, José I., Mercedes Castro-Nuño, and Lourdes López-Valpuesta. "Analyzing the Transition from a Public Bicycle System to Bicycle Ownership: A Complex Relationship." *Transportation Research Part D: Transport and Environment* 38 (July 2015): 15–26. <https://doi.org/10.1016/j.trd.2015.04.004>

Annex I: Bicycle thefts reported in the EU-27, 2020-22

Country	Population	Thefts reported 2022	Thefts reported 2021	Thefts reported 2020	thefts per 100.000 2020	% resolved in 2022
Austria	8,978,929	16,824	17,595	18,080 ^{b)}	201	9.0%
Belgium	11,617,623	22,050 ^{c)}	26,748	24,711	213	-
Bulgaria	6,838,937	-	-	-	-	-
Croatia	3,862,305	835	848	1,093	28	34.4%
Cyprus	904,705	-	-	-	-	-
Czechia	10,516,707	4,820	4,799	5,258	50	25.1%
Denmark	5,873,420	46,105	37,373	40,613	691	-
Estonia	1,331,796	-	-	-	-	-
Finland	5,548,241	20,000 ^{b)}	20,000 ^{b)}	20,000 ^{b)}	360	-
France	67,871,925	456,000 ^{a)}	456,000 ^{a)}	456,000 ^{a)}	672	-
Germany	83,237,124	265,562	233,584	260,956	314	9.3%
Greece	10,459,782	-	-	-	-	-
Hungary	9,689,010	-	3,400 ^{b)}	-	-	-
Ireland	5,060,004	-	-	5,229	103	-
Italy	59,030,133	320,000 ^{a)}	320,000 ^{a)}	320,000 ^{a)}	542	-
Latvia	1,875,757	-	2,000 ^{b)}	2,678 ^{b)}	143	-
Lithuania	2,805,998	-	-	-	-	-
Luxembourg	645,397	-	987	720	112	-
Malta	520,971	-	-	-	-	-
Netherlands	17,590,672	77,580 ^{c)}	59,965 ^{c)}	61,755	351	2.7%
Poland	37,654,247	-	13,500 ^{b)}	-	-	-
Portugal	10,352,042	-	-	-	-	-
Romania	19,042,455	-	-	-	-	-
Slovakia	5,434,712	717 ^{b)}	-	-	-	-
Slovenia	2,107,180	3,000 ^{b)}	3,000 ^{b)}	3,000 ^{b)}	142	-
Spain	47,432,893	-	-	-	-	-
Sweden	10,452,326	62,697	64,974	77,207	739	0.0%
EU-27	446,735,291	1,296,190	1,264,773	1,297,300	290	-

a) Estimate based on survey.

b) Source is a news article or informational website.

c) Preliminary data.

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Further information:

ECFs web page devoted to bike parking and the EPBD

<https://www.ecf.com/what-we-do/making-buildings-fit-cycling>

ECF's report comparing regulations for off-street bicycle and car parking in Europe

<https://ecf.com/users/fabian-k%C3%BCster/trusted-content/making-buildings-fit-sustainable-mobility>

ECF's factsheet on national transpositions of the 2018 Energy Performance of Buildings Directive revision

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ECF's suggested amendments to the European Commission's 2020 proposal for the revision of the Energy Performance of Buildings Directive

<https://ecf.com/ecf-amendments-to-european-commissions-proposal-for-revision-of-energy-performance-buildings-directive>

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