

Hackmann, Angelina; Lindner, Vincent; Pelizzon, Loriana; Riedel, Max

**Working Paper**

## Vehicle identifiers: The key to jumpstarting the European Green Auto ABS market?

SAFE White Paper, No. 100

**Provided in Cooperation with:**

Leibniz Institute for Financial Research SAFE

*Suggested Citation:* Hackmann, Angelina; Lindner, Vincent; Pelizzon, Loriana; Riedel, Max (2024) : Vehicle identifiers: The key to jumpstarting the European Green Auto ABS market?, SAFE White Paper, No. 100, Leibniz Institute for Financial Research SAFE, Frankfurt a. M.

This Version is available at:

<https://hdl.handle.net/10419/285378>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

Angelina Hackmann  
Vincent Lindner  
Loriana Pelizzon  
Max Riedel

# Vehicle identifiers: the key to jump-starting the European Green Auto ABS market?

SAFE White Paper No. 100 | March 2024

**Leibniz Institute for Financial Research SAFE**  
Sustainable Architecture for Finance in Europe

[policy\\_center@safe-frankfurt.de](mailto:policy_center@safe-frankfurt.de) | [www.safe-frankfurt.de](http://www.safe-frankfurt.de)

## List of Abbreviations

ABS	Asset-Backed Securities
ACEA	European Automobile Manufacturers' Association
CMU	Capital Markets Union
CNIT	French National Vehicle Identification Code
EAFO	European Alternative Fuels Observatory
EBA	European Banking Authority
EEA	European Environment Agency
EPC	Energy Performance Certificate
ESMA	European Securities and Markets Authority
HEVs	High-Emission Vehicles
JC	Joint Committee of the European Supervisory Authorities
RTS	Regulatory Technical Standards
STS	Transparent and Standardized Securitisations
TAN	Type Approval Number
TVV	Type-Variant-Version
UNECE	United Nations Economic Commission for Europe
UoP	Use of Proceeds
VIN	Vehicle Identification Number
ZLEVs	Zero or Low-Emission Vehicles

# Vehicle identifiers: the key to jump-starting the European Green Auto ABS market?\*

*Angelina Hackmann, SAFE*

*Vincent Lindner, SAFE*

*Loriana Pelizzon, Goethe University and SAFE*

*Max Riedel, SAFE*

March 2024

## Abstract

*This paper addresses the need for transparent sustainability disclosure in the European Auto Asset-Backed Securities (ABS) market, a crucial element in achieving the EU's climate goals. It proposes the use of existing vehicle identifiers, the Type Approval Number (TAN) and the Type-Variant-Version Code (TVV), to integrate loan-level data with sustainability-related vehicle information from ancillary sources. While acknowledging certain challenges, the combined use of TAN and TVV is the optimal solution to allow all stakeholders to comprehensively assess the environmental characteristics of securitised exposure pools in terms of data protection, matching accuracy, and cost-effectiveness.*

## I. Introduction

There is a growing interest among stakeholders such as investors, public institutions, and researchers in sustainability-related vehicle information. Passenger cars and vans are a major source of climate pollution in the European Union, accounting for about 15 percent of total annual CO<sub>2</sub> emissions (European Commission, 2023). If the EU wants to reach its goal to become climate neutral by 2050, the automotive sector will have to reduce its emissions. While a modal shift from cars and trucks to mass transit and freight trains is desirable, private transport is likely to remain necessary to meet the mobility needs of European citizens. Thus, the gradual replacement of high-emission vehicles (HEVs) by zero or low-emission vehicles (ZLEVs) is a key pillar of the EU's strategy to become climate neutral.<sup>1</sup>

---

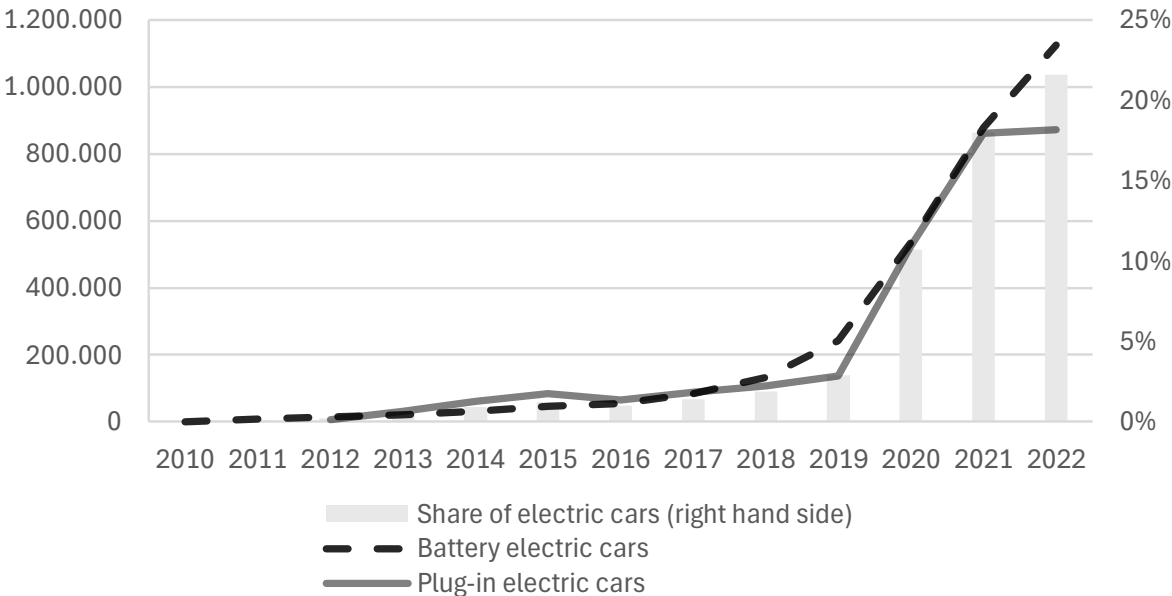
\* The project on which this report is based was funded by the Federal Ministry of Education and Research under the funding code 01LA2208A. The responsibility for the content of this publication lies with the authors. We gratefully acknowledge financial support from the German Federal Ministry of Education and Research under the initiative "Klimaschutz und Finanzwirtschaft" of the "Forschung für Nachhaltigkeit" strategy, project "Green Auto Securitization" (GAS).

SAFE policy papers represent the authors' personal opinions and do not necessarily reflect the views of the Leibniz Institute for Financial Research SAFE or its staff.

<sup>1</sup> Following Commission Regulation (EU) 2017/1151, ZLEVs are vehicles with a CO<sub>2</sub> emission below 50 g/km. They consist of plug-in hybrid vehicles and electric vehicles.

As part of the “Fit for 55” package, the EU has committed to a zero-emissions target for new cars and vans by 2035, with gradual increases in the coming years. In 2022, according to the European Environment Agency (EEA), 21.6 percent of newly registered vehicles were ZLEVs, a sharp increase from less than 5 percent in 2019 (Figure 1). The current increase in ZLEV registrations can partly be attributed to tax incentives.<sup>2</sup> However, a sole focus on such policy measures may not lead to market penetration due to fiscal constraints. Instead, market-based solutions such as Green Auto Asset-Backed Securities (ABS), which create positive feedback loops for ZLEVs, may be an appropriate complement to achieve the ultimate goal of climate neutrality.

**Figure 1: Newly registered cars in the EU**



Source: EEA, 2023.

In order for investors to align their investments in Auto ABS with their green preferences and to avoid concentration risks, transparent and consistent disclosure of sustainability information at the loan-level of these Auto ABS is required. Investor interest in the composition of the ABS became particularly pronounced following the Diesel scandal in 2015, leading Auto ABS issuers to include details on the composition of the collateral pool in terms of fuel type, Euronorm standards, and CO<sub>2</sub> emissions in their offering prospectuses. The share of Auto ABS deals that report the fuel type, for example, has risen steadily, from 0% in 2015 to 83% in 2022. In addition, institutions such as the Banque de France show a keen interest in sustainability information to assess climate risks. André et al. (2022) discuss methods for evaluating the climate risk associated with Eurosystem-eligible ABS. For Auto ABS, they

<sup>2</sup> See ACEA (2022) for an overview of environmental tax incentives in the EU. The positive impact of tax rebates on sales of electric vehicles has been confirmed for the US market (Clinton and Steinberg, 2019).

highlight the challenge of limited data and suggest collecting details on CO<sub>2</sub> emissions, vehicle use, weight, engine type, and vehicle identifiers such as the French National Vehicle Identification Code CNIT. Similarly, data limitations force academic studies in this area to either rely on rough estimates of sustainability metrics or considerably reduce their sample size (see e.g. Beyene et al, 2022).

In the literature, two criteria are used to define whether an ABS can be considered green (Latino et al. 2023). First, according to the use of proceeds (UoP) approach, the ABS issuer commits to use the proceeds for green projects or assets. However, this may result in only partially green transactions, as the underlying collateral of the ABS may still be brown (Petit and Schlosser, 2020). Therefore, the collateral-based approach, where the environmental characteristics of the securitised asset pool determine whether an ABS can be considered green, is an important complementary approach. For the collateral-based approach to be feasible, two conditions need to be met: First, a sufficient number of green assets must already exist to be used as collateral. Second, there must be an agreed, standardized, and accessible data field to determine whether each underlying asset can be considered green. While the first condition is met by the increasing number of ZLEV registrations, the lack of standardized data constitutes an obstacle to the establishment of a Green Auto ABS.

The European auto securitisation industry faces several challenges. Globally, it is lagging behind the successful green securitisation deals that have been placed in the US and China in recent years. Domestically, it is expecting more stringent sustainability reporting requirements, and therefore higher costs along the value chain. Some industry representatives fear that overly burdensome disclosure requirements for Asset-Backed Securities could even lead to a migration of market participants to alternative financial products, such as covered bonds.<sup>3</sup> The EU and its member states share this view, and the political will to strengthen securitisation markets in the EU as part of the Capital Markets Union (CMU) has become more pronounced since 2023.<sup>4</sup> While political initiatives are united in their goal of leveraging private capital via securitisation to achieve the transition to a green economy, they have also acknowledged the trade-off between administrative and bureaucratic costs for stakeholders, financial stability concerns, and the innovative and growth-enhancing potential.

This paper contributes to resolving this trade-off by proposing a smart regulatory innovation for Auto ABS that does not require new reporting standards. Instead, it argues that existing vehicle identifiers

---

<sup>3</sup> See responses to the joint consultation of sustainability disclosures by European Supervisory Authorities (JC, 2022, 2023).

<sup>4</sup> The French and German finance ministers Bruno Le Maire and Christian Lindner called upon a revitalisation of Europe's securitisation market in an FT [Article](#) in September 2023 to mobilise private capital. The binational roadmap towards CMU went beyond small and targeted regulatory amendments and opened the discussion on a comprehensive reform of the securitisation framework. Also Christine Lagarde called in her [speech](#) in November 2023 for building a sufficiently large securitisation market in Europe.

can be used to assess the environmental characteristics of asset pools. If stored in a central database, investors, banks, and issuers alike could access this vital information.

## **II. Status quo on the disclosure of sustainability-related vehicle information**

Over the past decade, the European securitisation market has been subject to several regulatory frameworks aimed at mitigating risks, creating a level playing field for securitisation transactions across the EU, and promoting market transparency and investor protection.<sup>5</sup> In 2017, the EU introduced a new category of simple, transparent, and standardized (STS) securitisations to provide an additional level of transparency and quality assurance.<sup>6</sup> A remarkably novel component of this framework, which came into effect in 2019, is the requirement to publish data (where available) on the environmental impact of the assets underlying the securitisations. However, the STS framework does not provide a definition of the environmental performance measures, leading to inconsistent reporting practices due to different definitions of energy performance certificates (e.g. for cars) across euro area countries. In 2021, the STS framework was amended, and the regulation set out the objective of developing a sustainable securitisation framework (EBA, 2022).<sup>7</sup> In May 2022, the ESAs launched a joint consultation paper on the Draft Regulatory Technical Standards (RTS) on the content, methodologies and presentation of disclosures.

However, the current mandatory loan-level data disclosure framework for Auto ABS does not yet allow for a comprehensive and comparable assessment of the securitisations' composition with regard to its level of sustainability. In particular, the European Securities and Markets Authority's (ESMA) Auto ABS loan and lease level disclosure template (Annex 5) does not currently include mandatory reporting of vehicle-related technical information. In addition, the data field on the energy performance certificate for vehicles (auto EPC), while intended as a helpful addition, often creates more confusion than clarity for its users. The classification system for auto EPCs varies from one member state to another, with some countries having adopted relative measures (e.g. CO<sub>2</sub> emissions relative to car weight) and others having introduced absolute measures (i.e. actual CO<sub>2</sub> emissions). Therefore, the same car (e.g., Fiat 500) may have a high rating in one country (C or better in France) and a low rating in another (D or worse in Germany). Panizza et al. (2022) provide a detailed overview of the different EPC definitions and the (scarce) availability of this label in the securitisation repository of the European DataWarehouse. As a result, investors, rating agencies, and researchers are forced to use their own techniques to estimate the carbon footprint of the collateral, a task that proves to be expensive and

---

<sup>5</sup> Regulations (EC) No. 24/2009 and No. 1075/2013.

<sup>6</sup> Regulation (EU) No. 2017/2402.

<sup>7</sup> Regulation (EU) No. 2021/557.

challenging. Vital information is buried in the descriptions of the car manufacturer and model, which frequently lack the precision required for meaningful analyses.<sup>8</sup>

In light of the need for a more comprehensive sustainability data collection of Auto ABS, this paper proposes a minimally intrusive modification to the existing disclosure requirements based on the use of two vehicle identifiers, the Type Approval Number and the Type-Variant-Version code. These are explained in more detail in the next section.

### III. Different types of vehicle identifiers

Every vehicle registered in the EU is accompanied by various identifiers. Table 1 provides an overview of the main codes, their intended purpose, the entity assigning the identifier, the standard according to which it is defined, and an example of the code. All codes presented apply to EU vehicle categories L, M, N, O, and T, i.e., 2-/3-/4-wheel vehicles, passenger cars, trucks, trailers, and agricultural vehicles.<sup>9</sup>

The most granular code is the Vehicle Identification Number (VIN), which is a vehicle's fingerprint: it is used to uniquely identify each vehicle produced by a manufacturer. The 17-digit alphanumeric character string represents vehicle-related information and consists of three sections: (i) the world manufacturer identifier, (ii) the vehicle descriptor section (i.e., model year, vehicle attributes, plant code), and (iii) the vehicle indicator section (i.e., serial number).

Both the Type-Variant-Version (TVV) and the Type Approval Number (TAN) are less granular than the VIN, with the TVV being slightly more granular than the TAN. The TVV is assigned to vehicles by the manufacturer in order to group them according to a common type (e.g. design and assembly of the essential parts of the body structure), variant (e.g. type of energy supply), and version (e.g. maximum laden mass, engine capacity, CO<sub>2</sub> emissions). Unlike the TVV, the TAN encompasses both variant and version aspects, leading to situations where vehicles with the same TAN may exhibit significant differences in CO<sub>2</sub> emission levels. It is assigned to a vehicle model by a national public authority before it is authorized to be placed on the EU market. The TAN serves the principle of mutual recognition of type approvals in the EU single market: the approval of a vehicle type in one EU country is valid throughout the EU without the need for further tests. The number consists of four to five sections separated by an asterisk (\*): (i) a number representing the member state issuing the type-approval, (ii)

---

<sup>8</sup> For instance, from the vehicle's model name "VW Golf 2.0 TDI" it is possible to deduce the engine size and the fuel type (i.e., 2.0-liter turbo diesel engine). Further, if the vehicle's construction year were also reported, one could identify the vehicle's Euronorm standard and approximate its CO<sub>2</sub> emissions. However, there are limits to this approach: if too little or too general information is reported, e.g., "VW Golf", adding corresponding environmental characteristics becomes an infeasible task.

<sup>9</sup> Vehicle categories in the EU follow standards developed by the United Nations Economic Commission for Europe (UNECE). Definitions for (sub-)categories and the regulatory texts are provided by the European Alternative Fuels Observatory (EAFO, 2024).



the number of the base directive or regulation, (iii) the number of the latest amending directive or regulation applicable to the EC type-approval, (iv) a sequential number for type-approval certificates, and (v) an extension number of the type-approval. All these identifiers are recorded in the national vehicle registration certificates. They are therefore readily available to banks offering loans for vehicle purchases.

**Table 1: Vehicle identifiers**

Identifier	Abbr.	Purpose	Assignment entity	Standard definition	Example
Vehicle Identification Number	VIN	Unique identification of every produced vehicle	Manufacturer	ISO 3779, ISO 4030	WVWZZZAUZFW574245
Type Approval Number	TAN	Approval of a vehicle type in one EU country leads to EU-wide validity	National Type Approval Authorities	Regulation (EU) No 901/2014	E1*2007/46*0627*10
Type	TVV	Grouping according to common features of a vehicle (e.g., manufacturer name, body structure)	Manufacturer	Regulation (EU) No 901/2014	AUV
Variant		Grouping according to common features of a vehicle type (e.g., type of energy supply, number of doors, cylinders, axles)	Manufacturer	Regulation (EU) No 901/2014	SACCVBX0
Version		Grouping according to common features of a vehicle variant (e.g., CO <sub>2</sub> emissions, energy/fuel consumption)	Manufacturer	Regulation (EU) No 901/2014	FM6FM6AJ009N7MMOVL01VR2

Table 1 provides an overview of vehicle-related identifiers: VIN, TAN, TVV. For each code, the table reports its original purpose, the assignment entity, the source of the standard definition, and a sample code. The example refers to a Volkswagen Golf Sportsvan 1.2l TSI engine.

**IV. Which identifiers can serve the purpose?**

In an ideal world, stakeholders such as investors and supervisors would have access to loan and lease information accompanied by a vehicle identifier that meets four criteria. The information should: (a) guarantee data privacy, (b) allow for perfect matching with vehicle sustainability information coming from a (c) comprehensive and (d) cost-free database. In the following, we explore the extent to which the VIN, TAN, and TVV meet these criteria.

The VIN serves as a unique identifier, enabling repair shops and technical experts to gather specific technical details about the vehicle. It can therefore be used to obtain data such as the vehicle's CO<sub>2</sub> emissions. However, there is no central database where parties such as consumers or investors can access this information free of charge. The data resides on the servers of the manufacturers, national vehicle registries, and commercial data providers.<sup>10</sup> Retrieving data from the former two can be challenging due to varying degrees of data availability and coverage across different manufacturers and countries, while the latter charge fees ranging from EUR 1.45 to EUR 1.65 per VIN inquiry. For an Auto ABS, that may contain 100,000 or more securitised loans, such fees would represent a considerable financial burden. In addition to the costs of data retrieval, employing the VIN alongside borrower details at the loan or lease level raises concerns about data privacy. It is possible to address these issues by either censoring or pseudonymizing the VIN. The caveats are that the former approach may result in loss of information or difficulties in retrieving data using the censored version of the VIN, while the latter requires an additional investment in IT solutions. Therefore, in terms of minimizing overall expenses, the VIN only meets two (b, c) out of the four criteria above.

Unlike the VIN, the TAN and TVV offer a level of generality that rules out any data privacy concerns. In addition, there exists a central, free database in Europe for all sustainability-related information: the Datahub of the European Environment Agency (EEA). The EEA monitors the CO<sub>2</sub> emissions of passenger cars, vans, and heavy-duty vehicles newly registered in the EU.<sup>11</sup> The data is provided to the EEA at a yearly frequency by the national car registries. The database offers a wealth of technical details for passenger cars and vans, such as vehicle weight, fuel type, engine size, and CO<sub>2</sub> emissions, making it a suitable source of vehicle sustainability data. As this information is provided with the TAN and TVV, both can be used as vehicle identifiers, albeit with certain limitations in precision. The TAN refers to a specific vehicle model, which may be available in different versions, leading to potential discrepancies between a vehicle and its corresponding sustainability data in the database (e.g. vehicles with identical TANs may report different CO<sub>2</sub> emissions). This issue of matching imprecision also applies to the TVV, although to a lesser extent. The main advantage of the TVV is that it distinguishes between different variants and versions of vehicles with the same TAN. The TVV is therefore much more granular than the TAN. Nevertheless, our analyses show that the best results are achieved when both the TAN and

---

<sup>10</sup> On November 9, 2023, in case [C-319/22](#), the European Court of Justice determined that the VIN does not qualify as personal data. Consequently, it mandated manufacturers to establish a database accessible to independent operators. The specifics of how this decision will be executed, including whether manufacturers will impose a fee for data access, remain to be determined.

<sup>11</sup> Please refer to these EEA databases: [Monitoring of CO<sub>2</sub> emissions from passenger cars Regulation \(EU\) 2019/631](#), [Monitoring of CO<sub>2</sub> emissions from vans - Regulation \(EU\) No 2019/631](#), and [Monitoring of CO<sub>2</sub> emissions from heavy-duty vehicles - Regulation \(EU\) 2018/956](#)

TVV are used together, minimizing the error margin to a negligible level.<sup>12</sup> Therefore, the combined use of TAN and TVV fulfils three (a, b, d) of our four criteria. In terms of comprehensiveness of the database, i.e. criterion (c), we currently see two challenges. First, heavy-duty vehicles in the EEA database are not accompanied by either the TAN or the TVV, so our proposal would not allow to integrate the data with securitised loans. Though this is a serious concern, the practical implications are limited: heavy-duty vehicles represent approximately 0.5% of the collateral pool in an average European Auto ABS.<sup>13</sup><sup>14</sup> Second, the EEA database lags behind commercial providers in that its data is only updated annually. This means that, in the worst case, sustainability information for a newly approved vehicle type may be publicly available with a delay of six to twelve months.<sup>15</sup> This is a concern, as an average Auto ABS issued between 2020 and 2023 held about 17% of auto loans and leases that had the same vehicle registration year as the year the deal was issued.<sup>16</sup> A remedy to the time lag concern could be a more frequent update of the EEA database, e.g., at a monthly frequency.

In summary, the combination of the TAN and the TVV is the most promising identifier to accompany securitised auto loans and leases, taking into account data privacy concerns and with the aim of minimizing the overall cost burden for all parties involved. It should be noted that if, for whatever reason, it is not possible or desirable to report both the TAN and the TVV together, it is always better to report the TVV, as it is more granular and thus more accurate.

## **V. Proposal for the revision of the Auto ABS disclosure requirements**

Our suggested vehicle identifiers, TAN and TVV, can address the information gaps that currently exist in ESMA's disclosure template and can considerably reduce data retrieval and preparation costs for various stakeholders. Figure 2 provides a stylized illustration of the improvements our proposed amendment would bring to the flow of information compared to the status quo.

---

<sup>12</sup> As an example, consider the weight and CO<sub>2</sub> emissions of passenger cars in the EEA Datahub for the period 2014-2022. On average, vehicles with the same TAN have a weight of 1,660 kg (CO<sub>2</sub> emissions of 163 g/km) with a standard deviation of +/-55 kg (+/- 13 g/km). When using the TVV, the imprecision drops to +/- 7.3 kg and +/- 1.4 g/km, respectively. A combination of the TAN and TVV reduces the average standard deviations even further, to 5.8 kg and 1.1 g/km.

<sup>13</sup> The statistics are based on our own vehicle classifications (since such a variable is currently not included in the reporting template), covering 301 Auto ABS deals that were issued in 11 countries during the period 2004 – 2023. The median share of heavy-duty vehicles is 0%, while the largest share in one single deal is 15.4%.

<sup>14</sup> Heavy-duty vehicle data is accompanied with an engine type approval number, which could be considered as a potential identifier for this vehicle group.

<sup>15</sup> Provisional data shall be publicly available by 30 June of each year (see Regulation (EU) 2019/631).

<sup>16</sup> The statistics are based on 70 Auto ABS deals that were reporting vehicle registration dates, issued in 11 countries during the period 2020 – 2023. The median share of same-year deal issuance and vehicle registration is 9%, while the largest share in one single deal is 85%. These estimates should be considered as the upper bound of the time-lag issue since the vehicle registration date serves only as a proxy for the (more accurate, not available) vehicle type approval date.

On the left-hand side of Figure 2, which presents the current setup, the flow of collateral-level information is as follows. The loan or lease originator, which is typically a captive or non-captive bank, collects and stores the loan/lease terms (e.g. loan amount, interest rates), borrower characteristics (e.g. age, profession, annual income) and information on the underlying vehicle (e.g. VIN, fuel type, EPC). Once the securitisation process is initiated, the underlying exposures are transferred from the originator to an issuing entity and a subset of characteristics about the underlying collateral pool is reported to a data repository. The data repository can then be accessed by stakeholders such as investors. In the current setup, the vehicle-related information collected by the originator is much more detailed than the information provided to the data repository. As a result, little to no sustainability-related information is currently stored in the data repositories. There are three reasons for this discrepancy:

1. Data privacy: e.g. as part of the loan or lease contract, the originator collects and stores information such as the VIN, but it cannot be submitted to the repository as it could be used by third parties to identify the borrower or lessee.
2. Cost-related: e.g. it is time-consuming to digitize scanned vehicle documents.
3. Lack of mandatory disclosure requirements for vehicle-related data.

On the right-hand side of Figure 2, we suggest introducing four mandatory fields into ESMA's reporting requirements: the Type Approval Number (TAN), the Type (T), the Variant (V), and the Version (V) of the vehicle. This information can be accessed and stored by the originator during the loan and lease origination process. During the securitisation process, the TAN and the TVV are provided to the data repository. The data repository can then use these two identifiers to merge the securitised exposures with sustainability-related vehicle information (e.g. vehicle fuel type, CO<sub>2</sub> emissions) from the EEA database. This approach will increase the overall level of information on the collateralized vehicles, enabling the various stakeholders to perform their respective analyses of the collateral pool in a cost-efficient manner. We acknowledge that the collection and storage of the two identifiers represents an additional cost burden for the originator. To counteract this increase in reporting costs, we suggest reconsidering the mandatory requirement of reporting the auto EPC (and the corresponding EPC provider name) in its current form. There is no common definition of the EPC across European countries and most of the vehicle information used for the different EPC calculations is available in the EEA database. In addition, issuers can use the "No Data" option to not report the EPC. Therefore, we do not see any immediate harm in removing this variable from ESMA's disclosure template. Notably, this would remove the regulatory burden on the issuer to provide sustainability-related vehicle information. Instead, issuers would need to provide well-established vehicle identifiers which can be linked to credible and standardized sustainability data. This proposal is not only likely to lead to

standardization in the market, but may also reduce reporting costs. However, it is beyond the scope of this paper to discuss whether other variables should be included in or removed from the reporting template. For a discussion of a potential wish list of variables to be reported to the data repository, we refer the interested reader to André et. al (2022).

**Figure 2: Current and suggested disclosure requirements**

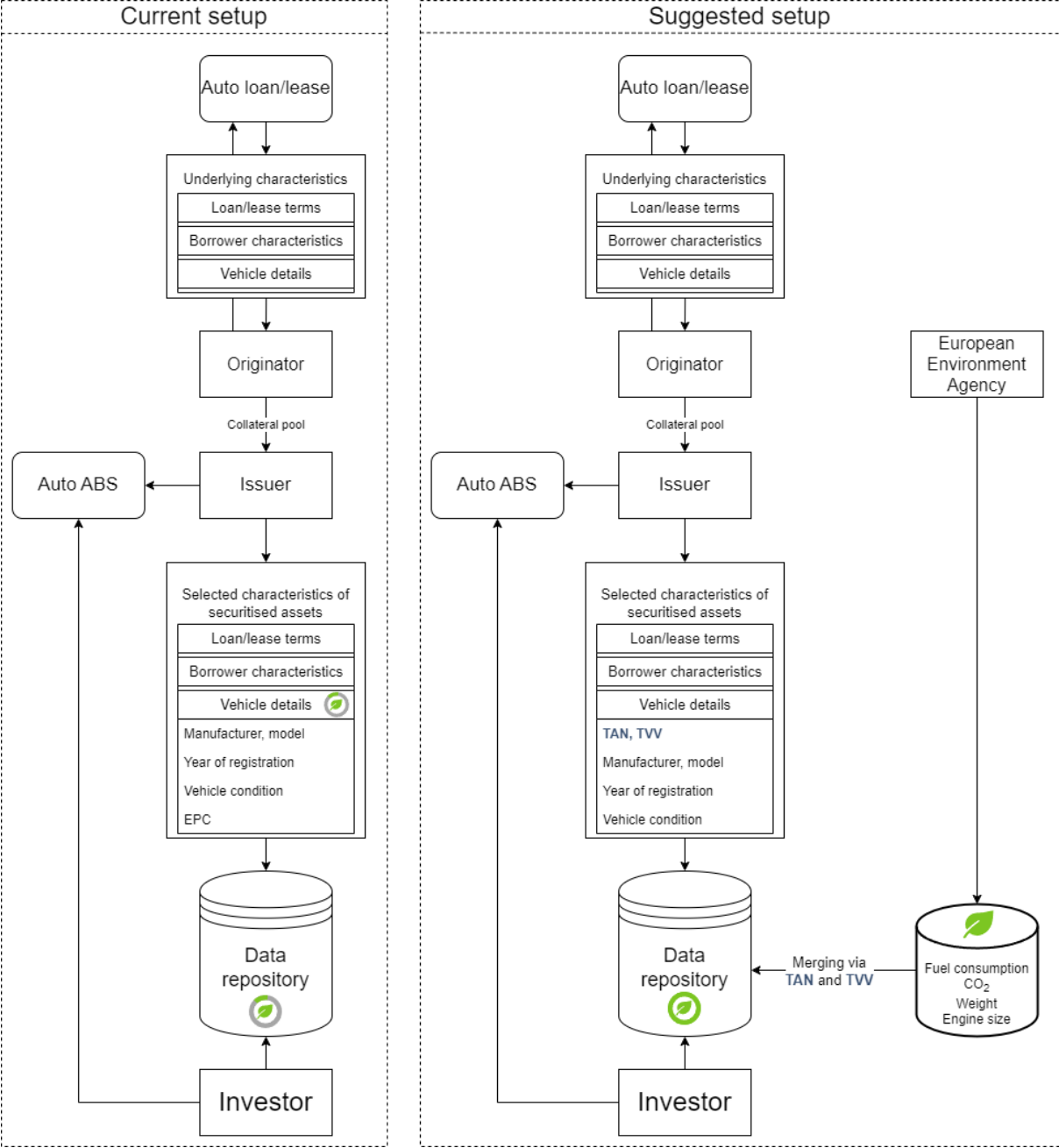


Figure 2 illustrates the current (left-hand side) and the suggested (right-hand side) flow of collateral-level information to stakeholders such as investors: the loan/lease-level information is collected by the originator, it is then passed on to the ABS issuer, who must submit a certain set of lease/loan characteristics to a data repository. The data repository can be accessed by investors. In the current setup, the originator collects only one sustainability-related vehicle information: the EPC. In the suggested setup, the collection of the vehicle identifiers TAN and TVV would become mandatory. Using the TAN and TVV, the data repository (and stakeholders

such as investors) can access vehicle-related technical details free of charge from the Datahub of the European Environment Agency.

In summary, we recommend that the inclusion of the TAN and the TVV be mandated as essential data elements for the reporting of both loans and leases in Auto ABS transactions. These identifiers are suitable for a wide range of analyses, enabling stakeholders to use them for multiple purposes, including, but not limited to, the collection of sustainability-related data. This versatility ensures that the data repository and its users can use these identifiers to navigate future uncertainties and meet the needs of stakeholders seeking to identify and manage unrecognized concentration risks in their portfolios. Ultimately, the TAN and the TVV represent key solutions to the current data access challenges faced by many stakeholders. Although integrating these identifiers may increase costs for originators, this can be offset by removing certain variables from the reporting template.

## **VI. Conclusion**

There is a general trend towards the aggregation and storage of sustainability-related information in data silos, often resulting in the redundant accumulation of identical information. Such a practice is both inefficient and costly and hinders the ultimate goal of using such data as a means to channel private capital towards sustainability-related causes. In this paper, we focus on loan-level data for Auto ABS and propose a minimally intrusive modification to existing disclosure requirements. Our aim is to integrate the loan-level data with sustainability-related vehicle information from ancillary sources by using two vehicle identifiers: the Type Approval Number and the Type-Variant-Version code. There are two main benefits to collecting these identifiers. First, they ensure data protection. Second, the sustainability-related vehicle data is obtained from a free-of-charge database maintained by the European Environment Agency. Therefore, the incremental cost burden imposed on the securitisation industry due to the mandatory reporting of the TAN and the TVV should be minimal, as these costs could be partially offset by eliminating certain data fields from the current reporting template, e.g. the Energy Performance Certificate.

In addition to facilitating the challenging task of collecting vehicle sustainability data, the TAN and TVV serve as crucial identifiers for managing uncertainties and concentration risks related to vehicles, which are currently unforeseen. These identifiers provide stakeholders with the ability to independently analyse securitised exposure pools, thereby reducing the reliance on the issuer's or originator's cooperation.

However, a number of challenges remain to be addressed. For example, obtaining sustainability information for heavy-duty trucks proves to be more difficult, necessitating the development of a more sophisticated approach. Moreover, the EEA database is updated on an annual basis, which results in a

delay in reporting for newly approved vehicles in the European Union. Consequently, regulatory bodies should re-evaluate the reporting frequency to the EEA.

Despite these challenges, the inclusion of the proposed vehicle identifiers in ESMA's Auto ABS loan and lease level disclosure template, which would allow for a standardized collection of sustainability-related vehicle information, may be the key to jump-start the Green Auto ABS market.

## References

- ACEA, 2022. Tax guide. ACEA European Automobile Manufacturers' Association. Available at: [Link](#) (Accessed: 13.03.2024).
- André, L., Grept, A., Laut, N., Plantier, G., Sapey-Triomphe, Z., Weber, P.-F., 2022. Climate Risk Measurement of Assets Eligible as Collateral for Refinancing Operations – Focus on Asset Backed Securities (ABS). Working papers 858, Banque de France. Available at: [Link](#) (Accessed: 13.03.2024).
- Beyene, W., Falagiarda, M., Ongena, S., Scopelliti, A., 2022. Do lenders price the brown factor in car loans? Evidence from diesel cars. Swiss Finance Institute Research Paper. Available at SSRN: [dx.doi.org/10.2139/ssrn.4245777](https://dx.doi.org/10.2139/ssrn.4245777).
- EAFO, 2024. EU classification of vehicle types. Available at: [Link](#) (Accessed: 13.03.2024).
- EEA, 2023. New registrations of electric vehicles in Europe. Available at: [Link](#) (Accessed: 13.03.2024).
- EBA, 2022. Developing a framework for sustainable securitisation. EBA/REP/2022/06. European Banking Authority. Available at: [Link](#) (Accessed: 13.03.2024).
- European Commission, 2023. CO<sub>2</sub> emission performance standards for cars and vans. Available at: [Link](#) (Accessed: 13.03.2024).
- JC, 2022. Joint Consultation Paper on sustainability disclosures for STS securitisations. European Securities and Markets Authority, European Banking Authority, European Insurance and Occupational Pensions Authority. Available at: [Link](#) (Accessed: 13.03.2024).
- JC, 2023. Final Report on draft Regulatory Technical Standards. European Securities and Markets Authority, European Banking Authority, European Insurance and Occupational Pensions Authority. Available at: [Link](#) (Accessed: 13.03.2024).
- Latino, C., Pelizzon, L., Riedel, M., 2023. How to green the European Auto ABS market? A literature survey. SAFE Working Paper No. 391. Available at SSRN: [dx.doi.org/10.2139/ssrn.4496092](https://dx.doi.org/10.2139/ssrn.4496092).
- Le Maire, B., Lindner, C. We must close the EU capital markets gap. In: Financial Times, 13.09.2023. Available at: [Link](#) (Accessed 13.03.2024).
- Panizza, G., Garrod, A., Conti, P., Chaudhry, M., Aufsatz, C., 2022. European Auto ABS: Auto EPCs on a Diverging Road. DBRS Morningstar. Available at: [Link](#) (Accessed: 13.03.2024).
- Petit, C. A., Schlosser, P., 2020. Rationale, Potential and Pitfalls of Green Securitization. Robert Schuman Centre for Advanced Studies Research Paper No. RSCAS 2020/35. Available at SSRN: [dx.doi.org/10.2139/ssrn.3688362](https://dx.doi.org/10.2139/ssrn.3688362).

## Regulations and case law

Commission Implementing Regulation (EU) No 901/2014 of 18 July 2014 implementing Regulation (EU) No 168/2013 of the European Parliament and of the Council with regard to the administrative requirements for the approval and market surveillance of two- or three-wheel vehicles and quadricycles (Text with EEA relevance). Available at: [Link](#) (Accessed: 13.03.2024).

Commission Regulation (EU) 2017/1151 of 1 June 2017 supplementing Regulation (EC) No 715/2007 of the European Parliament and of the Council on type-approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, amending Directive 2007/46/EC of the European Parliament and of the Council, Commission Regulation (EC) No 692/2008 and Commission Regulation (EU) No 1230/2012 and repealing Commission Regulation (EC) No 692/2008. Available at: [Link](#) (Accessed: 13.03.2024).

Judgement by the Court of Justice of 9 November 2023, *Gesamtverband Autoteile-Handel eV v Scania CV AB*, C-319/22, ECLI:EU:C:2023:837. Available at: [Link](#) (Accessed: 13.03.2024).

Regulation (EC) No 24/2009 of the European Central Bank of 19 December 2008 concerning statistics on the assets and liabilities of financial vehicle corporations engaged in securitisation transactions (ECB/2008/30). Available at: [Link](#) (Accessed: 13.03.2024).

Regulation (EU) No 1075/2013 of the European Central Bank of 18 October 2013 concerning statistics on the assets and liabilities of financial vehicle corporations engaged in securitisation transactions (recast) (ECB/2013/40). Available at: [Link](#) (Accessed: 13.03.2024).

Regulation (EU) 2017/2402 of the European Parliament and of the Council of 12 December 2017 laying down a general framework for securitisation and creating a specific framework for simple, transparent and standardised securitisation, and amending Directives 2009/65/EC, 2009/138/EC and 2011/61/EU and Regulations (EC) No 1060/2009 and (EU) No 648/2012. Available at: [Link](#) (Accessed: 13.03.2024).

Regulation (EU) 2019/631 of the European Parliament and of the Council of 17 April 2019 setting CO2 emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011 (recast) (Text with EEA relevance.) Available at: [Link](#) (Accessed: 13.03.2024).

Regulation (EU) 2021/557 of the European Parliament and of the Council of 31 March 2021 amending Regulation (EU) 2017/2402 laying down a general framework for securitisation and creating a specific framework for simple, transparent and standardised securitisation to help the recovery from the COVID-19 crisis. Available at: [Link](#) (Accessed: 13.03.2024).