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PROPERTY VALUATION: THE WEAKEST LINK IN THE LENDING PROCESS

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Is the EU red tape bonfire the end of ESG?

What does 'ESG' mean in EU valuation practice?

Michael MacBrien

Apart from war and tariffs, the only EU headline that seems to hold public attention is the rollback of EU regulation, admittedly the most extensive in the history of the Union. As EU law is the backbone of ESG requirements and related valuation, we need to consider to what extent the reversal of the regulatory tide affects ESG valuation practice.

We should consider this from three angles:

i. European Green Deal law in general and the law targeting the building stock in particular,
ii. EU corporate sustainability reporting law and
iii. EU banking supervision law and guidelines and their ESG valuation provisions

before translating ESG into valuation practice (IV.)

I. European Green Deal law in general and the law targeting the building stock in particular

ESG does not exist in a vacuum; it reflects evolving EU law on environmental, social and governance questions. So the first priority, given the utter dominance of 'E' over 'S' and 'G' (see below), is to see to what extent regulatory rollback affects Green Deal law: overall, only very marginally, and for property-relevant legislation, as repeatedly announced in EVJ, not at all.

Concerning overall reductions in GHG for which real estate is the single biggest emitter (34%), there are no plans to revise the goals of a 55% reduction of carbon emissions by 2030 compared to 2020 levels (the EU is on target to surpass that goal) or net zero by 2050. The current struggle is about what to do by 2035 and 2040.

Nor is there any movement to review the laws that lay down the rapid decarbonisation of the public and private building stock or to cancel extension of the EU Emissions Trading System to buildings.

An 'Environment Omnibus'[1] is imminent but is only expected to target administrative burdens relating to the circular economy, industrial emissions and waste management.

This ringfencing of hard EU law is crucial to the 'E' in ESG valuation because EVS's standard on valuation and energy efficiency and its guidance on the Capital Requirements Regulation (CRR)'s 'property value' are predicated on the assurance that nothing will stop the greening of the EU economy in general and of the building stock in particular.

> *"This ringfencing of hard EU law is crucial to the 'E' in ESG valuation because valuation is predicated on the assurance that nothing will stop the greening of the EU economy in general and of the building stock in particular."*

Two examples:

1. EVS 6 Valuation and Energy Efficiency, though adjusting the methodology according to whether the property has an energy performance certificate (EPC) or not, is predicated on the rapid increase in situations requiring EPCs mandated by the new Energy Performance of Buildings Directive.

2. The CRR's requirement that its 'property value' be based on 'prudently conservative valuation criteria' a key component of which is that "the value is adjusted to take into account the potential for the current market value to be significantly above the value that would be sustainable over the life of the loan (see EVS 2025 EVGN 2)". Probably the single most important element of that is the assurance that EU law will create regular and increasing market pressure on energy-inefficient properties.

II. EU corporate sustainability reporting law

This is where the European Commission is concentrating the brunt of its effort to reduce companies' administrative burdens by 25% (35% for SMEs) in particular by radically amending scope thresholds of, inter alia, the Corporate Sustainability Reporting Directive and Due Diligence Directive so that 80% of companies now covered will no longer be in scope. Those that still are, will have far less sustainability data points to cover thanks to revision of the European Sustainability Reporting Standards and limitation of the information that in-scope companies can request of their SME and small midcap business partners (the objective is to cut the 'trickle down` of ESG administrative burdens from the big corporates to their smaller suppliers). Banks will be able to exclude from the denominator of their green asset ratio (GAR)[2], exposures that relate to undertakings which are not in the reduced scope.

And all that's just the Commission's Proposal; the Council of Ministers's and European Parliament's amendments are cutting even deeper.

That will surely be an immense relief to corporate Europe, will have considerable fallout for business valuation, but won't have much impact on property valuation, especially mortgage valuation, because for that, the ESG obligations are elsewhere *and no one is contemplating touching them.*

III. EU banking supervision law and guidelin ovisions

This is the source of most ESG obligations for banks and in particular for ESG property valuation. First and foremost EU law – the Capital Requirements Directive (CRD)[3] and the Capital Requirements Regulation (CRR)[4], but the detail is in European Central Bank (ECB) and European Banking Authority (EBA) guidance flowing from the CRD and CRR:

- ECB Guide on climate-related and environmental risks[5]
- EBA Report on data availability and feasibility of common methodology for ESG exposures[6]
- EBA Report on the role of environmental and social risks in the prudential framework[7]
- EBA Guidelines on the management of environmental, social and governance (ESG) risks[8]
- EBA Guidelines on loan origination and monitoring[9]

What 'ESG' means in terms of valuation practice under the EU law and guidelines

With the exception of the ECB Guide which restricts itself to "climate and environment", all the EBA reports and Guidelines address 'ESG'. Understanding what this means concretely requires dissection of 'E', 'S' and 'G' and further dissection of 'E'.

A. Dissecting 'ESG'

It is not hyperbolic to state that, at least as far as valuation-related issues are concerned, all the above laws and guidance pay mere lip service to both 'S' and 'G'. Paragraph 208 of the EBA Guidelines on loan origination is typical:

"when applicable, credit institutions should take into account ESG factors affecting the value of the collateral, for example the energy efficiency of buildings at origination"

Taken in isolation, that would not be conclusive – energy efficiency is just 'an example'; but when all the various guidelines always use the same turn of phrase and always use as the 'example' either "energy efficiency" or "climate and environment", clearly a picture is emerging.

The EBA Guidelines on the management of ESG risks have the merit of giving a rationale for this:

> **"1. Scope of the ESG risks covered by the guidelines**
>
> ... Article 87a of the CRD VI mandates the EBA to issue guidelines on management practices for the full scope of these risks. [Ndlr: 'E', 'S' and 'G'] However, ***the EU and international regulatory developments for environmental risks are more advanced than for social and governance risks.*** ...Therefore, in order to reduce the burden for institutions and the time pressure to adapt to the new regulatory developments, it is considered that the guidelines should focus on environmental risks mainly, ***although introducing some high-level requirements to define the management practices for social and governance risks ...***
>
> *Section 7.1 Cost-benefit analysis, subsection E(12)(1)"*

Readers may need assistance with the niceties of politically correct eurosemantics:

- ***" ... regulatory developments for environmental risks are more advanced than for social and governance risks"*** That's 'ever closer union' spiel. And why not? Historical determinism is a European invention: "This is the situation today, but it will change when we have developed the 'S' and the 'G'! We'll get there! It's just a matter of time!"

  Don't hold your breath – the current slashing and burning of the Due Diligence Directive that was originally designed to force companies to check their foreign supply chains for human rights abuses is a good litmus test of the low current political appetite for 'S' and 'G'.

- ***"introducing some high-level requirements to define the management practices for social and governance risks"***. Sounds powerful! But in eurospeak, 'high level requirements' means principles-based requirements – a bald statement with no detail that would enable the Commission or the Court of Justice to enforce.

In search of anything in the valuation-relevant EU law and guidance having anything to do with 'S' or 'G', we found this in the EBA Guidelines on management of ESC risk (under "Identification and measurement of ESG risks):

"negative material impacts on own workers, workers in the value chain, affected communities and consumers/end-users including information on due diligence efforts or processes to avoid and remediate such impacts." (Paragraph 28 (b)(ii))

You could consider tenants as end-users, but under the EBA Guidelines it would only concern the assets of the largest rental property companies because the section applies only to "large corporate counterparties".

Note that financial institutions have a major 'G' or 'Governance' obligation to ensure the conditions for the sustainable activity of the valuers they commission or employ, a matter of the highest importance, but not an obligation on valuers themselves. See in this issue *"ESG and climate risks: redefining real estate valuation for banking risk mitigation"* by José Caetano Soares de Oliveira.

Thus, with very few exceptions, ESG valuation is all about 'E'.

So what is the scope of 'E'?

B. Dissecting 'E'

Analysing the EBA and ECB literature, even though there are many references to energy performance and nothing else, still there are many others that refer to "climate-related and environmental risks". Energy efficiency is obviously "climate-related" but it doesn't monopolise the concept. Floods and wildfires are clearly climate-related risks. 'Environmental risks' can include for instance biodiversity or soil degradation.

Probably the safest and best indicator of EU policy on this is the ECB Guide on climate-related and environmental risks, especially as the ECB's relationship with its bank wards is of a different nature than EBA's. The title of their paper is misleading. The ECB doesn't give guidance; it has "expectations". Like Nelson's England at Trafalgar, the ECB expects every banker to do his duty.

ECB expectation 8.3: **"Institutions are expected to consider climate-related and environmental risks in their collateral valuations.** Climate-related and environmental risks may affect the value of collateral. **Institutions are expected to give particular consideration to the physical locations and the energy efficiency of commercial and residential real estate** in this regard. Institutions are expected to incorporate these considerations into both the process for establishing the value of collateral and into the review process prescribed by the applicable regulations."

"physical locations of the real estate" would seem to translate a concern with floods and wildfires, and we see that banks are asking valuers for this information more and more along with earthquake risk which is neither climate- nor environment-related but is also a high EU political concern. It was introduced into the Energy Performance of Buildings Directive which requires that buildings undergoing major renovation address not only energy efficiency but also risks related to intense seismic activity *(Article 8(3))*. The idea is to profit from the obligatory major renovation to get both jobs – energy efficiency and earthquake resilience – done cost-effectively.

IV. Translating ESG as circumscribed above into valuation practice

We have seen that under EU law and guidance, 'ESG' for valuation means energy efficiency and wider "climate-related and environmental risks". Yet EVS 2025's EVS 6 deals only with energy efficiency. Going forward, the European Valuation Standards Board might consider a broader EVS 6 or separate guidance on climate-related and environmental risks, but if they do, it may not be easy.

For starters, accessing information may be a real problem in some countries. In their cutting edge article *"Bulgaria's approach to integrating EU energy efficiency and climate regulation into valuations for lending purposes"* in EVJ issue n° 36 of July 2025, Tzenka Bojilova and Georgi Georgiev state that increased attention is being focused on natural risks such as earthquakes, floods and fires but that "Currently the only reliable and widely accessible source in this regard is the map of seismic zones in Bulgaria. The lack of centralised information about the remaining risks continues to create difficulties in valuation practice." It is doubtful that such problems are restricted to Bulgaria.

And then there's the question of what to do with the information. Simply include it in the valuation report because it was requested by the bank client, or actually try to integrate the data into the estimation of value as is done for energy efficiency in EVS 6? That may be tough. For instance, the responsiveness of property markets to flood risk is a very complex valuation challenge. See EVS 2025's EVIP 8 Flooding and the Valuation of Property and the magisterial *"The impact of flood risk on the assessment of property values for secured lending"* by Borut Bajc, Samo Javornik, Jure Kern and Jernej Šturm in EVJ issue n° 33 of June 2024.

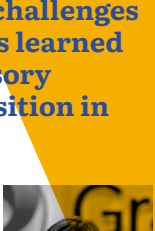
In short, examination of EU banking supervisory law and guidance shows 'ESG' to be a political Zeitgeist-prompted misnomer, at least for all but the biggest commercial property companies or portfolios. Of course, apart from regulation, corporates have their own needs and motivations for comprehensive 'E', 'S' and 'G' valuation reporting as can be seen in the last issue of EVJ[10]. But for mortgage valuation under EU law and guidance, what matters is 'E', which is broader and more complex than just the still very dominant energy efficiency.

Michael MacBrien

1 'Omnibus' is the catchword for packages of proposed amendments to EU laws scaling down the administrative burdens.
2 According to the EU Taxonomy Disclosures Delegated Act, the GAR refers to the proportion of a credit institution's assets that finance and are invested in EU Taxonomy-aligned economic activities as a proportion of the total covered assets.
3 Directive (EU) 2024/1619 amending Directive 2013/36/EU as regards supervisory powers, sanctions, third-country branches, and environmental, social and governance risks
4 Regulation (EU) 2024/1623 amending Regulation (EU) No 575/2013 as regards requirements for credit risk, credit valuation adjustment risk, operational risk, market risk and the output floor
5 European Central Bank – Guide on climate-related and environmental risks – Supervisory expectations relating to risk management and disclosure – November 2020
6 European Banking Authority – Report on data availability and feasibility of common methodology for ESG exposures – EBA/REP/2025/06 – February 2025
7 European Banking Authority – Report on the role of environmental and social risks in the prudential framework – EBA/REP/2023/34 – October 2023
8 European Banking Authority – Final Report – Guidelines on the management of environmental, social and governance (ESG) risks EBA/GL/2025/01 – 08/01/2025
9 European Banking Authority – Final Report – Guidelines on loan origination and monitoring – EBA/GL/2020/06 – 29 May 2020
10 European Valuer Journal issue n° 36, July 2025:
"The new reality for property valuation – Navigating the ESG landscape", by Jolanta Panas
"Quantifying climate risks: the new frontier in real estate valuations", by Sven Bienert and Ben Höhn

Yerevan, Armenia

#01 Valuation challenges and lessons learned in compulsory land acquisition in Armenia

Tigran Grigoryan *Naira Derdzyan*

Context of compulsory land acquisition in Armenia

In Armenia compulsory acquisition of land has been shaped by two parallel developments: the formation of a professional valuation system and the state's pursuit of large-scale urban redevelopment. After independence of the Republic of Armenia in 1991, property rights were gradually restored and private ownership expanded. However, it was not until the early 2000s that valuation became institutionalised as a profession, with the State Cadastre Committee certifying valuers and enforcing standards. This system created the technical basis for calculating compensation in cases of alienation. A Law "On Valuation Activities," was adopted in 2005 and a National Valuation Standard in 2006, both having undergone multiple revisions in response to evolving market needs and international practice. At present, around 80 valuation companies and 180 certified valuers are active in Armenia.

The first large test of valuation practice in compulsory land acquisition came with the redevelopment of central Yerevan. The "Northern Avenue" project, initiated in the early 2000s, required the clearance of entire neighbourhoods in the city's historic core. Residents were displaced, many of them unwillingly, and conflicts quickly arose around compensation levels, valuation methods, and the absence of transparent negotiation. These disputes revealed the state's limited capacity to balance investor interests with the rights of affected households. In many cases, residents claimed that compensation fell well short of market value, while courts offered little effective protection.

The controversy around "Northern Avenue" directly influenced the adoption of the 2006 Law "On Alienation of Property for Ensuring Overriding Public Interests." The law codified procedures for declaring an area as subject to compulsory acquisition, requiring valuation-based compensation and providing for judicial appeal. On paper, this was a step toward formalisation and legal clarity. In practice, however, the implementation of the law exposed deeper tensions: the definition of "overriding public interest" remained broad, and the power imbalance between developers and residents persisted.

Subsequent projects, such as the redevelopment of the "Firdus 33rd District" and the "Kond" neighbourhood, further illustrated these issues. Both areas held not only residential but also cultural and historical value, making the social cost of clearance particularly high. The 2008 global financial crisis stalled investment and left these projects incomplete, yet the declaration of eminent domain remained in force, freezing property rights for affected owners. To this day, residents of these neighborhoods face uncertainty over their homes, fragmented ownership, and limited legal remedies.

The Armenian experience demonstrates that compulsory land acquisition is not merely a legal or technical procedure. It is a deeply political process that tests the credibility of state institutions, the professionalism of valuers, and public trust in the fairness of redevelopment. While Armenia has developed a legal and professional framework for valuation and eminent domain, the unresolved legacies of its flagship projects highlight the gap between formal regulation and lived reality.

The lion's share of disputes in Armenia has consistently revolved around the compensation value of affected land plots, with valuers playing a central role. Regardless of how carefully compensation is calculated, grievances tend to emerge—whether from the acquirer, the property owner, or both. In the case of the three major redevelopment projects of the 2000s, all investors were local companies, while multiple valuation firms were engaged in assessing thousands of properties over several years. This marked the first wave of valuation practices in the context of compulsory land and property acquisition in Armenia.

In the 2010s, a new generation of large-scale investment projects reshaped the practice. The "North-South Road Corridor," linking Armenia from the south-Iranian to the northern-Georgian border and traversing nearly all regions, and the "Sustainable Urban Development Investment Project" in central Yerevan, were both financed primarily by international financial institutions (IFIs). These projects introduced higher standards in design and construction and, critically, elevated the requirements for compulsory acquisition and resettlement planning. A cornerstone of these efforts was the determination of fair compensation for affected properties in line with international principles and best practices. This guided the second wave of valuation practices in Armenia, requiring national valuation standards to be reconciled with the more rigorous safeguard frameworks of the IFIs.

Role of valuers: managing public trust and resistance

Beyond legal and organisational steps, preparation for eminent domain process starts with public hearings/consultations - the first point of contact between the project implementer (the purchaser) and the property owners.

These meetings are designed to inform participants about their rights and obligations, the methodology of planning and implementation, and the overall project details. Valuers, along with social and resettlement experts, are usually present at this early stage.

For affected persons (APs), project presentations attract strong attention. It is not uncommon for some participants to gather around printed design maps even before the presenter reaches the relevant slides, and the more outspoken may even attempt to "redesign" the project on the spot, suggesting alternatives they believe to be "more suitable."

Nevertheless, what consistently overshadows the project design is the question of compensation. From the outset, valuers are frequently pressed to state how much will be paid for the affected land or property. At this stage, however, it is premature to provide figures. Compensation can only be determined after several preparatory steps: field measurements, property inventories, the drafting of description protocols, site inspections, and subsequent office-based valuation work.

The valuers must once again explain that it is impossible to answer at that stage, trying to switch the attention of APs from valuation figures to methodological aspects of valuation applied.

Over the years, valuers' cooperation with social development and resettlement specialists has helped refine methodological approaches to impact assessment and compensation, improving technical rigour and producing practical strategies for addressing stakeholder concerns. Some of the practical examples and selected case studies presented later in this article highlight the challenges encountered and the good practices that have emerged. In 2015, during the construction of the Yerevan Bypass Road, authorities experimented with a new compensation approach. Instead of disclosing individual valuations upfront, a price scale was introduced, showing minimum and maximum rates by land category. At public hearings, affected persons (APs) raised few objections, but once official offers were issued, many questioned why their property had not been valued at the maximum rate. This reinforced the practice that valuers now generally limit themselves to explaining compensation principles rather than presenting figures prematurely.

A different innovation emerged in 2007, after lessons from Northern Avenue, where some owners lost cash compensation or could not purchase equivalent housing due to rising market prices. For residents of dormitory-style housing (shared kitchens and bathrooms), the government offered in-kind compensation: exchange of units for newly renovated apartments of similar size, about one kilometer away. One elderly woman, for example, traded her $20\ m^2$ room for a $35\ m^2$ apartment with private facilities. While the offer was objectively favorable, many families protested relocation from central Yerevan. The woman ultimately accepted, as her old building collapsed under heavy snowfall the following winter.

These cases highlight that compensation design—whether cash or in-kind—shapes public perceptions and valuation once again becomes the most sensitive issue.

Commonly applied compensation principles in IFI-funded projects led to APs' behavioural changes

International donor organisations require that affected persons (APs) be compensated so that their standard of living after project implementation is equal to or better than before. Unlike national legislation, which provides market value plus 15 percent, IFI-funded projects apply the principle of **replacement cost**—the amount needed to construct a comparable new building without applying depreciation—or market value, whichever is higher, plus 15 percent. Agricultural landowners benefit additionally, as trees and crops are compensated separately based on age and yield. This has been particularly significant in rural regions affected by the North-South Road Corridor project.

One might assume that compensation above market value eliminates grievances, yet in practice, complaints often persist. The prevailing mindset tends to be: "the more we can extract, the better." Purchasers, meanwhile, emphasise fairness and legal compliance. What the purchaser explains: Properties are acquired from owners on fair terms. What many owners think: They want to take our lands for pennies. Public hearings bring these perspectives into direct confrontation. While they are designed to ensure common understanding and manage expectations, they sometimes escalate, with APs comparing their plots to neighbors' or making exaggerated claims about intended land use. Experience shows that collective resistance is common in group settings, while one-on-one consultations are more conducive to cooperation.

In these situations, valuers play a central role in dispute management. Their responsibility is to explain the premises of valuation, including concepts such as "highest and best use," while reminding participants that consultations are meant for dialogue and adjustment of approaches, not immediate price negotiation. Over time, the active involvement of valuers in grievance redress and public engagement has led to improvements in both methodology and institutional practice.

Evolution of valuation procedures during IFI-funded projects implementation

To align with international safeguards, Armenian valuation practice underwent several adjustments during the 2010s:

- **Depreciation eliminated** in replacement cost calculations for structures
- **Separation of land and improvements** (trees, crops, vines, etc.) to ensure independent valuation
- **Land valued by actual use** (current or registered—whichever was more advantageous to APs)
- **Inclusion of livelihood restoration** considerations to achieve pre-project well-being levels
- **Valuation of non-registered/illegal assets**[1] to prevent uncompensated losses

Institutional improvements also emerged: specific Terms of Reference for valuation assignments; structured cooperation between safeguards teams and valuation specialists; enhanced data collection and management tools; and greater integration of valuers in public consultations and grievance redress. The practice of revising valuation reports based on complaints also took root, reflecting a more participatory approach.

Culmination of valuation disputes.

What happens if an AP refuses the proposed compensation?

Despite the abovementioned efforts, disputes remain common. By law, compensation equals market value plus 15 percent. If APs reject the proposed compensation, the purchaser initiates expropriation proceedings in court. APs often submit independent valuation reports, which sometimes diverge sharply from official figures. In one Yerevan project in 2025, for example, the purchaser proposed €130 per square meter, while an independent report valued the property at €400 per square meter.

Before cases proceed to court, both parties typically submit their reports to the Valuation Report Review Commission, established under the Cadastre Committee in the 2000s. The Commission, composed of five active valuers serving on a voluntary five-year basis, issues a professional opinion on both the assessed values and the methodologies applied. While this process occasionally facilitates settlement, disputes more often move forward to court.

In litigation, courts generally order additional expert examinations before ruling. Valuers are called as witnesses to defend their reports, a process that can take years and rarely favors the purchaser. A striking example occurred in 2016, when one AP—out of 200—rejected the proposed compensation for the Yerevan Bypass Road. Nearly a decade later, the case remains unresolved, leaving a 200-meter gap in a 12-kilometer road and preventing the project from achieving its full purpose. Disagreements with the valued compensation amount, and escalation of those disagreements, lead to multidimensional risks for government-led projects.

Measures taken to overcome the challenges and improve the sector.

Several reforms have been proposed to strengthen valuation practice in eminent domain. These include the introduction of mandatory professional liability insurance for valuers and the creation of an accelerated compensation mechanism, whereby APs would receive payment at the higher end of estimated values. Any potential losses to either party would then be covered through the valuer's insurance. Such steps are intended to increase trust and reduce disputes.

Case studies: Practical valuation challenges in eminent domain process and complaint- triggered improvements

Case 1. Use of Baseline Data and Related Issues

The first case concerns the use of baseline data for valuation in the North-South Road Corridor Project in Armenia. A group of APs filed a complaint to the Asian Development Bank (ADB), the funding institution for that section of the project, regarding compensation for arable land plots and fruit trees under the resettlement plan. ADB appointed an independent valuer to conduct due diligence. The new valuation resulted in compensation levels nearly twice as high as the initial assessment.

Findings:

The due diligence revealed that the original valuer preparing the Land Acquisition and Resettlement Plan (LARP) had relied exclusively on land sales registered in the Cadastre. By contrast, the independent expert expanded the dataset to include both registered sales and land publicly offered for sale in the open market. For trees, the LARP valuer used data from the Department of Agriculture of the regional administration, applying crop data and a single year's price index. The ADB's expert instead used multi-year statistics, professional literature, and market data, averaging unit prices over three years.

Lesson:

To ensure reliability, data should be drawn from multiple sources. Outliers should be excluded by comparing ranges of figures and retaining the most representative values. For agricultural assets, multi-year statistical data (at least three years), professional literature, and specialised market bulletins should be combined to establish credible yield and price indices.

Improvement:

Today, valuation methodology requires the use of several independent and reliable sources of baseline data, which are then comprehensively analysed to ensure transparency and fairness in compensation.

Case 2. Valuation Approaches for Productive and Not Yet Productive Trees

The second case also arose from a complaint in the North-South Road Corridor Project, concerning compensation for 500 fruit trees. The AP disputed both the compensation amount and the categorisation of the trees as "not-yet productive," and hired an independent agronomist to verify productivity status.

Findings:

The agronomist engaged by the Land Acquisition and Resettlement Plan (LARP) team assessed the trees as 4 years old, classifying them as not-yet productive since apple trees typically reach full productivity at 5 years. In contrast, the AP's agronomist measured the trees using cross-sectional growth rings in the trunk. Upon further review, it became clear that the additional three years reflected the period during which the seedlings were grown in a nursery, which cannot be considered in valuation.

At the time, fruit trees were divided into three categories for valuation: seedlings, not-yet productive (valued by the investment approach) and productive (valued by the income approach). The compensation difference between not-yet productive and productive trees was substantial—nearly tenfold.

Lesson and Improvement:

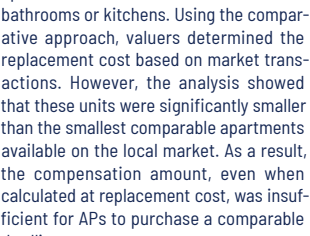
This case prompted significant debate in the valuation community. As a result, the methodology was revised:

- The categorical distinction was removed.
- Trees are now valued year by year, combining both investment costs and income flows.
- Tree age is calculated from the date of planting, excluding nursery years.

Formula applied:

$$\text{TF Compensation} = \text{TF Value of the investment} + \text{A actual tree age}^{1} \times \text{NMAI}^{2}$$

1 (max age of productivity)
2 Net market annual income



Case 3. Replacement Cost Insufficient to Restore Livelihoods

What if replacement cost is not enough? The third case highlights situations where the calculated replacement cost is insufficient to restore livelihoods. During the preparation of a Land Acquisition and Resettlement Plan (LARP) for the **North-South Road Corridor Project**, consultations revealed complaints from APs regarding the compensation for small apartments in multi-dwelling buildings.

Findings:

The affected units were single-room apartments of about $20\ m^2$, often without bathrooms or kitchens. Using the comparative approach, valuers determined the replacement cost based on market transactions. However, the analysis showed that these units were significantly smaller than the smallest comparable apartments available on the local market. As a result, the compensation amount, even when calculated at replacement cost, was insufficient for APs to purchase a comparable dwelling.

Further investigation of local transactions and listings confirmed that the minimum size of apartments on the market was larger, and therefore, their total cost was higher than the compensation calculated for the smaller affected units.

Lesson and Improvement:

To address this gap, valuers introduced a rehabilitation allowance, defined as the difference between the compensation for the affected unit and the minimum cost of a market-available apartment. This ensured that APs could acquire a functional replacement residence.

The methodology was subsequently revised and applied across the LARP: market analysis must account not only for unit prices but also for minimum viable dwelling sizes, linking valuation practice directly to livelihood restoration.

1 Most of IFI's safeguard policies for the projects they fund provide for compensation for non-land assets/improvements of non-registered illegal users affected due to compulsory land acquisition, and this, notwithstanding that such policy runs counter to legislation in most countries.

Tigran Grigoryan is CEO of the Independent Valuers Club, the Armenian member of TEGOVA. A valuation professional with over 20 years of experience, he has played a leading role in the valuation of more than 9,000 affected properties, particularly in the context of compulsory land acquisition, eminent domain, and infrastructure development projects. His work spans major initiatives such as the North-South Road Corridor and urban redevelopment programs in Yerevan. He has contributed to the development of national valuation standards and supported policy reforms including draft amendments to the Law on Valuation.

Naira Derdzyan PhD is a valuation and consulting professional with nearly two decades of experience in Armenia and the wider region. She has led valuation engagements and has extensive experience in transaction advisory and corporate strategy, bringing international best practice into the Armenian context. She has supported policy reforms and advised on the alignment of Armenian practice with international standards across diverse industries.

PROPERTY VALUATION

Yerevan, Armenia

#02

Property valuation: the weakest link in the lending process

Paulo Barros Trindade

Background

In virtually all sectors of the economy, it is recognised that expertise and responsibilities must be fairly compensated. And yet, in Europe's property valuation industry, particularly in valuations for mortgage purposes, this logic does not seem to apply. In most countries, property valuation professionals, who are essential to the smooth functioning of the financial and property markets, are typically still remunerated at a level that does not reflect the technical demands and legal responsibilities of their work.

In Europe, property valuers produce reports that are crucial for lending decisions, property investments, accounting records and even legal disputes. They work according to strict standards, such as the European Valuation Standards (EVS), and face significant risks. However, the reality is that, in many countries, the fees paid to valuers are very low and the situation is often compounded by tight deadlines and increasing paperwork.

The pressure comes mainly from the banking sector, whose models for hiring valuers (individuals or companies) are based on volume and speed. The work demands technical rigour and prudence, but the prices paid make it difficult to sustainably guarantee the required quality.

The consequences are clear: valuers forced to accept high workloads and devote less time to each report. The result is a potential decline in quality that could compromise the entire decision-making process, from lending to banking supervision.

"Regulating the profession and ensuring its economic

sustainability is not about protectionism, but about guaranteeing independence, quality and, ultimately, stability for one of the pillars of the financial system."

What's even more serious is that this undervaluing of the profession makes it less attractive. Young engineers, architects and economists are less likely to be motivated to pursue a demanding, technically complex and legally exposed career when the compensation is comparable to that of entry-level office assistants. And so, in many jurisdictions, there is a notable ageing of the profession that urgently needs to be reversed in the short to medium term.

We must urgently face this reality head on. Restoring value to the profession requires setting minimum sustainable fees for valuers and promoting stringent professional accreditation – such as TEGOVA's REV (Recognised European Valuer) designation – to guarantee rigorous quality criteria. Regulating the profession and ensuring its economic sustainability is not about protectionism, but about guaranteeing independence, quality and, ultimately, stability for one of the pillars of the financial system.

Regulation and new challenges

The introduction of sustainability criteria (ESG) in company balance sheets and in the property sector has heralded new requirements for valuers. As required by banking regulations, valuation reports have begun to incorporate these criteria, and in most jurisdictions this has increased workloads without being compensated for in fees.

The rules of the Capital Requirements Regulation (CRR), which in its latest version introduced the concept of 'property value', are now becoming another requirement of valuation reports, with the resulting time investments. However, European banking has not generally understood that this increase in work and responsibility needs to be accompanied by higher fees.

TEGOVA's study

To investigate this further, TEGOVA conducted a survey among its members, to which it received responses from 23 countries. The aim was to identify the average fees paid by banks for a typical mortgage valuation (for an apartment measuring 80–100 m^2).

The fees paid to property valuers are obviously influenced by each country's level of wealth. The results show values between €80 (Montenegro) and €1,350 (Austria), with a European average of €334.

A cross analysis with economic indicators (GDP per capita, average gross and net wage) revealed a strong correlation with the average net monthly wage.

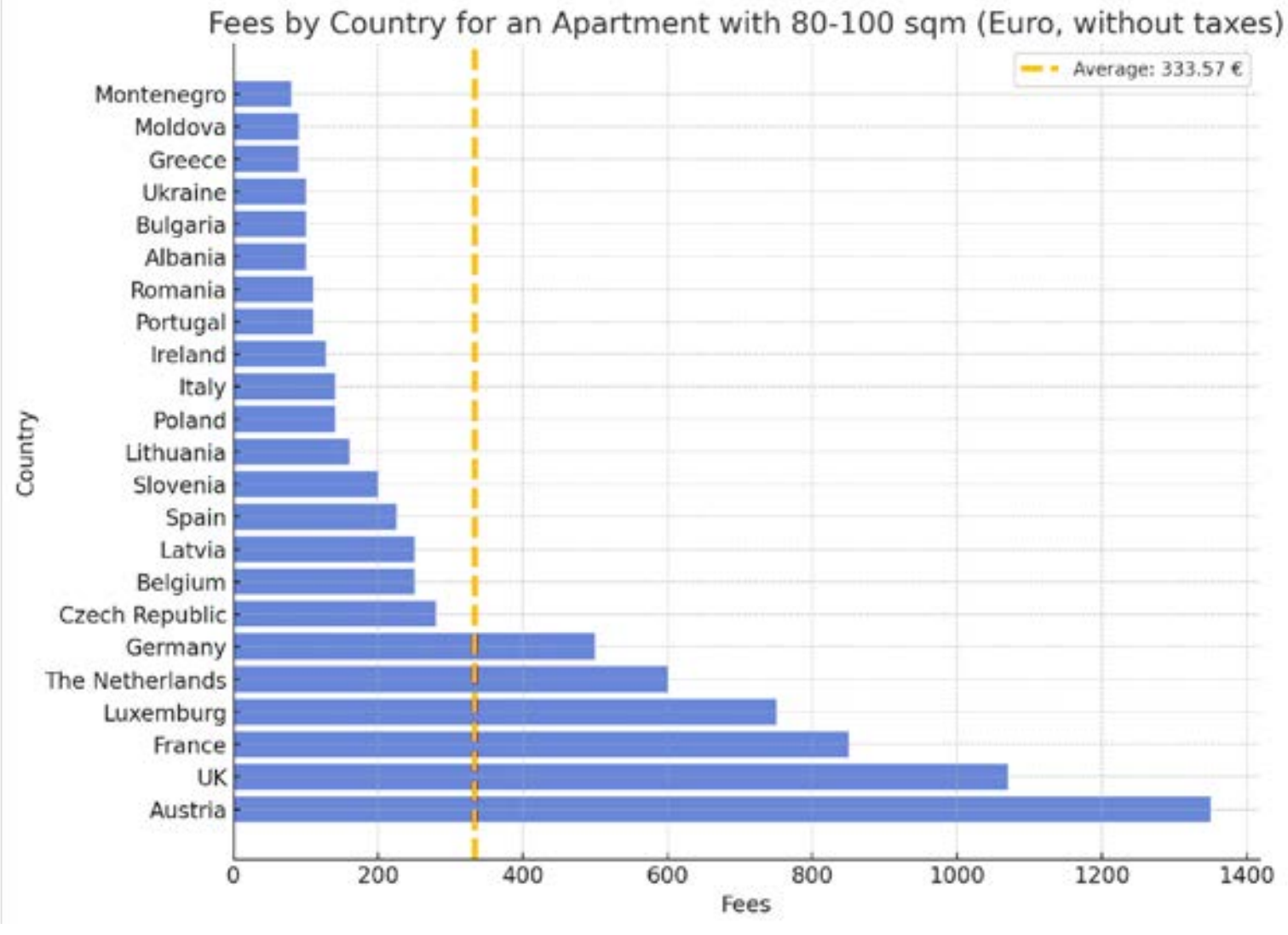


Table 1 – Fees by country
Source: TEGOVA

Based on the analysis, it was possible to create a homogeneous graph of the situation in different European countries.

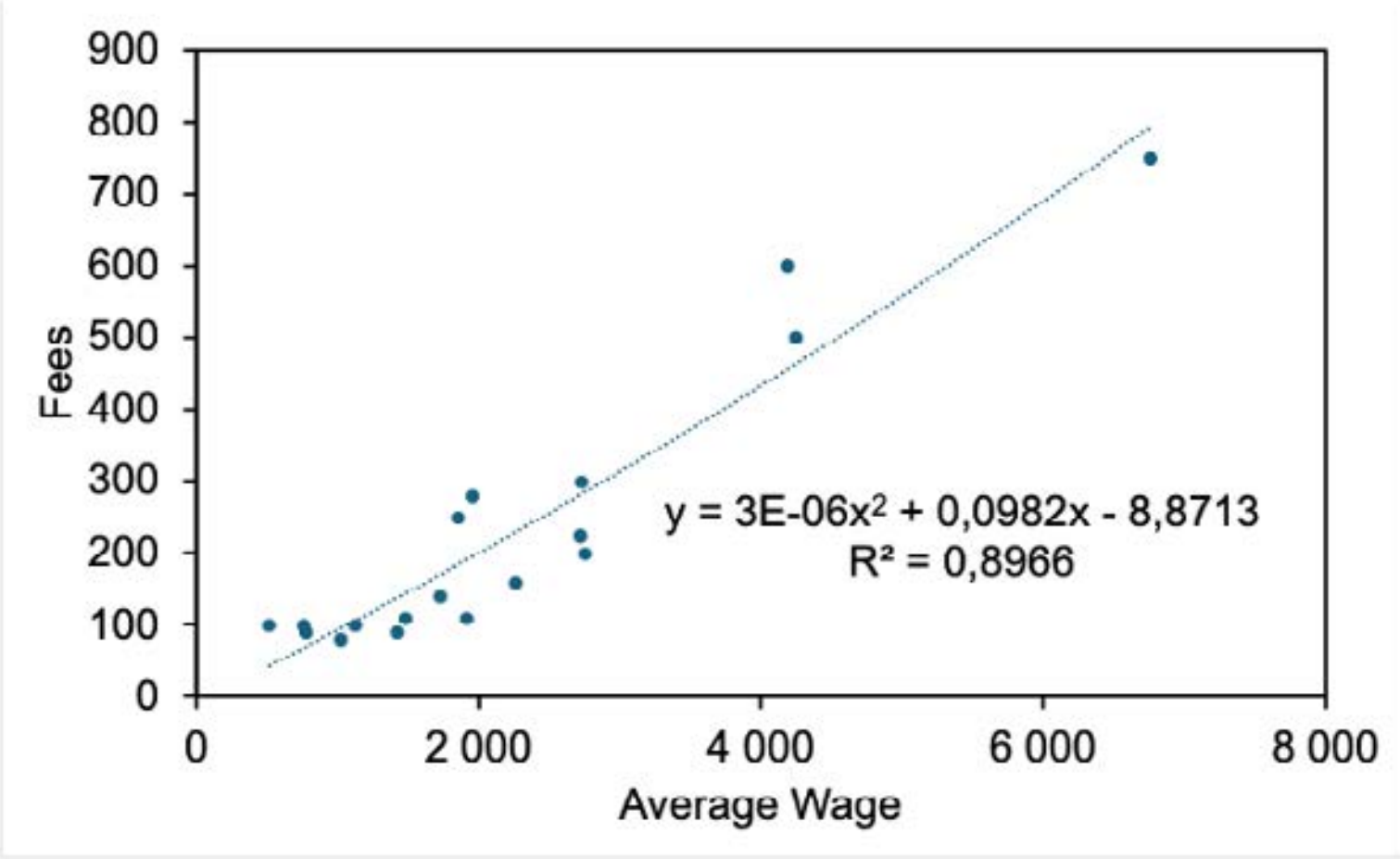


Table 2 – Regression analysis of fees and net average monthly wage
Source: TEGOVA

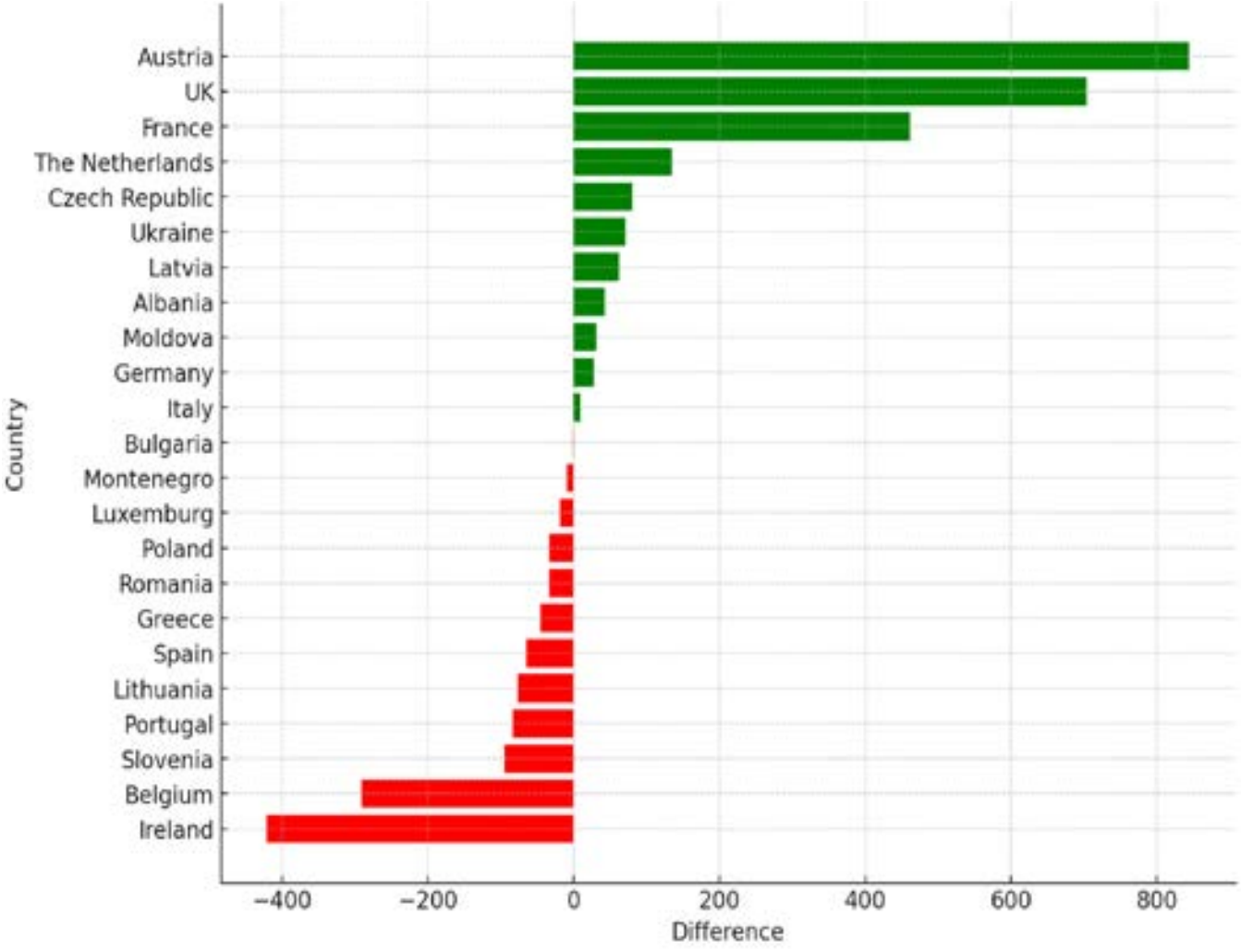


Table 3 – Differences between actual fees applied in each country and the expected fee according to regression
Source: TEGOVA

The study uncovered disparities: in countries marked in green, the fees were higher than expected, while those in red were below expected. The most representative example is Ireland, where the amounts paid are substantially lower than expected, considering the national average net wage.

Although these types of studies are good indicators for identifying countries with the greatest problems in this regard, it is possible to perform an even more in-depth study, introducing aspects such as the level of banking industry requirements and national regulations in each country.

In the survey carried out, it was possible to ascertain that responsibilities currently do not differ and are common to all the countries surveyed, meaning they are not a factor that could affect the study's results.

Contradictions and risks

According to EBA data, mortgage lending currently accounts for 79% of total lending to private individuals. As such, according to ECB data, it currently exceeds 5.347 billion euros, almost four times more than in 1998.

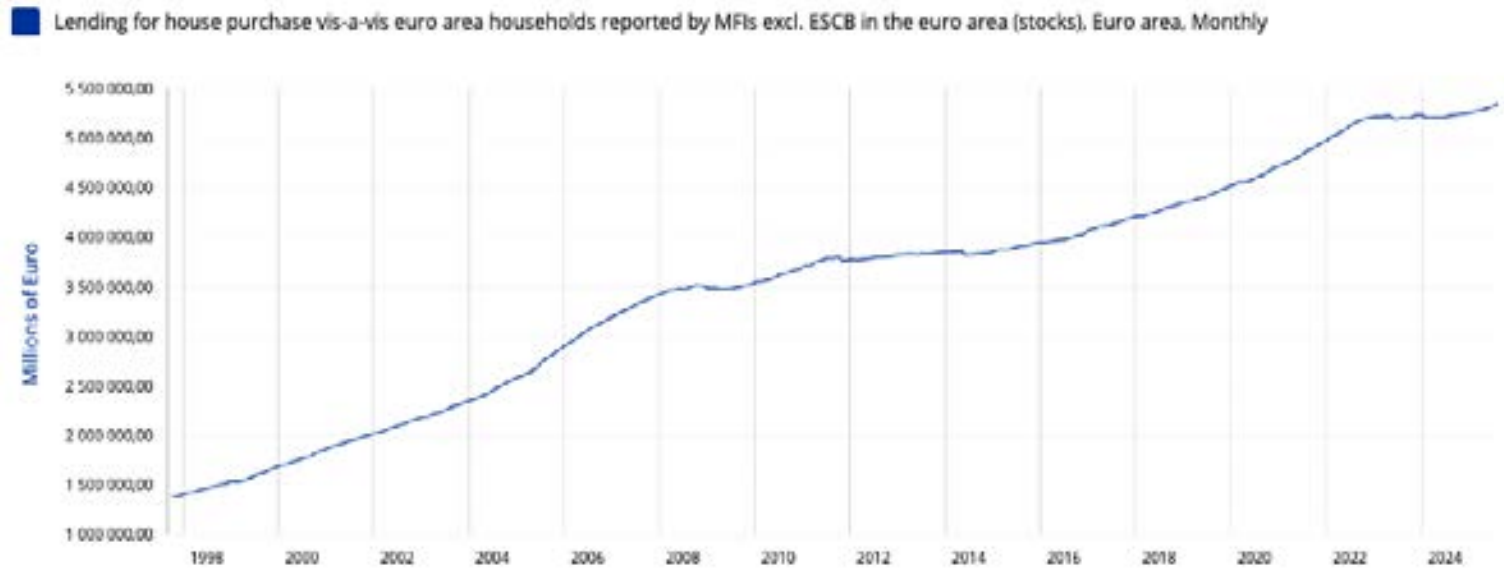


Table 4 – Evolution of housing loans in the euro area

Source: ESCB

Over the past 30 years, this increase in mortgage lending has transformed what was once a niche market in most countries – housing loans – into an everyday product, and one of the most desirable for the banking industry.

This substantial increase in mortgage lending has led to a consequent increase in the number of professionals in the property valuation sector. Over the past two decades, however, valuation for mortgage purposes has become increasingly commoditised, as banks have introduced processes that aim to accelerate the pace of the lending process. As a result, turnaround times have become an additional factor in inter-bank competitiveness.

This situation has placed enormous pressure on property valuers, as report turnaround times are increasingly becoming the most important factor for the banking industry.

Regulations have attempted to rebalance this situation by introducing more rigorous requirements, especially after the 2008–2011 financial crisis, but with these developments property valuers find themselves between two opposing pressure points – on the one hand, commercial criteria that demand speed in completing reports to avoid delaying banks' internal processes, and on the other, European and national regulations that impose technical and quality criteria, aimed at avoiding the consequences of another financial crisis.

The problem is that the two pressure points are antagonistic. Property valuers cannot do quality work, adhering to standards such as the EVS, if they do not have a feasible timescale in which to do that work.

To some extent, the current landscape in the mortgage lending valuation industry in Europe is one that property valuers have allowed to happen by failing to defend their interests and not making European banks aware of these issues. As an example, 48-hour turnaround times are unacceptable if property valuers are to do their work to the desired quality.

"...property valuers find themselves between two opposing pressure points – on the one

hand, commercial criteria that demand speed in completing reports to avoid delaying banks' internal processes, and on the other, European and national regulations that impose technical and quality criteria…"

The question of timescales is, in fact, a false problem for the banking industry – the efficiency of the banking process is not compromised if, instead of two days, the service level required for a valuation report is increased to five days, giving the property valuer time to carry out the work, and meeting the quality criteria that we all want to see met.

The question of fees also merits reflection.

In the life cycle of a residential property, an important constituent of the various technical practitioners' pay is their level of responsibility:

- The responsibility of the architect and engineer at planning and design level goes beyond commercial aspects, since they will be held responsible for any damage that a plan or design error may cause.
- Construction works supervision, management, safety and coordination – other levels of technical work that also entail responsibilities over time.

- Estate agents, who have no responsibilities after the transaction, receive between 3% and 5% of the sale value.
- Property valuers, who do have significant responsibilities and a direct impact on the financial health of the banking system, receive amounts far lower than the other practitioners involved, in proportion to the risk they take on.

It is also telling that, when the bank sells property portfolios, it agrees to pay 5–10% of the value to estate agents and portfolio management companies, but exerts pressure to save money on valuation services – the very services that support the quality of the credit granted and, ultimately, the value of the bank itself.

At some point, banks' commercial process decided that property valuers are simply another 'stamp' involved in the lending process, and they are treated as such. Nothing could be more mistaken. It is not for nothing that European and national regulations place so much focus on the quality of mortgage valuations; it is because these valuations are so fundamental to the health of the financial sector.

Nevertheless, it is up to the associations representing valuers to attempt to change this mistaken view of property valuation, which has contributed to the devaluation of the profession and consequent devaluation of fees.

"At some point, banks' commercial process decided that property valuers are simply another 'stamp'

involved in the lending process, and they are treated as such. Nothing could be more mistaken."

Conclusions

The TEGOVA study confirms it: in half of the countries analysed, the banking industry pays fees that fail to reflect the profession's level of expertise and responsibility.

Reversing this situation will require:

- greater literacy in the banking sector, in society and among regulators about the importance of valuers and property valuations;
- setting fees that are economically sustainable for valuers;

- realistic delivery timelines enabling professionals to do quality work.

Fortunately, EU law facilitates fair fees for mortgage valuation. The Services Directive allows minimum fees as long as they are justified by an overriding reason relating to the public interest. Among the reasons identified by the Court of Justice, two are of the highest relevance to valuation:

- *"public policy"*, given the ECB's recognition of valuation as a crucial safeguard against systemic financial and property market risk, and
- *"the protection of consumers and recipients of services"* concerning valuation of collateral which is the most important financial commitment in peoples' lives.

And the Mortgage Credit Directive lays down that banks' general information about the loan must include any valuation costs for the borrower. I would add that in the borrower's and the public's interest, the next revision of the Directive should refine that obligation to distinguish between the total sum to be paid by the borrower for the valuation and the portion of that sum that is actually paid to the valuer.

At a time when greater rigour and transparency are required in the financial sector, to leave property valuers as the weakest link in the chain is a systemic error. If we want informed decisions, we need robust valuations. To achieve that, it is essential that those who have the know-how to do these valuations be paid fairly. The profession needs to organise itself to make that happen.

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#03
ESG and climate risks: redefining real estate valuation for banking risk mitigation

José Caetano Soares de Oliveira

Start When? Right NOW!

The intersection of climate change, real estate, and finance has shifted from theory to practice.

Floods, wildfires and heatwaves are no longer isolated events – they directly affect property values and collateral quality. At the same time, regulators such as the European Central Bank (ECB), European Banking Authority (EBA), and standard-setters like IFRS and ESRS are mandating climate-related disclosures and risk integration across lending and valuation practices.

Do we have the data we need? Yes, although information is available and improving, there are differences from country to country. Check what information you have available in your geography. Energy Performance Certificates (EPCs), hazard maps and NGFS1 climate scenarios now enable valuers and lenders to quantify climate exposure and energy consumption and embed it in financial decision-making. Portugal benefits from advanced EPCs, both in terms of the quality of the information and its availability. The same applies to maps and scenarios with climate change.

The regulatory landscape in Europe is at the forefront of embedding climate considerations into financial supervision. The ECB's Supervisory Guide on Climate Risks and the EBA Guidelines on Loan Origination and Monitoring set expectations for integrating environmental factors into credit policies and valuations. From 2026 onwards, EU banks will be required to climate disclosure mandatory for many institutions.

Meanwhile, the recast Energy Performance of Buildings Directive (EPBD) introduces minimum energy performance standards (MEPS), compelling upgrades and renovations across the building stock. The message is clear: **climate risk is now a decisions must reflect climate and energy performance. Its mandatory** – not part of it, or risk regulatory non-compliance that will lead to asset devaluation.

In preparing your guidance, always set your mind on these evolving factors:

Physical risks depend on direct natural events: floods, wildfires, heat, or sea-level rise; while **transition risks** are set by the people holding the power to shape the decarbonisation policies, carbon pricing, the setting of incentives or high-emission assets. Both categories are increasingly material to property valuation and banking metrics such as loan-to-**Value** (LTV) and **Loss Given Default**2 (LGD).

So now we can advance to the valuation. How can we incorporate ESG risk factors in a rational and economic way? Climate and ESG factors influence property values through multiple channels. Stick to the most relevant:

- **Revenue:** declining rents or higher vacancy in non-resilient assets
- **Operating costs:** rising insurance premiums, energy costs, and adaptation CAPEX
- **Liquidity:** longer selling times and higher discounts in high-risk zones

Valuers are adapting the three core valuation methods to incorporate these dynamics:

- **Income approach** – discount rates and cash flows adjusted for insurance, energy, or downtime risk
- **Cost approach** – reconstruction costs reflecting resilience and energy codes
- **Market approach** – comparables adjusted for EPC ratings, sustainability certifications and hazard exposure

Insurance as a market signal

Insurance markets are becoming a leading indicator of physical risk. Premiums are rising, exclusions are expanding, and **uninsurable zones** are emerging in parts of Europe. When coverage becomes unavailable, properties effectively lose part of their collateral value. For lenders, **insurability is now a proxy for climate resilience.**

> "Climate and ESG factors influence property values through multiple channels. Stick to the most relevant."

From real estate to banking risk

As collateral values shift, banks face direct exposure through their loan portfolios. Climate risk affects not only individual properties but also portfolio concentration and capital adequacy.

Revaluation triggers based on EPC grades, hazard exposure or insurance status are being built into loan monitoring frameworks.

Scenario testing, using the **NGFS orderly, disorderly, and hot-house world frameworks**, helps institutions quantify potential value-at-risk across 2030 and 2040 horizons.

> "Banks that pay valuations below a fair value will be contributing to the unsustainability of the valuation activity."

Take the 2023 **Storm Daniel floods in Thessaly, Greece**, as a case study: billions in damages, thousands of displaced people, and a temporary real estate liquidity freeze — illustrating how climate shocks can cascade through property and financial systems.

Governance and implementation

Leading banks are already embedding ESG adjustments and climate triggers in their valuation policies and lending rules.

Banks must observe the 'i' in ESG. GOVERNANCE in aspects related to the independence of valuers, usually reflected in a contract that sets both value and bank obligations. If, on contractor side, you are not willing to pay a fair and appropriate price, then you do not meet the governance criteria established in the ESG sustainability policy and must make the necessary changes. Banks that pay valuations below a fair value will be contributing to the unsustainability of the valuation activity. They will also be harming customers and shareholders, as they will not allow for data research, information analysis and the completion of an adequate valuation.

Addressing these challenges requires cross-functional coordination among **Credit**, **Valuation**, and **Sustainability** teams.

Conclusion

The convergence of ESG climate risk and governance requirements is transforming how banks and valuers assess real estate, but must also contribute to a more transparent and fair relation between the two. **A property's sustainability profile is no longer a reputational feature — it's a financial determinant**. As regulation tightens and data improves, the institutions that integrate climate intelligence into valuation and lending today will be best positioned to safeguard both asset quality and financial stability tomorrow. The valuers are the key providers. They must be aware, they must be proactive, but they must also be fairly recognized for their work, with appropriate fees, reflecting the importance of their reports for bank sustainability and long-term profitability.

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- EPBD Recast Directive (2024)
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[1] The Network of Central Banks and Supervisors for Greening the Financial System (NGFS) launched at the Paris One Planet Summit on 12 December 2017, is a group of Central Banks and Supervisors willing, on a voluntary basis, to share best practices and contribute to the development of environment and climate risk management in the financial sector and to mobilize mainstream finance to support the transition toward a sustainable economy.

[2] The estimated amount of money a financial institution loses when a borrower defaults on a loan.

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#04

Are valuers the weak link in digitalisation?

Erik Schlooz

EVJ interviews Erik Schlooz, CEO of KATE Innovations[1]

Michael MacBrien: How do you see valuation digitalisation today in your native Netherlands and across Europe?

Erik Schlooz: Ten years ago, the first lenders began requesting structured data rather than just a report in Word or PDF. At first, it seemed like a small step, but it marked the start of a larger movement toward comparable valuations. In several countries, valuation models have since been introduced as the de facto standard, driven primarily by the explicit requests of clients.

The problem? Many of these models are black boxes. They produce results but provide little to no visibility into how the calculations are made. For special asset classes, such as operational real estate, valuers sometimes need to use workarounds in input fields to arrive at realistic values. As a result, many firms still maintain their own Excel models as a control mechanism and the foundation of their valuation process.

In the Netherlands, three major banks jointly took the initiative to develop a single valuation standard that made everything comparable: calculation models, reports, and the underlying real estate taxonomy. It was an important step toward greater market transparency.

In other European countries, the situation is more complex. Dozens of lenders and stakeholders are often involved, making it harder to achieve a single uniform standard. Still, a clear pattern is emerging: 90% of the data points are the same across countries. The differences lie mainly in emphasis, such as Germany's 'Mortgage Lending Value' or specific sustainability requirements elsewhere. The expectation is that this movement will ultimately lead to a European data standard for the entire valuation market.

> *"Lenders no longer want valuations only as paper reports but as reusable data."*

MM: What consequences do you see for the valuation profession?

ES: Valuers are lagging behind. For years valuers invested a lot to create the fastest word and excel modelling. These tools often efficient, require no large investments, and fit the existing business model, but clients are moving on. Lenders no longer want valuations only as paper reports but as reusable data. They need to analyse portfolios, monitor risks, oversee portfolios, and meet reporting obligations. Today, this often means valuations are retyped manually, an inefficient and error-prone process. The real question for valuers is: "How do I organise my own data, and can I deliver structured information alongside a report?"

MM: And how does your company help with that?

ES: The valuation profession is undergoing a rapid digital transformation. Modern valuation management systems allow valuers to structure their entire workflow and data, from conflict checks and instruction letters to the inspection process and the creation of reports in their own style. This makes it possible to achieve internal consistency while enabling data exchange with lenders as well as with public and private data sources.

This development ties directly into the acceleration we see on the side of financial institutions. Banks are increasingly automating the way valuations are reviewed and how assignments are distributed to valuers, often including the relevant data directly with the instruction.

As financiers continue to adopt such tools, valuers will no longer be able to ignore them. Digitalisation will not be optional but required. Embracing structured processes and interoperable data will be essential to ensure transparency, consistency, comparability, and efficiency across the valuation chain.

MM: It's understood that there's now a strong AI component to digitalisation and presumably your products integrate that. Can you explain?

ES: By structuring data in a consistent way, AI opens up a wide range of possibilities. On the one hand, it enables the automated collection of information from multiple sources, forming the foundation for intelligent applications. At the same time, valuers retain the ability to apply their own prompts and professional judgement, ensuring that their unique expertise continues to play a central role.

Depending on the asset type, available sources, and location, up to 85% of a report can be pre-prepared automatically. This allows valuers to shift their focus towards risk analysis and interpretation, in other words, the substantive and engaging aspects of the profession. Early results suggest this can accelerate the valuation process by 40% to 60%.

Some practical examples illustrate what this means in practice:

- Smart analysis of lease information: Upload a lease contract and, within seconds, key details such as terms, rents, and conditions are extracted, validated, and ready for use in a valuation model.
- Enrichment of transaction data: Because datasets are often incomplete, AI can automatically gather and structure missing information, resulting in more reliable comparisons and stronger substantiation of valuations.
- Interactive report review: AI can act as a second reviewer, checking whether substantiation is sufficient, risks are overlooked, or reasoning lacks consistency. This improves report quality and provides the valuer with a critical digital sparring partner.

> *"For valuers, the implication is clear: those who work with systems that generate uniform data will be in a stronger position to receive assignments."*

MM: You're talking about valuation data exchange with lenders, but are they ready for this?

ES: With the introduction of Basel IV and CRR3, banks are required to report more extensively and in greater detail. At the same time, the concept of property value has been formally introduced. Yet, the processing and assessment of valuation reports is still often carried out manually. To meet these new regulatory demands, the quality and consistency of data is critical.

To support this, a European taxonomy is being developed, which will provide clarity on the uniform meaning of individual data points. This common language enables better comparability and ensures that reporting requirements can be met across markets.

For lenders, this creates a strong incentive to adopt systems that can standardise incoming information. A Valuation Assessment System allows lenders to receive and review valuation data in a consistent way, regardless of the layout or format of the underlying report.

For valuers, the implication is clear: those who work with systems that generate uniform data will be in a stronger position to receive assignments. Since much of the manual work on the lender's side disappears, uniform data enables more efficient and transparent assessments of valuations.

MM: You say that your smart analysis of lease information is directly usable in your "valuation model". What do you mean by that?

ES: New tools make it possible to use AI to read lease contracts directly and transform the information into actionable data. This data can then be linked to a tenant's creditworthiness, enriched with additional information from external sources, and seamlessly loaded into valuation models and reports.

The valuer remains responsible for verifying the information, but the process provides deeper insight into the tenant profile and potential risks. This not only strengthens the foundation of the valuation but also adds measurable value to the report.

Beyond meeting requirements such as those defined by TEGOVA, these tools open the door to offering additional services or advice to clients. By combining structured data with professional expertise, valuers can move beyond compliance and provide richer, more strategic insights in their valuation reports.

MM: Your examples evoke a rich collaboration between your product and the valuer. How does that work? For instance, you say that AI can gather and structure additional transaction data. So, valuers first gather their own data and then turn to your product? Or is it the other way around with the valuer 'prompting' your product for input refinements?

ES: It is ultimately a combination of automation and expertise. By using AI to structure and analyse data, a large share of the underlying information can be generated and offered as suggestions. It is then the responsibility of the valuer to review and approve this input before it becomes part of the report.

> *"A new platform has been developed where an EVS-compliant report can be pre-filled up to 80% before the valuer even reviews it."*

At the same time, valuers can apply their own prompts, ensuring that specific descriptions or company-specific insights are incorporated into the text. For example, a research paper can be linked and combined with selected internal or external data points to provide additional context.

What remains essential, however, is that the valuer must always be able to explain how particular values and conclusions were reached. The use of AI enhances efficiency and consistency, but professional accountability and transparent reasoning remain at the core of the valuation process.

MM: On your website you discuss the importance of the valuer approaching AI in the right way: "Not 'how do I make my job as easy as possible', but 'how can I make AI as practical as possible for work and with the target group?'." How does KATE help with that?

ES: Of course, a default setup is provided to get started. Working with AI is a different way of thinking, and it takes some experimentation to find what works best for both the company and the valuer. We know that data is available in each country, and combining this knowledge is combined with client expertise to define the initial configuration, including prompts.

The implementation takes place in several stages, as companies usually gain new insights during the process about what is possible. Often, after just a few weeks, the question arises: *"If that can be done, then surely this can be done as well?"* This reflects a shift in mindset. The transition is guided step by step, ensuring that clients can both adopt the technology and learn to think differently about their processes.

MM: A lot of this seems to revolve around data exchange between valuers and clients. Can you elaborate?

ES: The guiding principle is that it is not the PDF report itself that matters most, but the underlying data. This shift enables seamless data exchange with both clients and data providers. For example, engagement confirmations from banks with basic property data can be received digitally and enriched with additional analyses. Similarly, sustainability partners can supply their reports, which valuers then verify during inspections.

A new platform has been developed where an EVS-compliant report can be pre-filled up to 80% before the valuer even reviews it. Local data sources are integrated directly, while AI tools provide further support. Importantly, the valuer always retains control: AI suggestions can be adjusted or overruled, as professional expertise remains decisive.

At the same time, changing banking regulations are forcing institutions to act on data compliance. While assignments and reviews are still often carried out manually today, the future lies in digital data exchange. Reports will be assessed largely automatically, accelerating processes and enabling deviations to be detected more effectively – forming the basis for a more meaningful dialogue between lender and valuer.

MM: That brings us to the heart of the matter. Up to 80% of the report is your product's 'suggestion' or 'options' which the valuer can 'override'. I suppose in practice you mean override if the valuer's experience leads him to suspect that something's wrong, for instance with the estimation of value. But how does the valuer check your various inputs that led to the 'suggested' estimation of value? A selling point of your company is that your product is less 'black box' than an AVM. How exactly?

> *"… not every datapoint is necessarily up to date. A building may, for instance, have just been fitted with double glazing that is not yet reflected in the datasets. In such cases, the valuer can adjust and steer the outcome, ensuring that professional expertise and on-site observations remain decisive."*

ES: Transparency is a central principle: from prompts to calculation models and external data points, everything is visible to the valuer. This ensures that the system always acts as a supportive tool rather than a replacement for professional judgement.

Calculation models in particular are often a topic of debate, as every valuer may have a different view. For this reason, it is possible to upload or connect one's own models within the system. What remains essential is that the valuer must always be able to account for the conclusions in the report and the values assigned.

At the same time, not every datapoint is necessarily up to date. A building may, for instance, have just been fitted with double glazing that is not yet reflected in the datasets. In such cases, the valuer can adjust and steer the outcome, ensuring that professional expertise and on-site observations remain decisive.

MM: Your website states that by taking on the less noble tasks, your products give valuers extra time to work on "real craftsmanship". What are you thinking of?

ES: With the new programme, valuation reports can be completed up to 40–50% faster. Around 80% of the report is pre-filled, and this information is also accessible through the inspection tool. This enables the valuer to make adjustments on site, add photos, and have everything synchronised instantly with the report, avoiding any loss of time.

The more data is integrated into the system, the more efficiently the processes can run. Over time, this creates a compounding effect where both speed and consistency in valuations continue to improve.

MM: I can certainly think of one "real craftsmanship" area: ESG. Banks are under EU regulatory pressure to include this in their valuations, and they have duly passed it on to valuers. Under EU law and practice, it's mostly the 'E' in ESG, not just energy efficiency, but also information on flood, earthquake, biodiversity, soil degradation and forest fire risk. Does KATE have a way of pulling all that together so that the valuer doesn't have to waste time with multiple requests to local authorities?

ES: Across Europe, there is growing initiative around ESG data. In the Netherlands and Belgium, we are currently working with CFP.[2] In the Netherlands, 80 ESG data points are now mandatory as part of the valuation process. Of these, 63 are filled automatically, including data on sustainability measures.

This level of integration is not yet possible in every country, which is why we invite local partners to work with us on optimising ESG data exchange across markets. Importantly, the impact on market value remains the responsibility of the valuer. While data supports the process, professional judgement continues to determine the final assessment.

MM: How do your products work on less sophisticated markets with less digitalised public information than in the Netherlands? Obviously, they take a hit, but are they still partially useful?

ES: A question I often hear is whether the entire process must run through the platform. The answer is that while KATE structures the complete workflow, it is also possible to configure individual components. The greater the volume of data available, the greater the acceleration in the process.

For example, the EVS and GRS are already embedded in the software, ensuring that every report produced complies with the required standards.

Looking ahead, we are actively seeking pioneers in each country to explore new possibilities together. We will also continue to make significant investment in this area over the coming period. Our message is clear: challenge us to push the boundaries further.

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[1] KATE Innovations is a Dutch PropTech company that develops innovative software solutions for the real estate industry. Their platform helps valuers, lenders, advisory firms, and financial institutions streamline the entire valuation process, from request to delivery, making it faster, more transparent, and more reliable. KATE works with leading players in the real estate and finance sectors, such as Cushman & Wakefield, CBRE and Savills, who rely on their technology to increase efficiency and ensure high-quality, data-driven valuations.

[2] CFP Green Buildings is a Dutch-based sustainability consultancy and tool provider that helps organisations, banks and building owners accelerate the transition to net zero and healthier buildings worldwide. They are active in 26 countries and combine digital tools, certifications, and consulting expertise to scale impact across millions of properties.

PROPERTY VALUATION

Yerevan, Armenia

#05

EVJ interviews

Krzysztof Grzesik, new Chairman of the European Valuation Standards Board

Krzysztof Grzesik

Krzysztof Grzesik REV FRICS led TEGOVA for a decade. He succeeded Cédric Perrière as chairman of the European Valuation Standards Board in July.

Michael MacBrien: Why take the EVSB chair?

Krzysztof Grzesik: For me this appointment is an honour and privilege. During my years as Chairman of TEGOVA I gained most satisfaction and enjoyment from interacting with valuers across Europe and beyond and witnessing the development of European Valuation Standards to which I contributed to some extent. It's a relief for

me to see that Jeremy Moody, the most outstanding contributor to several editions of EVS, remains as Vice Chairman and that there are both promising new arrivals and seasoned veterans. I couldn't hope for more.

MM: So what now?

KG: The timing of EVS 2025's release was spot on because the EVSB had time to fully adapt the Blue Book to the major valuation impacts of the revised Capital Requirements Regulation and the European Green Deal legislation, making EVS 2025 cutting edge: still today, the Blue Book has the only existing guidance on *"property value"* based on prudently conservative valuation criteria and a methodology for integrating energy efficiency into the estimation of market value. But the speed of change now is as never before, so we must urgently return to work.

"I've spoken to ECB risk analysis officials about ESG. They look to EVS for answers. And this is no abstract affair because across Europe banks simply shift the burden to valuers."

MM: What are the urgent new valuation topics which need to be tackled by the EVSB?

KG: The headline topics will be ESG, Property Value and AI. The first two will require refinement and AI will be an adventure because we are just beginning

to gauge its true impact on valuation practice. Indeed, TEGOVA will be working on two tracks simultaneously: the EVSB and an AI Task Force. Fortunately some people will be on both bodies and the Task Force will also have top EVSB veterans Cédric Perrière and Julia Barrasa Shaw. At a recent valuation conference in answer to the question, will we valuers be replaced by AI I heard a speaker say no, but those of us who do not use AI will be. I agree, but only to a certain extent. I do not believe that clients will be impressed by the valuer's skills, necessary as they will become, in generating reports through AI. After all, those same clients will also have access to the same AI applications. Rather clients will value more than ever the valuer's independent judgement based on experience and an intimate knowledge of the market and its players, the willing buyers and willing sellers. If valuers are ever faced with defending a valuation in court, typically in a claim for negligence or as an expert witnesses in arbitration disputes, will the judges or tribunals be convinced by AI-generated evidence?

MM: What do you mean by refining guidance on ESG and Property Value?

KG: EVS 2025 focusses on the energy efficiency component of 'E' for the good reason that the regulatory pressure to upgrade the energy efficiency of the building stock has critical mass and is transforming the market. No other aspect of ESG approaches that, and monetising 'S' and 'G' is difficult for valuers. In the last issue of EVJ, the articles by Jolanta Panas and Sven Bienert/Ben Höhn addressed 'S' and 'G' but were all about ESG in commercial property because that's the property for which valuation approaches to ESG have been found – there's not much out there for residential. And yet EU law and ECB practice require banks to do ESG mortgage valuation reporting even though every time the ECB explains what is wanted

the examples always return to energy efficiency.

I've spoken to ECB risk analysis officials about ESG. They look to EVS for answers. And this is no abstract affair because across Europe banks simply shift the burden to valuers. It is time for EVS to take this on. I'm really glad that Georgi Georgiev, Chairman of the Chamber of Independent Appraisers of Bulgaria, is also joining the EVSB because his and Tzenka Bojilova's joint article in the last issue of EVJ shows they're way ahead on this and go beyond energy efficiency to the broader natural risks that banks want us to cover.

As for Property Value, notwithstanding its supposed implementation as of January this year, so far take up by banks has been slow with some resisting the change and there continues to be debate about interpretation and methodology. The EVSB will need to expand its current guidance in EVS with a view to harmonising practice in this area across Europe.

MM: The TEGOVA General Assembly decided that EVS 2025 will be the last of the classic comprehensive standards books published every four or five years with no changes in between. How do you see EVS work in this context?

KG: The decision follows the idea of European Business Valuation Standards Board Chairman Ivars Strautiņš and his colleagues to create a core, stable, streamlined EVS limited to standards, methodology and code of conduct whilst everything else including crucially the Guidance Notes moves to a permanent dedicated area of the TEGOVA website and can be modified as necessary. This applies to all Blue Books. The Blue Book will become a much reduced albeit still substantial document in a more user friendly style. It is indeed the Guidance Notes which will require the EVSB's constant attention in a rapidly

changing legislative environment. The core standards have been developed over nearly 50 years and nowadays require minimal refinement, not so Guidance Notes.

There's also a powerful presentational aspect to this. The sea change we are engineering must not result in a 'noble' core standards book with the rest relegated to some obscure section of the website. The website has to be developed to ensure that both Standards and Guidance Notes really stand out, becoming a major centre of interest for the valuation community, an agora. We have to get that engineering just right. Modern valuation challenges and increasing EU regulation of the profession require it.

MM: In the March 2025 EVJ you appeared alongside Paulo Barros Trindade at a meeting with IVSC and RICS leaders. Is there any possibility of standards convergence?

KG: First of all we need to dispel the myth that IVS, EVS and RICS are in competition with one another. Each has a different emphasis and true purpose. IVS are broad in nature with a worldwide remit, EVS is not surprisingly more detailed focusing on Europe and in lockstep with EU law, and the RICS red book sets rules for its members whilst incorporating IVS. Much credit is due to the RICS which kicked off the standards setting process back in the mid-1970s with the publication of the first red book. What is important for the future is continuing dialogue between IVSC, TEGOVA and RICS as well as our observer member standards setting bodies in North America. We do in fact agree on the most important valuation concepts and methodologies.

MM: How do you see the state of the valuation profession right now and in the years to come? What advice would you give to a graduate contemplating a valuation career?

KG: The main problem is an ageing profession. Nowadays graduates seeking a career in real estate are more attracted to supposedly better paid sectors such as investment development and commercial agency. Technological advances and AI will no doubt also lead to less internships for budding valuers. But a diminishing pool of valuers should in theory lead to brighter prospects for young valuers. If you enjoy the subject, please persevere. On qualification you will join an in-demand elite.

As discussed above, valuers will need to acquire skills in using AI as a valuable tool but the fear that the technology will replace valuers is misplaced. Valuation will become more complex with the implementation of "property value" and the growing need to report on ESG factors usually requiring consideration of the unique features of each property valued following inspection. Also, the old adage that valuation is both an art and science is still true today.

Valuers' intuition, knowledge and experience are key in the assessment of value, a fact which European Valuation Standards will frequently emphasise.

MM: You are in Ukraine as we speak, carrying out a mission for the World Bank. Can you tell us anything at this stage?

KG: Notwithstanding the Russian aggression, the country's valuation profession is very much alive albeit operating under difficult circumstances. In recent years, the State Property Fund of Ukraine (SPFU), the valuation profession's regulator, with the assistance of the World Bank Group has been promoting a new draft law on valuation, now before the Ukrainian Parliament "Verkhovna Rada" for enactment. If and when the statute comes into force, European Valuation Standards will feature prominently given Ukraine's chosen pathway towards EU membership.

In this connection, the SPFU in conjunc-tion with the World Bank Group, invited me to deliver a two day training session on European Valuation Standards to a group of 40 top valuers to equip them with the knowledge about EVS which could be disseminated further down the line to those engaged on training valuers across Ukraine ('Train the Trainers') – ten hours on the Blue Book (trip to air raid shelter included) interspersed with lively discussion on market value, property value, the European Green Deal, Code of Conduct and methodology. This was certainly a knowledgeable audivrent issues of valuation practice in Ukraine are common to much of Europe.

BUSINESS VALUATION

Big data flow

#06

Modern approaches to business and digital asset valuation in the

context of disruptive change and ESG factors (Part I)

Dragoljub Janković

1. Introduction

Business valuation represents a fundamental component of strategic decision-making in the contemporary economy. With the increasing influence of global economic and geopolitical turbulence, accelerated digital transformation and the integration of ESG (Environmental, Social, and Governance) standards, the question arises regarding the adequacy of existing methodological frameworks in assessing modern enterprises. In addition to traditional value drivers—such as revenue, assets, and cost of capital—today's business environment requires the consideration of intangible, digital, and sustainability-related aspects. Traditional approaches that relied on relatively stable market conditions, historical data and expected cash flows are showing increasing limitations when applied to startups, digital platforms, ESG-oriented organisations, and companies operating in disruptive sectors.

Over the past decade, we have witnessed significant changes in global value chains fragmented due to trade wars, the COVID-19 pandemic, sanctions, and shifts in the global geopolitical structure. Simultaneously, digital transformation has introduced new forms of value not directly recorded in financial statements—such as algorithms, user data, and online reputation. Accordingly, the need to revisit and adapt existing business valuation methodologies to the realities of the modern environment becomes increasingly relevant.

Key Issues and Questions

Traditional valuation models—such as the Discounted Cash Flow (DCF) method, market multiples, and asset-based approaches—are based on assumptions of stable revenues, historical data, and rational market behaviour. However, under conditions of rapid technological change, market shocks, and the rising importance of intangible assets, these approaches are becoming increasingly inadequate.

Key questions that arise include:

- How can digital assets, intangible resources, and ESG factors be quantified in valuation models?
- Is it possible to develop a reliable framework that integrates these variables into existing methodologies?
- How do different value adjustment approaches impact the final valuation outcome?

2. Digital assets and intangible resources

Digital assets include software, databases, algorithms, patents, AI models, user networks, digital brands and domains. Intangible resources also encompass reputation, organisational culture, innovation ability and managerial know-how. In the digital era, digital assets have become one of the key drivers of competitive advantage and value creation in companies worldwide. The increasing digitisation of business operations, development of platform-based economies, and the proliferation of big data are transforming traditional asset valuation concepts, introducing new challenges for both valuers and investors[1].

Valuing digital assets is a complex, multidisciplinary task requiring a deep understanding not only of economic and financial aspects but also of the technical characteristics of digital resources, the regulatory environment, as well as risk and sustainability factors. The objective of this article is to offer a critical overview of current methodological approaches, challenges, and recommendations for reliable and applicable digital asset valuation.

Types of Digital Assets

A successful valuation requires a clear classification of the various types of digital assets. Primarily, this includes software and applications—whether commercial or custom-developed products. Then come databases and user data relating to collected and processed user and market information. Algorithms and AI models—programme code and models that enable automation and data analysis—are also considered digital assets. Digital brand and reputation represent the perceived value associated with digital services and user experience. Ecosystems that connect users and service providers, such as platforms and network effects, likewise fall under this category. Finally, intellectual property (patents, licenses) in the digital domain is a key component of digital asset valuation.

3. Valuation approaches

One of many pieces of research (Brookings, 2023) shows that over 75% of the market capitalisation of companies in developed markets stems from intangible and digital assets. Standard accounting and financial statements are often unable to reflect this value adequately, leading to significant discrepancies between market and fundamental values.

Traditional valuation approaches include the Discounted Cash Flow (DCF) method, market comparison, and asset-based valuation. The DCF method is based on projecting future net cash flows that the company is expected to generate and discounting them to their present value using a return rate that reflects risk. This method is particularly useful for stable and mature companies with predictable earnings. Market comparison uses multiples (e.g., EV/EBITDA, P/E) from comparable firms, while the asset-based approach assesses firm value based on its net assets, often adjusted to market values. These models assume the availability of reliable data, market stability, and rational investor behaviour. Many businesses—especially in early development stages—lack historical data, while markets are increasingly characterised by volatility, uncertainty, and unpredictability. Moreover, traditional models often overlook intangible assets, which represent a fundamental source of competitive advantage in the digital economy.

Hence, there is a growing need to integrate these methods with the specific characteristics of digital assets. Hybrid valuation methods include:

- DCF with adjustments for digital premiums or revenue corrections
- Real option models for valuing AI and software assets

- Market method (peer comparable) segmented by the degree of digitalisation
- Direct value adjustment methods supported by documentation of digital resources

The Role of Technology and Artificial Intelligence

The integration of artificial intelligence (AI) and big data analytics tools significantly reshapes valuation methodology. AI enables the identification of patterns in company and market behaviour, the optimisation of cash flow forecasting, and the automation of peer analysis. The use of alternative data sources—including sentiment analysis and social media insights—provides better understanding of public perception and reputational capital[2].

An example from the UK-based startup Wordsmith AI demonstrates how a company built on software platforms and proprietary algorithms can rapidly create substantial market value. The primary value drivers were intangible in nature—algorithmic expertise, a user base, and brand perception—all of which were integrated into the valuation model through AI-powered dynamic simulation tools.[3]

Scenarios and Real Options

The real options approach represents a methodological enhancement to DCF, as it incorporates strategic flexibility into the model. It is based on the premise that management can make decisions depending on market developments—for example, to delay, expand, or reduce investment. Scenario modelling, on the other hand, involves the development of multiple business projections under different macroeconomic and regulatory conditions.

In the case of GreenSolutions, scenario analysis—ranging from changes in regulatory frameworks to CO2 pricing—led to insights into wide variations in potential market value. This afforded investors a deeper understanding of both risk and opportunity. Such approaches reinforce the management of uncertainty, especially prevalent in sectors with strong ESG components.[4]

Valuation of Intangible and Digital Assets

Traditional financial statements often fail to include adequate information on intangible assets, which may represent the dominant share of a company's value. This is especially relevant in sectors such as IT, e-commerce, biotechnology, and digital platforms. The value of brands, software solutions, user bases, algorithms, and network effects can far exceed the book value of physical assets.[5]

RideShare Co., a company in the sharing economy sector, based its valuation primarily on platform potential and customer loyalty. A valuation that ignored these components would significantly underestimate true potential. Modern valuation models use metrics such as platform or app user growth, engagement[6], user lifetime value[7], and retention data to estimate digital asset value.

Bridging Theory and Practice in Modern Business and Digital Asset Valuation

This first part of the paper has provided a theoretical foundation for understanding contemporary approaches to valuation, with a particular emphasis on the importance of digital and intangible assets, innovative models such as discounted cash flows in real and nominal terms, real options theory, scenario modelling, and the integration of artificial intelligence into valuation processes. It has been demonstrated that traditional models, while still useful, are increasingly insufficient in addressing the dynamics of the market and the uncertainties stemming from geopolitical and macroeconomic factors, as well as the requirements of sustainable development (Damodaran, 2012; Koller et al., 2020). This part highlighted the need for valuation theory to be expanded and complemented with methodological tools that allow for greater flexibility and improved risk capture. This naturally opens the door for the integration of regulatory and professional guidelines found in the most recent European and international standards, particularly the *European Valuation Standards 2025* (EVS 2025) and the *European Business Valuation Standards 2020* (EBVS 2020), alongside the *International Valuation Standards* (IVS). In this way, a theoretical framework has been established that does not remain in the abstract domain, but instead leads logically towards its operationalisation in practice through standards, concrete methodologies, and case studies. With this conclusion, the theoretical part of the paper is rounded off, while at the same time paving the way for an examination of the practical implications in the next section.

In the following (second part) of this article, the focus shifts towards the operationalisation of the theoretical framework and its validation in practice. Special emphasis will be placed on valuation standards, above all the European Valuation Standards 2025 (EVS 2025) and the European Business Valuation Standards 2020 (EBVS 2020), which serve as a regulatory and methodological anchor for valuers in Europe, but also the International Valuation Standards (IVS), whose framework carries global significance. The analysis will explore how these standards address the challenges of inflation, market volatility, digitalisation, and ESG factors (EVS 2025, Part 1; EBVS 2020, Chapter 4), as well as the limitations that arise in their application in specific circumstances. Beyond the standards, the discussion will also examine the practical application of modern methodologies in the valuation of digital assets and start-ups, where the need for adjusted discounting models, the incorporation of specific risks into the discount rate, and the use of scenario-based approaches becomes evident (OECD, 2021; PwC, 2023). By introducing case studies, the aim is to demonstrate how theoretical concepts can be translated into real-world valuations, and what lessons such translation provides for professional practice. In this way, the second part of the paper represents a logical continuation of the previous one, but with a clear shift in focus from theory to empiricism and application.

[1] Damodaran, A. (2012). Investment Valuation,

Wiley, i OECD (2022). Valuation of Intangible Assets in the Digital Economy

2 CFA Institute (2023). ESG Integration in Business Valuation

3 EY (2022). Unlocking Value in the Digital Economy

4 World Economic Forum (2021). Strategic Intelligence on Energy Transition

5 IASB (2022). Intangible Assets Reporting Framework i Deloitte (2023). Measuring the Value of Data

6 User engagement, user interaction with the product, service, or content. High user engagement indicates that the application is popular.

7 It represents the estimation of the total revenue or profit that will be generated from a single user over the period during which the user remains active. Increasing the customer's lifetime value helps the company to better plan its marketing expenses.

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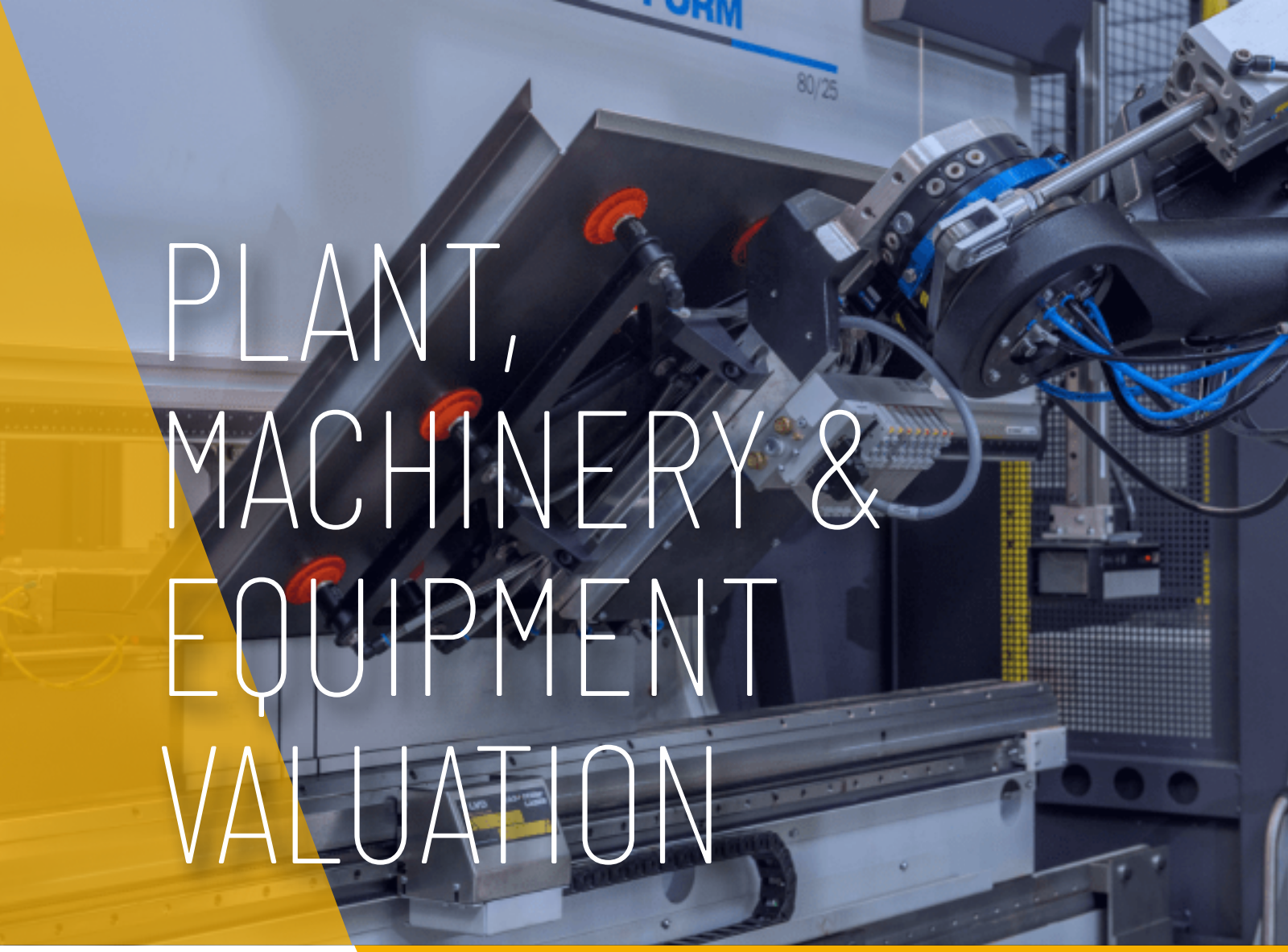
Prof. Dr. Dragoljub Janković[8] is a university professor of finance and the author of the first Business Valuation Regulation in Montenegro, developed during the country's economic restructuring towards a market-based model, which included establishing initial ownership structures of companies through privatisation. He also focuses on the application of artificial intelligence in real estate and business valuation, as well as comprehensive financial analyses. His expertise encompasses business and real estate valuation, financial modelling, financial statement analysis, and applied Excel, PowerPoint, and Word methodologies. His research includes integrating digital assets, ESG factors, and disruptive technological changes into modern valuation frameworks.



PLANT, MACHINERY & EQUIPMENT VALUATION

LVD Group RBS 40 Robotic Bending System for mid-sized parts

#07

Sustainable technologies for production machines

Roman Šůstek

Introduction

In the world of modern manufacturing, the view of the value of technical equipment is changing. Machines are no longer judged solely on performance, production capacity or acquisition cost. New dimensions of valuation are coming to the fore - energy efficiency, digital connectivity, the ability to integrate into automated operations and, above all, sustainability as a comprehensive framework for environmental and operational responsibility.

Machinery that can minimise resource consumption, speed up production flow and communicate in an Industry 4.0[1] network is gaining more relevance than traditional volume or price-based technology. Sustainability is thus turning into a fundamental value driver that affects not only the life cycle of a machine, but also its position in economic and expert valuation.

Sustainability is becoming a key factor in the valuation of production machinery. Companies that invest in environmentally friendly and energy efficient technologies not only increase their competitiveness but also contribute to a long-term sustainable industry.

One example of sustainable manufacturing technology is modern CNC machining[2] centres that use energy-efficient components and optimised machining strategies. For example, replacing an old machining centre with a new model can reduce energy consumption by up to 30 %. Another innovative approach is trochoidal milling, which enables more efficient metal machining. This method can reduce machining time by up to 75 %, resulting in lower energy consumption and less tool wear.

Reducing the energy intensity of a production machine translates directly into its market value and return on investment. The key factors that influence the valuation of a machine are:

Lower operating costs:

Energy-efficient machines have lower electricity consumption, which reduces overall operating costs. For example, if a new machine uses 30 % less energy, this can mean annual savings of tens of thousands of euros, increasing its value at valuation.

Higher competitiveness in the market:

Companies prefer machines with a lower carbon footprint because it helps them meet environmental standards and ESG requirements. Machines with energy efficiency certification (e. g. Energy Efficiency Certificate from GF Machining Solutions[3]) have a higher value and are more attractive to buyers.

Longer life and less wear and tear:

Modern energy-efficient machines often use intelligent power management, which reduces mechanical wear and tear and extends their lives. Longer life means higher resale value.

Regulatory benefits and subsidies:

In some countries there are tax breaks or subsidies for energy efficient technologies. If a machine meets these conditions, its value may be higher due to lower acquisition costs for the buyer.

Higher energy consumption of an old machine means lower efficiency. If a new press consumes, for example, 60% of the energy of the old one, the energy consumption can be used as an indicator of technical obsolescence.

Quantifiable base of LVD press brakes

The method of solving the problem is carried out on the forming machine of the bending press. The main parts of the press brake are shown in Figure 1.

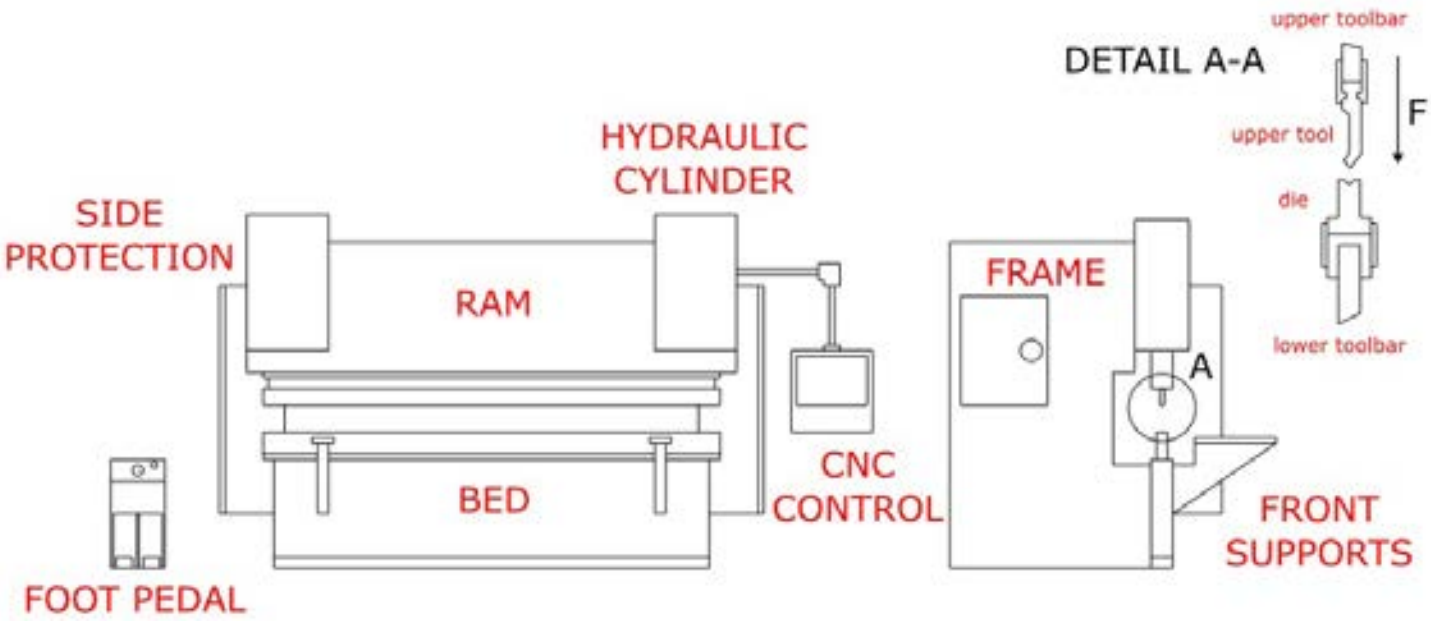


Figure 1 - Basic design groups of a press brake; source (2) (See "Literature")

Table 1 presents the analytical core of the model, which aims to capture the technological evolution of the three key generations of LVD bending presses in terms of functional performance, digitalisation and operational efficiency. The chosen benchmarks include, among others, energy intensity, bending accuracy, level of automation and degree of integration into the

Industry 4.0 environment.

Feature	I. generation (2000-2008)	II. generation (2009-2016)	III. generation (2017-present)
System control	PC120/ basic CNC	TOUCH-B with graphics	TOUCH-B 15" with 3D simulation
Back gauge	2 axes, manual	5-6 axes, automated	6-8 axes, adaptive
Motion angle correction (bending accuracy)	integration of EFL into higher models of the PPEB series	Easy-Form® Laser	Easy-Form® Laser with Adaptive Correction
Energy efficiency	without energy-saving features	standard hydraulics	ERS System
Industry 4.0 integration	no (CADMAN-B)	partial (CADMAN® Lite)	full (ERP, CADMAN®, Remote

			Access)
Safety system	basic light barriers	CE Certification, advanced barriers	sensors, remote diagnostics
Motor power (kW)	42	37	37

Table 1 - Comparison of generations of LVD PPEB bending presses; sources (3) and (4) (see "Literature")

Solution

The above table does not simply compare parameters (e.g. number of steered axes, accuracy, energy consumption), but above all contains quantifiable bases for subsequent adjustment of the purchase price of older models using objective correction factors. Since the Generation I and Generation II press brakes are no longer in production, the approach applies the principle of solving for moral wear and tear – i.e. the degree of technological and operational obsolescence of the equipment in relation to current standards – based on two coefficients:

- Energy Correction Factor (ECF), which reflects the difference in daily electricity consumption
- Time Correction Factor (TCF), which captures the difference in the total execution time of an identical operation

Energy Correction Factor (ECF):

The Energy Correction Factor (ECF) is a key parameter used to express the relative energy consumption of each generation of bending presses in relation to a comparative (reference) variant. In this approach, the ECF quantifies the ratio of the daily electricity consumption of the older model to the latest generation III and serves as one of the inputs for correcting the purchase price of the machine in terms of its operational efficiency. It is expressed as a dimensionless number which takes a value of less than 1 if the older model is more energy intensive than the reference variant. The ECF thus effectively captures the degree of operational obsolescence of the technology based on its consumption intensity and allows environmental and cost considerations to be incorporated into the valuation of the functional value of the machine (Tables 2, 3, 4 and 5).

Item	Value
Number of shifts per day	2
Length of shift	7,5 h = 450 min
Working time per day	2 × 450 min = 900 min = 15 h

Table 2 – Determination of working time per day

Item	Time (min/day)
Breaks (40 minutes/shift)	80
Settings (tools, programme)	30
Preparation of material (unpacking, supply)	20

Total losses	130

Table 3 - Time loss and downtime

Working time per day (min)	900
Real machine operation (min)	770
Percentage of effective processing	86%
Active time 15 h × 86 %	12,83 h
Inactive time 15 h × 14 %	2,17 h

Table 4 - Operating time of the press brake

The Energy Correction Factor (ECF) for each generation is based on the data presented in Table 5.

Indicator	I. generation	II. generation	III. generation
Model	PPEB EFL 220/40	PPEB EFL 220/40 TOUCH-B	PPEB 220/40 (ERS)
Nominal power[4] (%)	60%	60%	60%
Motor power (kW)	42,00	37,00	37,00
Energy Reduc-	no	no	45%

tion System (ERS)			
Active time (h)	12,83	12,83	12,83
Total daily consumption (kWh)	323,40	284,90	156,70
Energy correction factor (ECF)(-)	0,485	0,550	1,000

Table 5 - Energy Correction Factor (ECF) I., II. and III. generation

The Time Correction Factor (TCF):

The Time Correction Factor (TCF) represents a numerical expression of the difference in productivity of a press brake, specifically the difference in the time required to perform the same operation between different generations of equipment. In the context of the valuation model, the TCF is used to consider the fact that older generations of press brakes perform the same production task significantly slower than the current model with its higher degree of automation and digitisation. The calculation of the TCF is based on the ratio of the time required to complete a specific operation for the new generation of bending presses compared to the older version. The value of this coefficient is always less than 1 (for older models), which reflects the lower performance and thus lower technical and operational value of the bending press. The inclusion of the TCF in the calculation framework results in a more realistic correction of the starting price of the press brake by the obsolescence factor.

The product used for the evaluation of the time subsidy is a 12 mm thick, 500 mm long steel plate carrier with four 90° bends (2 × 400 mm bends and 2 × 15 mm bends).

Phases of the operation	I. generation	II. generation	III. generation
Model	PPEB EFL 220/40	PPEB EFL 220/40 TOUCH-B	PPEB 220/40 (ERS)
Machine setting (min)	18,0	12,0	6,0
Tool change	10,0	6,0	3,0

(min)			
Bending (4 bends)	4,5	3,2	2,6
Angle correc-tion	6,0	2,0	0,0
Total (min)	38,5	23,2	11,6

Table 6 - Time allowances for making product bends; source (5)

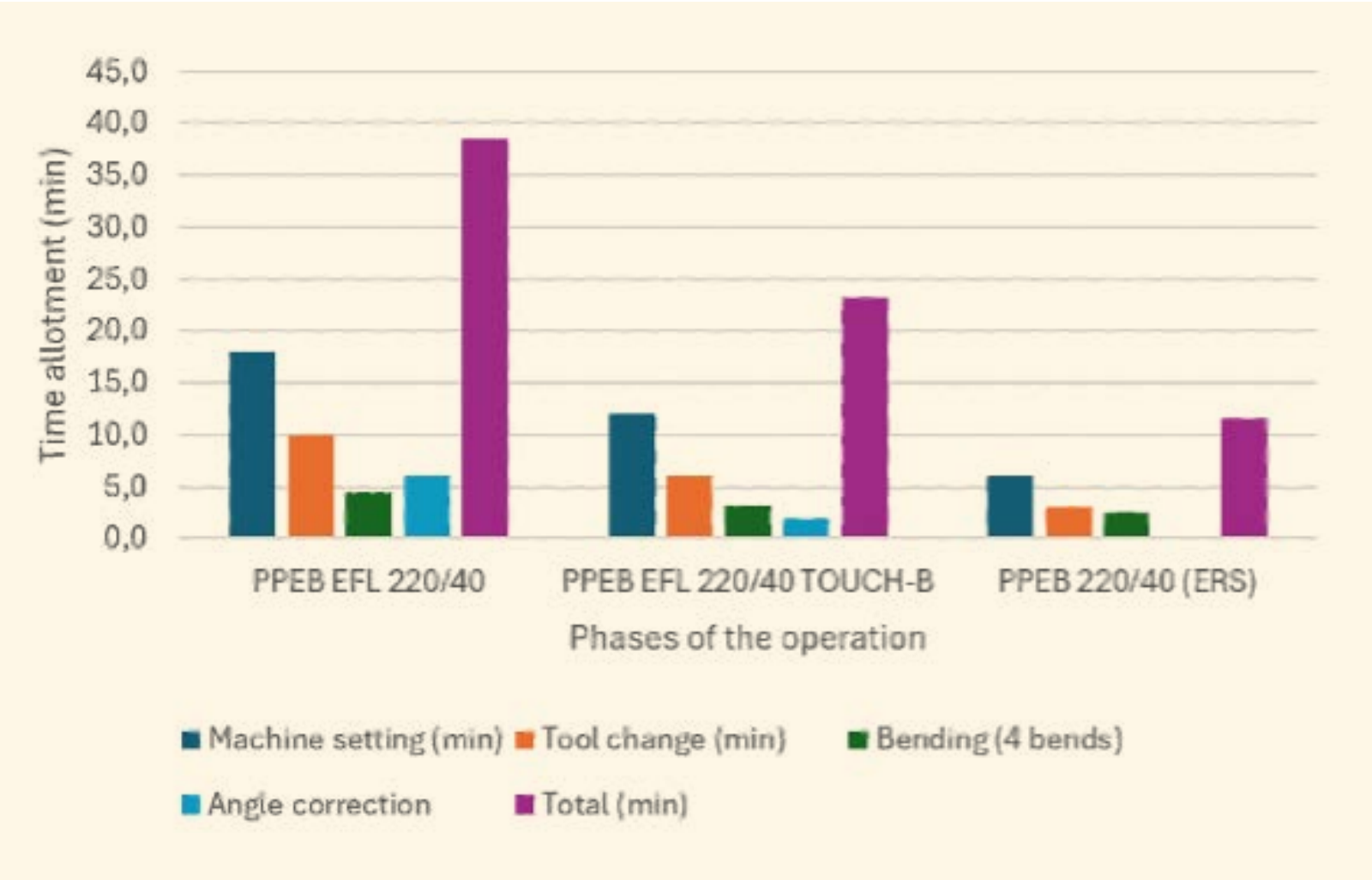


Figure 2 - Comparison of the time phases of the models

Time allocations are estimated based on a combination of catalogue data, technology standards and practical operating experience. The most widely used systems for measuring and standardising work are the MTM and REFA standards. Comparisons of the time allotment for setting up LVD PPEB bending presses with the MTM and REFA standards commonly used for time standardisation in engineering production are shown in Table 7.

Generation	Model	Setting time (min)	MTM/REFA Standard (typical range)
I.	PPEB EFL 220/40	18,0	15-25 min (manual adjustment, no simulation)
II.	PPEB EFL 220/40 TOUCH-B	12,0	10-15 min (partially automated)
III.	PPEB 220/40 (ERS)	6,0	5-8 min (automated, adaptive)

Table 7 - Adjustment of press brake vs. MTM/REFA standard

Indicator	I. generation	II. generation	III. generation
Model	PPEB EFL 220/40	PPEB EFL 220/40 TOUCH-B	PPEB 220/40 (ERS)
System control	PC120/basic CNC	TOUCH-B with graphics	TOUCH-B 15" with 3D simulation
Number of controlled axes	2–4 (X, R, Z1, Z2)	5–6 (X1, R1, Z1–Z2, X2)	6–8 (X1, R1, Z1–Z2, X2, V)
Industry 4.0 integration	no	partial	full
Digitalisation and connectivity	basic (without network connectivity)	TOUCH-B, USB, off-line CADMAN-B	Ethernet, CADMAN-SDI, ERP connection
Software	manual programming	3D simulation,	CADMAN® Suite, cloud,

(equipment)		tool database	remote diagnostics
Safety system	basic light barriers	CE Certification, Advanced Barriers	sensors, remote diagnostics
Bending accuracy	±0,3° (without correction)	±0,2° Easy-Form® Laser	±0,2° adaptive correction
Time allotment (min)	38,5	23,2	11,6
Time Correction Factor (TCF)(-)	0,301	0,500	1,000

Table 8 – Time Correction Factor (TCF) I., II. and III. generation

For a practical valuation, it is necessary to compare the LVD bending press being valued with a comparable machine. The cost of the new acquisition is estimated using comparable machinery of the manu-facturer with known sales prices:

$$SPE = SPC \times CTL \ \{EUR\} \qquad (1)$$

where SPE is estimated selling price {EUR}, SPC is the selling price of a new item of comparable design to the item being valued {EUR}, and CTL is the technical level coefficient of the item being valued {EUR}.

However, due to the heterogeneity of the production of bending presses, it is very difficult to correctly determine the values of the CTL technical level coefficient. When estimating the CTL, the expert must correctly consider all significant differences in terms of the new value of the bending press being valued and the bending press used for comparison.

In these considerations, it is necessary to respect the principle described in the IVS (International Valuation Standards)

that if the comparable market information does not relate to exactly or substantially the same asset, the valuer must perform a comparative analysis of the qualitative and quantitative similarities and differences between the comparable assets and the asset being valued. Adjustments will often be necessary based on this comparative analysis. These adjustments shall be reasonable, and the valuers shall document the reasons for the adjustments and how they were quantified.

A structured approach to the determination of the CTL allows for a reduction in the level of subjective assessments made by the expert. In practical valuations of forming machines, it is useful to think of the CTL coefficient as a system of two sub-coefficients according to relation (2):

$$CTL = COP \times CDTP \{-\} \qquad (2)$$

where COP is the coefficient of distinction accounting for differences in pricing, the so-called determinants {-} and CDTP is the Coefficient of Distinction of Technical Progress {-}.

The solution for deriving the COP coefficient is described in the author's paper (Comparative analysis of pricing parameters, Canadian Property Valuation).

The Coefficient of Difference of Technical Progress of CDTP[5] is expressed according to relation (3):

$$CDTP = (ECF \times TCF)^{1/2} \{-\} \qquad (3)$$

where ECF is the Energy Correction Factor {-} and TCF is Time Correction Factor {-}.

The valuation of older generations of LVD PPEB bending presses is shown in Table 9.

Genera-tion	ECF (-)	TCF (-)	CDTP (-)	SPC or SPE (EUR)
I.	0,485	0,301	0,382	SPE = 61 133 €
II.	0,550	0,500	0,524	SPE = 83 905 €
III.	1,000	1,000	1,000	SPC = 160 000 €[6]

Table 9 - Valuation of older generations of LVD PPEB bending presses using the energy and time correction method

To avoid excessive underestimation, a minimum value is set at the same time, below which the reduced default value does not fall. In general, a value of 20-30 % of the cost of the new generation can be set as a normal lower limit for moral wear and tear when using the cost method. This approach ensures that the starting value reflects the technical differences between press brakes, but at the same time does not fall below an economically defensible residual value.

Conclusion

In today's industrial environment, the value of machinery is no longer determined solely by technical parameters or purchase price. Ecological footprint, energy efficiency, digital readiness and processing speed are becoming equal criteria in modern valuation. Sustainability is no longer an add-on, but a functional factor that influences the operational relevance and future usability of machines.

By investing in environmentally and operationally efficient technologies, companies are not only conforming to regulatory requirements but also building strategic value for their production facilities within Industry 4.0. In valuation practice, sustainability and moral obsolescence thus become an integrated part of the value framework, not just an additional characteristic.

In this context, it is crucial to consider moral wear and tear. This is captured in the model by the Energy Correction Factor (ECF), reflecting the difference in energy consumption, and the Time Correction Factor (TCF), reflecting the difference in productivity of the operation. These two indicators are combined by a geometric mean to produce an objective measure of moral wear and tear, which serves as a correction to the original value of the machine.

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1 The concept of Industry 4.0 (also called Industry of the Future or Fourth Industrial Revolution) refers to a new way of organising the means of production. This new industry is characterised by the convergence of the virtual world , digital design and management (operations, finance and marketing) with the products and objects of the physical world. When valuing machines, it is therefore important to consider whether the equipment meets the requirements of the digital environment - i.e. whether it is "Industry 4.0 ready". Machines that are unable to communicate over a network or are limited by manual control have a higher rate of technical obsolescence and tear even if they are mechanically functional.

2 CNC (Computer Numerical Control) machining is a manufacturing process in which pre-programmed computer software dictates the movement of factory tools and machinery. This process can be used to control a range of complex machinery, from grinders and lathes to mills and routers. With CNC machining, three-dimensional cutting tasks can be accomplished in a single set of prompts.

3 The Energy Efficiency Certificate from GF Machining Solutions is a document that certifies that a specific machine or model series meets defined low energy consumption standards in accordance with ISO 14955.

4 The manufacturer does not provide an accurate average energy consumption per cycle in publicly available materials. Expert sources and energy audits of comparable machines indicate that consumption is about 30 to 40% lower during approach and return and can reach 80 to 100% in the short-term during bending. The average consumption is therefore often between 50 and 70% of the rated power. For the calculation of the energy correction factor, a mean value of 60% is chosen.

5 The technical level coefficient CTL is calculated by the geometric mean of the two coefficients (energy and time). The geometric mean reflects the multiplicative nature of the operational effects.

6 The initial value of the Generation III press brake LVD PPEB 220/40 (ERS) is 160 000 EUR.

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EU REGULATION

European Parliament, Strasbourg
Sculpture by Ludmilla Tcherina
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#08

AI Act impacts on valuation practice

Michael MacBrien

Regulation (EU) 2024/1689 (artificial intelligence act)

Before considering the AI Act it is important to debunk the trope aggressively marketed by Silicon Valley and the U.S. administration that EU regulation stifles AI innovation. The reality is that EU policy is strongly geared to supporting AI development including supporting Europe's 6 800 AI startups:

- Computing power in the EU is publicly accessible through the European network of cutting-edge supercomputers deployed by the **European High-Performance Computing Joint Undertaking** (EuroHPC2). The network provides AI innovators and research organisations with an open environment to access computing resources to train and finetune models, linking to high-quality data spaces and enabling broad participation in cutting-edge model development.

- The AI Continent Action Plan launched in April accelerates and intensifies:

  - computing infrastructure strengthening the network of AI factories and establishing resource-efficient Gigafactories
  - action to ensure more access to high-quality data for AI innovators
  - stimulating the further development of AI algorithms and leveraging their adoption in the EU's strategic sectors
  - reinforcing AI skills

These existential initiatives to ensure European sovereignty and competitiveness are simply complemented and counterbalanced by the AI Act. It protects EU citizens against the harmful effects of AI systems and guards against diverging regulatory responses by national authorities that could fragment the EU internal market.

The AI Act introduces a uniform framework with a risk-based approach:

- **Minimal risk:** most AI systems such as spam filters and AI-enabled video games face no obligation under the AI Act.
- **Specific transparency risk:** systems like chatbots must clearly inform users that they are interacting with a machine, while certain AI-generated content must be labelled as such.
- **High risk:** high-risk AI systems such as AI-based medical software or AI systems used for recruitment must comply with strict requirements, including risk-mitigation systems, high-quality of data sets, clear user information, human oversight, etc.

- **Unacceptable risk:** for example, AI systems that allow "social scoring" by governments or companies are considered a clear threat to people's fundamental rights and are therefore banned.

Supervisory powers and tasks are shared between:

- **the European Commission** (aided by an Advisory forum *(Art. 67)* and a Scientific panel of independent experts *(Art. 68)*) . The 'AI Office' referred to below "means the Commission's function of contributing to the implementation, monitoring and supervision of AI systems and general-purpose AI models *(Art. 3(46)*).
- **and the Member States** – each of which must set up a dedicated market surveillance authority *(Art. 70)*

A **European Artificial Intelligence Board**

composed of one representative per Member State coordinates the national market surveillance authorities, helps harmonise national administrative practices and supports the Commission and other Union institutions *(Articles 65&66)*.

Relevance for the practicing valuer

Most of the Act does not apply to valuers as it concerns providers of AI systems. Nonetheless it does also harmonise rules on the use of AI systems and it applies to deployers of AI systems defined as "***a natural or legal person,*** public authority, agency or other body ***using an AI system under its authority*** except where the AI system is used in the course of a personal non-professional activity *(Art. 3(4))*. Clearly valuers are deployers.

Article 4 – AI literacy

"Providers and deployers of AI systems shall take measures to ensure, to their best extent, a sufficient level of AI literacy of their staff and other persons dealing with the operation and use of AI systems on their behalf, taking into account their technical knowledge, experience, education and training and the context the AI systems are to be used in, and considering the persons or groups of persons on whom the AI systems are to be used."

This could be interpreted as extending to the self-employed valuer, because, semantically, any such person using AI is doing so "on his behalf" and much more importantly because there is no logical reason to exclude the self-employed. To do differently would create two dangerously different levels of literacy among service providers.

Article 5 – Prohibited AI practices

There is only one that could possibly apply to valuers:

(c) the placing on the market, the putting into service or the use of ***AI systems for the evaluation or classification of natural persons or groups of persons*** *over a certain period of time* ***based on their social behaviour or known, inferred or predicted personal or personality characteristics****, with the social score leading to either or both of the following:*

(i) detrimental or unfavourable treatment of certain natural persons or groups of persons in social contexts that are unrelated to the contexts in which the data was originally generated or collected;

(ii) detrimental or unfavourable treatment of certain natural persons or groups of persons that is unjustified or dispropor-

tionate to their social behaviour or its gravity;

One could relate this to U.S. Congressional hearings of appraisers about valuation practices that cause minority neighbourhoods to be undervalued compared to white ones even though the objective conditions are similar.

Article 26 – Obligations of deployers of high-risk AI systems combined with Article 6 – Classification rules for high-risk AI systems and Annex III – High-risk AI systems referred to in Article 6(2)

Article 26 lays down a lot of user responsibility/potential liability (including ensuring relevance of input data (par. 4) as has been the case with AVMs), so **the question is**

whether any of the AI systems categorised as high risk are used ('deployed') by valuers. Nothing in Annex III could concern valuers except possibly:

ANNEX III

High-risk AI systems referred to in Article 6(2)

...

5. Access to and enjoyment of essential private services and essential public services and benefits:

...

(b) ***AI systems intended to be used to evaluate the creditworthiness of natural persons or establish their credit score****, with the exception of AI systems used for the purpose of detecting financial fraud;*

But it seems doubtful that this would apply. Even if the AI-using or AVM/AI-using valuation report contributes to the bank's creditworthiness evaluation, at most it's just an input to the bank's credit scoring. A valuation report estimates the property's value, not the borrower's creditworthiness.

See related commentary on Article 86 – Right to explanation of individual decision-making

Article 50 – Transparency obligations for providers and deployers of certain AI systems

No relevance to valuers. They don't use ('deploy') emotion recognition or biometric categorisation systems or systems that generate or manipulate image, audio or video content constituting a deep fake.

Article 86 – Right to

explanation of individual decision-making

1. *Any affected person subject to a decision which is taken by the deployer* **on the basis of the output from a high-risk AI system listed in Annex III**, *with the exception of systems listed under point 2 thereof, and which produces legal effects or similarly significantly affects that person in a way that they consider to have an adverse impact on their health, safety or fundamental rights shall have the right to obtain from the deployer clear and meaningful explanations of the role of the AI system in the decision-making procedure and the main elements of the decision taken.*

2. As this is only about high-risk AI systems, it only applies to valuers if their AI- or AVM/AI-using valuation reports are considered to be part

of bank credit scoring. *See related commentary on Article 26*

Article 56 – Codes of practice

3. *The AI Office shall encourage and facilitate the drawing up of codes of practice at Union level in order to contribute to the proper application of this Regulation, taking into account international approaches.*
4. *The AI Office and the Board shall aim to ensure that the codes of practice cover at least the obligations provided for in Articles 53 and 55*

Those articles have obligations for AI system providers, not deployers, so codes of practice under Article 56 are not relevant to valuers.

Article 95 – Codes of conduct for voluntary application of

specific requirements

2. The AI Office and the Member States shall facilitate the drawing up of codes of conduct concerning the voluntary application, including by deployers, of specific requirements to all AI systems, on the basis of clear objectives and key performance indicators to measure the achievement of those objectives, including elements such as, but not limited to:

...

(c) promoting AI literacy, in particular that of persons dealing with the development, operation and use of AI;

It seems clear that "persons" dealing with the ... use of AI" would cover valuers.

Automated valuation models (AVMs)

AVMs now have some AI functions so in theory their manufacturers could be considered as providers of AI systems and subject to the AI Act's provisions for providers. Time and practice will tell. But the Act seems much more focused on 'pure' AI systems like search engines rather than those integrated into other products.

The closest (but tenuous) link is with AI systems intended to be used to evaluate the creditworthiness of natural persons or establish their credit score *(see above)*.

More likely, the AI element of AVMs will become part of the requirements for AVMs under the Capital Requirements Regulation's article 208(3a), in particular the requirement to have in place adequate IT processes, systems and capabilities *(point (e))*.

The AI act is indicative of the challenges facing the

valuation profession and of what needs to be done

TEGOVA will need to take account of the relevant aspects of the AI Act but also cover all other valuer-important phenomena because AI is permeating work practice at speed, in valuation as elsewhere, and TEGOVA is acting to help the profession in this transformation and safeguard client and wider public interest.

A Code of Conduct is certainly important. In the current EVS Code of Conduct, the AI-relevant provisions would seem to be:

- the duty of care to the instructing party – *Would apply to disclosure of AI use and maintenance of human oversight*: and
- the obligation to exercise professional judgment objectively and independently in undertaking work – *Would involve extending professional*

judgment to the AI-generated parts of valuation reports

But for such a professional sea change, more elements in the EVS Code or an AI-specific Code may be necessary.

In particular, it will be necessary to consider the extent of the client's right to know:

- whether the valuer used AI
- *at what level of AI use the client's right to know kicks in*

  For instance AVMs now use AI but that's just part of the 'black box' that the valuer knows nothing about apart – perhaps – from the mere existence of AI in the AVM

  But what about image recognition for property inspection (e.g. structural analysis) or automated report generation?

- and what efforts were made to ensure verification of the accuracy and veracity of AI findings

At least part of the solution could be TEGOVA standardised AI usage disclosure requirements for valuation reports.

Perhaps even more important than a code of conduct or at least very complementary to it are **valuers' AI skills** without which even implementing a code of conduct becomes problematic. In AI, skills are the prerequisite of ethics. It is doubtless no coincidence that AI literacy is the first operative article in the AI Act.

"In AI, skills are the prerequisite of ethics. It is doubtless no

coincidence that AI literacy is the first operative article in the AI Act."

In consequence, TEGOVA's Board of Directors has set up an AI Task Force to address:

5. Regulation, Ethics and Standards
6. Training and Professional Development
7. Technology Monitoring and Validation of Cases of Use of AI
8. Data Governance and Confidentiality
9. Strategic Partnerships and Harmonisation

and carry out a draft survey to form the basis for a study identifying training gaps, ethical challenges, and cases of use of AI.

Members:

- Julia Barrasa Shaw MRICSrv REV (Member of the Board of Directors)
- Paulo Barros Trindade REV REV-BV (Chairman of TEGOVA)
- Dr. Angelo Donato Berloco (Member of the European Valuation Standards Board (EVSB))
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