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Article

Detailing Of Hs-Based Codes For "Ev" And "Erev" Passenger Cars: Customs Clearance Data And A Scenario Assessment

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Abstract: Background and objective: In passenger-car imports, battery electric vehicles (EV) and series-hybrid extended-range electric vehicles (EREV) are reported together under a single heading, 8703 80, of the current national commodity nomenclature (HS code). This study assesses how this joint treatment relates to customs clearance time. Methods: We conducted a comparative analysis of import volumes for 2019–2025 and of mean clearance time per vehicle for 2020–2025, complemented by conditional scenario calculations for 2026–2030 and a sensitivity analysis. Results: Between 2022 and 2025, EV imports grew 11.1-fold (from 4,240 to 47,173 units) and EREV imports 72.3-fold (from 215 to 15,551 units); the EREV share rose from 4.8% to 24.8%. Mean clearance time per EREV exceeded that per EV in every year of 2020–2025 (4.5 vs 2.5 hours in 2025; ratio 1.78). Under the scenario with separate subpositions, EREV clearance time in 2030 is 0.79 hours versus 1.95 hours under the current coding (-59%). Conclusions: The gap may be related to classification ambiguity, but these data do not establish causality; the scenario is conditional, and practical implementation should be evaluated against a control group.

Keywords: EV, EREV, commodity nomenclature (HS code), customs classification, risk management, clearance time, scenario analysis.

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1. Introduction

In recent years, the share of electrified vehicles in Uzbekistan's passenger-car imports has risen sharply. Two categories within this group differ fundamentally. Battery electric vehicles (EV) have no internal combustion engine (ICE), whereas extended-range electric vehicles (EREV; also called range-extended EVs or series hybrids) are driven solely by an electric drive, while the ICE is mechanically decoupled from the wheels and serves only as a generator [1]. Nevertheless, under the 2022 edition of Uzbekistan's Commodity Nomenclature of Foreign Economic Activity (HS code) [2], both categories are cleared under the same heading, 8703 80 (current code 8703 80 000 9). As a result, they are not distinguished in statistical records or in the formation of risk profiles.

International classification practice confirms this situation. In the 2022 edition of the Harmonized System (HS), subheading 8703.80 is defined as "other vehicles, with only electric motor for propulsion", whereas subheadings 8703.40–8703.70 cover hybrids that use both an ICE and an electric motor for propulsion [3]. The customs administration of Uruguay assigned EREVs to subheading 8703.80 in 2024 on the grounds that the ICE is not directly connected to the wheels (General Rules for the Interpretation of the HS 1 and 6) [4]. The Classification Committee of the Karachi Collectorate of Customs (Pakistan) reached the same result in 2026 [5]. The Pakistani committee's decision also notes that a new subheading will be introduced in the HS 2028 edition [5]. The problem therefore lies not in the misclassification of EREVs but in the absence of a mechanism for distinguishing two different designs within a single national code.

This issue is relevant to customs clearance time. Time in trade is treated as a cost-like barrier: Hummels and Schaur equated each additional day of delay with an ad valorem tariff [6]. Djankov, Freund and Pham showed that delays reduce trade volumes [7].

The World Customs Organization (WCO) proposes the Time Release Study (TRS) methodology for measuring the time between the arrival of goods and their physical release [8]. Article 7.6 of the WTO Trade Facilitation Agreement encourages members to measure and publish average release times regularly [9]. Classification ambiguity is particularly important for differentiated goods: Javorcik and Narciso found that tariff evasion through misdeclared prices is more likely for such goods [10]. A risk management system may therefore apply more inspections to ambiguous categories, which lengthens clearance time.

The aim of this article is to assess, on the basis of the collected data, the dynamics of EV and EREV imports, the difference between their clearance times, and the conditional scenario effect of subdividing heading 8703 80 into subheadings. The study addresses three research questions: How did EV and EREV imports change in 2019–2025? Is the mean clearance time for EREV higher than for EV, and has this difference persisted? By how much could the time per vehicle fall under a scenario with a separate subheading for EREV, and how sensitive is the result?

Materials and Methods

Study object and design

The study object comprises passenger cars of the EV and EREV categories cleared under the "release for free circulation (import)" customs procedure. The design combines a descriptive–comparative analysis (observed annual data) with conditional scenario calculations for 2026–2030. No control group or randomised experiment is available for estimating causal effects. The technical and customs-classification characteristics of the two categories are summarised in Table 1.

Table 1. Technical and customs-classification characteristics of EV and EREV vehicles

Criterion	EV (battery electric vehicle)	EREV (series hybrid)
Internal combustion engine (ICE)	None; propulsion relies solely on energy stored in the battery	Present but not connected to the wheels; serves only as a generator
Energy source	Electricity only (external charging)	Electricity and gasoline
Driving range on a full energy supply	400–700 km	1,000–1,400 km
Current HS code	8703 80 000 9	8703 80 000 9 (not separately identified)
Proposed code	8703 80 00	8703 80 90
Customs risk (author's assessment)	Low: no scope for misrepresenting the ICE or engine displacement	High: owing to the small ICE displacement (1.2–1.5 L), there is a risk of understating customs value and duties payable

Data

Two indicators were used: (a) the annual number of EVs and EREVs imported in 2019–2025 (units); and (b) the mean time spent on customs clearance per vehicle in 2020–2025 (recorded in days and converted to hours by multiplying by 24). The data were calculated by the author on the basis of official data of the State Customs Committee [11]. The vehicle sample includes, for example, the brands Li Auto, AITO, Voyah, Deepal, Leapmotor, Avatr, Yangwang and Neta [12].

Indicators and calculations

The following indicators were calculated: the EREV share in EV + EREV imports; the annual growth rate; the ratio of EREV to EV clearance times ($r = t_{EREV} / t_{EV}$) and their difference; and the time gap $T = N_{EREV} \times (t_{EREV} - t_{EV})$, expressed in vehicle-days (hours divided by 24), where the number of EREVs imported in each year was assumed to equal the number of vehicles cleared. T is the upper-bound saving that would be obtained if the EREV clearance time fell fully to the EV level. It rests on the assumption that the entire gap is attributable to classification and is therefore not a causal estimate.

Scenario calculations

Projected values for 2026–2030 were used for two paths: (i) the projected EREV clearance time when the codes are not detailed (the status quo); and (ii) the projected time when heading 8703 80 is split into EV (8703 80 00) and EREV (8703 80 90) subheadings, so that the EREV time converges step by step to the EV projection. Neither path is an observed outcome; both are conditional projections. A sensitivity analysis was also performed: if k = 0, 25, 50, 75 and 100% of the gap is closed, the time is $t(k) = t_{current} - k \cdot (t_{current} - t_{detailed})$.

Software

The calculations and figures were prepared in Stata (StataCorp LLC, College Station, TX, USA) using the s2color graph scheme.

Results

Dynamics of EV and EREV imports (RQ1)

EV imports rose from 105 units in 2019 to 47,173 units in 2025. No EREV imports were recorded in 2019 (0); they amounted to 3 units in 2020 and 15,551 units in 2025 (Figure 1, Table 2). Between 2022 and 2025, EV imports increased 11.1-fold and EREV imports 72.3-fold. The EREV share in EV + EREV imports rose from 4.8% in 2022 to 24.8% in 2025. In 2025, growth rates slowed: +29.4% for EV and +115.2% for EREV.

Table 2. EV and EREV imports, 2019–2025

Year	EV, units	EREV, units	EREV share, %	EV growth, %	EREV growth, %
2019	105	0	0.0	–	–
2020	392	3	0.8	273.3	–
2021	1,513	22	1.4	286.0	633.3
2022	4,240	215	4.8	180.2	877.3
2023	22,670	2,817	11.1	434.7	1,210.2
2024	36,467	7,227	16.5	60.9	156.5
2025	47,173	15,551	24.8	29.4	115.2

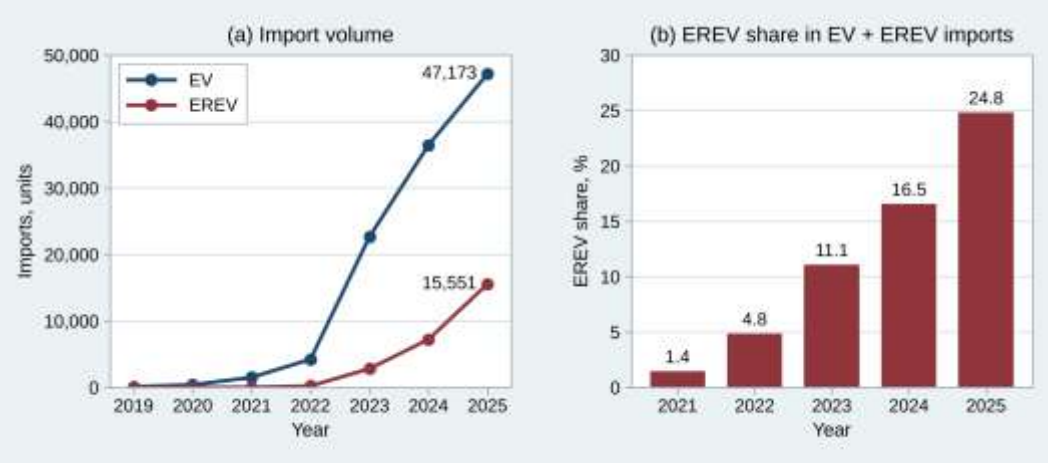

Figure 1. EV and EREV imports (a) and EREV share in EV + EREV imports (b), 2019–2025. Panel (b) starts in 2021; shares for 2019–2020 are given in Table 2

Clearance time: EREV versus EV (RQ2)

The mean clearance time per EREV exceeded that per EV in all six observed years (Table 3, Figure 2). The ratio ranged from 1.14 to 2.54; in 2025, 4.53 hours were spent per EREV and 2.54 hours per EV (ratio 1.78). The clearance times of both categories decreased in 2022–2025 (EREV -43.4%, EV -56.8%); because the decline was stronger for EV, the relative gap widened (1.36 in 2022 and 1.78 in 2025). The EREV values for 2020 and 2021 are based on only 3 and 22 vehicles, respectively, and are therefore unreliable (hollow markers in Figure 2a); for 2022–2025, the ratio lies between 1.30 and 1.78.

Table 3. Mean clearance time per vehicle and the time gap

Year	EV, hours	EREV, hours	Difference, hours	EREV / EV	EREV count, units	Time gap *T*, vehicle-days
2020	4.95	12.55	7.60	2.54	3	1.0
2021	9.75	11.10	1.35	1.14	22	1.2
2022	5.87	7.99	2.12	1.36	215	19.0
2023	3.30	4.59	1.28	1.39	2,817	150.6
2024	3.91	5.09	1.18	1.30	7,227	355.2
2025	2.54	4.53	1.99	1.78	15,551	1,288.3
Total	–	–	–	–	**25,835**	**1,815.3**

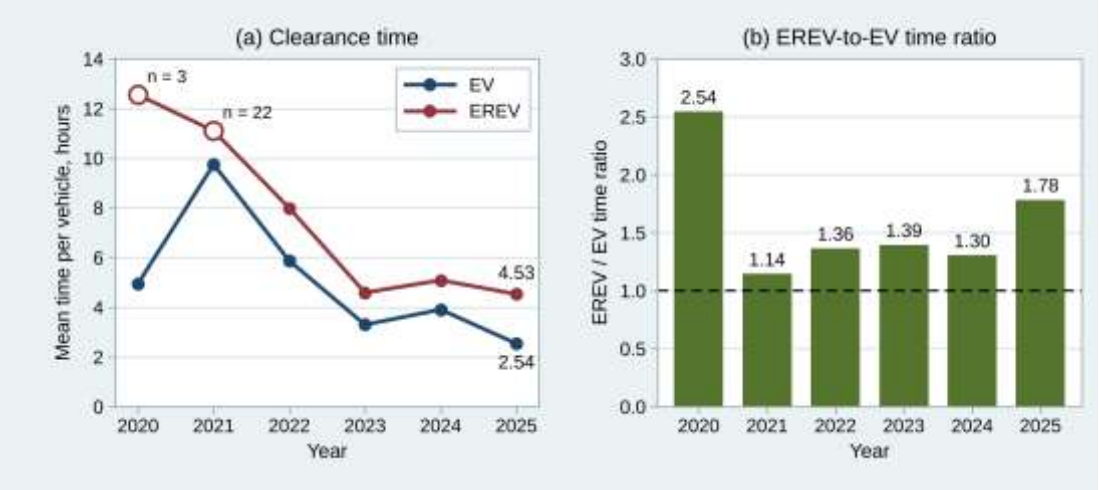

Figure 2. Mean clearance time per vehicle (a) and ratio of EREV to EV time (b), 2020–2025. Hollow markers denote small samples (n = 3 and n = 22); the dashed line marks parity (1.0)

The time gap *T* totalled 1,815 vehicle-days for 2020–2025, of which 71% (1,288 vehicle-days) fell in 2025, when EREV imports were highest.

Scenario results

Without detailing the codes, the mean time per EREV is projected to fall from 3.64 hours in 2026 to 1.95 hours in 2030 (-46.4%); under the scenario with separate subpositions, it falls from 2.05 to 0.79 hours (-61.5%). The difference between the two paths is 1.59 hours (43.7%) in 2026 and 1.16 hours (59.5%) in 2030 (Table 4, Figure 3). Summed over 2026–2030, the time per vehicle is 6.72 hours instead of 13.64 hours, i.e. 6.92 hours (50.7%) less. In the status quo projection, the EREV / EV ratio rises from 1.78 to 2.47, which is above the 1.30–1.78 range observed in 2022–2025.

Table 4. Projected clearance time per EREV, hours

Year	Current coding	Detailing scenario (= EV projection)	Difference, hours	Reduction, %	Current / EV ratio
2026	3.64	2.05	1.59	43.7	1.78
2027	3.11	1.61	1.50	48.2	1.93
2028	2.66	1.27	1.39	52.3	2.09
2029	2.28	1.00	1.28	56.1	2.28
2030	1.95	0.79	1.16	59.5	2.47
Total 2026–2030	**13.64**	**6.72**	**6.92**	**50.7**	**–**

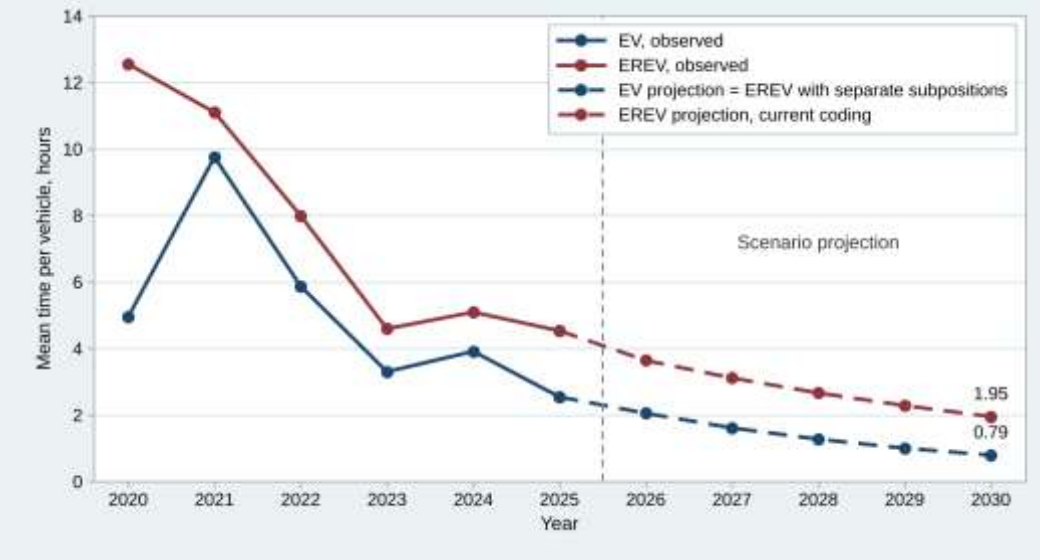

Figure 3. Mean clearance time for EV and EREV: observed (2020–2025) and scenario (2026–2030), hours

The sensitivity analysis is presented in Table 5. Even when only half of the gap is closed, the EREV time in 2030 falls to 1.37 hours, below the 1.95 hours under the current coding.

Table 5. Sensitivity analysis: EREV clearance time by share of the gap closed

Share of gap closed	2026, hours	2030, hours	Total 2026–2030, hours	Saving, hours per vehicle
0%	3.64	1.95	13.64	0.00
25%	3.24	1.66	11.91	1.73
50%	2.84	1.37	10.18	3.46
75%	2.45	1.08	8.45	5.19
100%	2.05	0.79	6.72	6.92

Discussion

Principal findings

First, EV and EREV imports grew rapidly in 2022–2025, and the EREV share reached one quarter; a large part of the category cleared under a single code thus now consists of vehicles of a different design. Second, the mean clearance time for EREV was higher than for EV in every observed year, with a ratio of 1.30–1.78 in 2022–2025, the highest being in 2025. Third, in the conditional scenario, bringing the EREV time down to the EV level yields a saving of 1.16 hours (59%) per vehicle in 2030 and 6.92 hours per vehicle over five years.

Interpretation and comparison with international practice

Under HS rules, EREVs fall within subheading 8703.80 [3]. The ruling of the Uruguayan customs administration reaches the same conclusion [4]. So does the decision of the

Karachi committee [5]. The proposed measure is therefore not a reclassification but a clarification of identification through national subheadings within heading 8703 80. Changes at the HS level fall within the WCO's remit [13]. This national solution should therefore be harmonised with the transition to the HS 2028 edition. According to the Pakistani committee's decision, a new subheading, 8703.81, will be introduced in that edition [5]. This indicates that the issue is recognised internationally. The Pakistani committee also stressed that classification is separate from fiscal incentives [5]. In our case, too, introducing subheadings is a tool for identification and risk management, whereas tax and customs preferences are a separate policy matter.

One explanation for the time gap is the additional operations needed to verify technical characteristics and to check that an EREV matches its declared code. This explanation is consistent with risk management theory: in categories with ambiguous classification and differentiated products, the risk of price misdeclaration is higher [10]. Evidence from China shows that import duties encourage evasion through misreported trade values, with more evasion where tax rates are higher [14]. The probability of inspection may therefore also be higher. However, these data do not isolate other factors: the model mix of EREVs, vehicle value, the distribution across risk channels, the set of documents submitted and other variables may have contributed to the time difference. The difference is therefore consistent with classification ambiguity but not proven by it. Time is a recognised trade barrier [6]. Delays also reduce trade volumes [7]. Cross-country estimates further show that better customs and trade-facilitation conditions raise trade flows [15]. Observing and measuring such a gap is therefore valuable in itself. The WCO TRS methodology recommends systematic measurement of average release time [8]. Article 7.6 of the WTO Agreement does the same [9]. Such measurement can also be applied to individual product sub-groups. Simplified and standardized customs procedures are the stated aim of the Revised Kyoto Convention [16].

The sensitivity of the scenario deserves attention. The status quo projection implies that the EREV / EV ratio widens from 1.78 to 2.47, whereas in 2022–2025 it ranged between 1.30 and 1.78. Part of the scenario saving therefore stems from this assumed widening. The sensitivity analysis (Table 5) shows that even if only half of the gap is closed, 3.46 hours per vehicle are saved over five years; the main conclusion (a reduction in time) is thus preserved, but its magnitude is roughly halved.

Practical implications

The results support the following directions for customs practice: (1) introducing separate national subheadings for EV and EREV within heading 8703 80 (8703 80 00 and 8703 80 90 are proposed; the digit structure of the code must be adapted to the 10-digit structure of the national nomenclature); (2) automatically validating the subheading against the technical data in the declaration (VIN, manufacturer's catalogue, engine and generator design), which reduces the likelihood of incorrect technical declarations; (3) forming risk profiles that reflect the actual design of each category; and (4) evaluating implementation with control and treatment groups and regularly measuring clearance time by sub-group.

Limitations

First, the observed times are group means; measures of dispersion (standard deviation, median) and additional variables (value, model, risk channel) are unavailable, so the gap cannot be attributed to classification. Second, the EREV values for 2020–2021 are based on 3 and 22 vehicles. Third, the indicator T equates the number of imports with the number of vehicles cleared and gives an upper-bound saving. Fourth, the values for 2026–2030 are conditional projections rather than observations; the projection model for EV and EREV is not fully described in this article, and the detailing scenario assumes that the EREV time converges fully to the EV level. Fifth, the calculated time measures only elapsed duration, not inspectors' labour costs; the legal costs and the costs of integrating subheadings with information systems are likewise not modelled.

Conclusions

In 2022–2025, EV imports grew 11.1-fold and EREV imports 72.3-fold, and the EREV share reached 24.8%. The mean clearance time per EREV exceeded that per EV in every

observed year (4.5 vs 2.5 hours in 2025). If separate subheadings for EV and EREV are introduced within heading 8703 80, the EREV clearance time could, according to the conditional scenario, fall to 0.79 hours in 2030 instead of 1.95 hours under the current coding; the saving persists even when only half of the gap is closed. The results do not prove a causal link between classification and time. The next step should therefore be to evaluate the subheadings using real implementation data with control and treatment groups.

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