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Members of the European Business Valuation Standards Board present at the TEGOVA General Meeting, Riga, 21-23 May 2026

From left to right: Georgi Georgiev, Stefanos Mamakis (Vice-Chairman), Ivars Strautiņš (Chairman), Ella Dunphy, Artūrs Žuromskis, Nino Beraia



#05

Valuing Coastal Erosion Applying Residual Use Value



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Abstract

Coastal erosion threatens hundreds of thousands of properties across Europe, yet no European valuation framework specifically addresses the case of assets with a physically limited and foreseeable economic life. This is potentially one of the key factors that will have the most significant economic impact on real estate over the coming decades. This paper introduces Residual Use Value (RUV) as a structured methodology for the valuation of properties exposed to coastal erosion. RUV calculates the present value of the income that the property is likely to generate over its remaining occupancy period, net of risk-related costs and including terminal costs. The paper proposes a European framework compatible with existing European Valuation Standards (EVS). It draws on the experience in France, where RUV began to be envisaged long before national legislation was introduced (*Climate and Resilience Act 2021*) and where it has already been incorporated into professional standards (*Charte de l'Expertise en Évaluation Immobilière*, 6th edition, 2025). It posits that RUV is not a new value base, but an application of EVS in market conditions distorted by special circumstances, enabling valuers to use a specific methodology when faced with these valuations.

1. Introduction: the Scale of the Challenge

European coastlines are retreating. A combination of rising sea levels, increasing storm intensity and reduced sedimentary input is accelerating the erosion of shorelines that have remained stable for centuries. What used to be a local concern for a few clifftop villages has become a continental challenge with far-reaching implications for property markets, public finances and the valuation profession.

In France, a study by Cerema in February 2024, commissioned by the French Ministry of Ecological Transition, quantified the exposure with remarkable accuracy. Under a realistic scenario to 2050, **5,200 homes and 1,400 business premises** would be affected, worth a total of **€1.2 billion**. Under an unfavourable scenario to 2100 – assuming the disappearance of all coastal defence structures and a 1-metre rise in sea level – the figures skyrocket: **449,000 homes and 53,000 business premises**, worth around **€94 billion**. These estimates cover mainland France and its overseas territories, and include 41,000 hectares of urban areas, 1,765 kilometres of major roads and 243 kilometres of railways.

“The rational pricing of risk is drowned out by the lure of coastal living. In such conditions, market value routinely overestimates the long-term economic value of the asset.”

Similar dynamics are at play across Europe. In Wales, the village of Fairbourne faces a managed realignment by 2050. On the North Sea coasts of the Netherlands, Germany and Denmark, soft shorelines are receding. The Mediterranean coasts of Spain, Italy and Greece are increasingly vulnerable to flooding aggravated by rising sea levels. However, nowhere in the EVS, RICS Red Book or International Valuation Standards (IVS) can we find a specific operational methodology for the valuation of a property whose useful life is physically limited and foreseeable.

This shortcoming may soon pose a problem. When a local authority exercises its purchase option on a coastal property, how much should it pay? When a bank assesses the mortgage risk of a beachfront home, how should the loan-to-value ratio reflect a 15-year time horizon before the cliff edge reaches the garden? When an insurer calculates its reserves for a portfolio of seaside homes, what residual value should it use? Traditional market value, obtained from comparisons, can be unreliable or misleading in these situations, because the market itself fails to properly account for terminal risk.

The work of Eugénie Cazaux (2023) illustrates precisely this paradox: properties on the coastal front line in France benefit from a premium of up to 30% compared with identical properties located more inland, even when they are in zones officially mapped as being exposed to erosion and flooding. The rational pricing of risk is drowned out by the lure of coastal living. In such conditions, market value routinely overestimates the long-term economic value of the asset.

This paper proposes Residual Use Value (RUV) as a structured, transparent and auditable methodology able to address these challenges. It is intended for all European jurisdictions, based on existing EVS principles, and is informed by the experience in France, which has Europe's most advanced legislative and professional framework for the valuation of coastal erosion risk.

2. Why Conventional Methods Fail

Standard valuation methods are based, explicitly or implicitly, on the assumption that the physical substrate of the property – the land – has an indefinite useful life. The comparative method relies on transactions between willing buyers and sellers who share this assumption. But is there really an identifiable market? Capitalisation methods project income streams in perpetuity or over extremely long time horizons. Even the depreciated replacement cost method treats land as a durable asset on which reconstruction is possible.

Coastal erosion undermines each of these assumptions. The land itself will cease to exist within a known period of time. Income streams are not perpetual but degressive: the letting potential decreases, the vacancy rate increases, insurance becomes unavailable or prohibitively expensive, and maintenance costs skyrocket. The terminal value is not just low – it is generally negative, involving demolition, evacuation, decontamination and rewilding. There is no residual land value to anchor the calculation.

In addition, comparable references are rare or biased. In areas where there is a known risk of erosion, transactions may reflect speculative behaviour (buying on the cheap for short-term seasonal use) and distressed or off-market sales. In areas where risk is not yet priced in, comparables will overestimate the value. In both cases, the traditional market value obtained from these references is unreliable as a basis for public acquisition, financial reporting or prudential valuation.

Synthetic Comparison

CRITERION	CONVENTIONAL METHODS	RUV
References	Random and heterogeneous	Inadequate or non-existent
Lifespan	Long and stable (50+ years)	Limited and predictable (< 30 years)
Income	Long-term, stable yield	Degrressive, higher rate
Terminal value	High (land as a durable asset)	Negative or zero
Land	Perpetual value	No future value
Costs	Stable or predictable	Increasing, demolition costs

3. Residual Use Value: a Structured Framework

3.1 Definition

Residual Use Value (RUV) is the value obtained from the total discounted net income, excluding terminal value, that a property is likely to generate over its remaining period of safe, lawful and economically viable occupancy, net of specific risk-related costs and including terminal (exit) costs.

RUV is not another value base to be added to market value, investment value or fair value: it is an *application* of existing EVS principles in distorted market conditions.

3.2 The Four Components

- ▶ **Remaining useful life (n).** Estimated number of years during which the property may be occupied safely and legally. This is determined from authoritative sources: geotechnical studies (municipal studies); risk mapping; regulatory zoning (ZERTC, see below); Intergovernmental Panel on Climate Change (IPCC) projections of sea-level rise; in-situ observation of coastal defences. If in doubt, the valuer will adopt conservative assumptions in line with the precautionary principle. A phased approach with progressive risks is also possible.
- ▶ **Income or utility (R_t).** For rental properties: projected net rental income, taking into account the likely trend in rents, expected vacancy periods and the gradual decline

in letting potential. For main residences: equivalent rent (market rent that the owner avoids paying) minus occupancy costs.

- ▶ **Risk-related costs (C_t).** Extra maintenance caused by exposure, higher insurance premiums or exclusions from cover, temporary protective equipment and gradual decline in value due to the reduced letting potential and fall in rental value. These costs are on an upward trajectory, accelerating as the end date approaches.
- ▶ **Terminal value (D).** Recoverable values (reusable building materials, removable equipment, technical components) minus exit costs (demolition, removal of rubble, decontamination, land restoration, administrative costs). In almost all coastal erosion scenarios, the terminal value is negative.

3.3 Formula

$$RUV = \sum_{t=1 \rightarrow n} [(R_t - C_t) / (1 + a)^t] - D$$

Where:

n = remaining useful life

R_t = income/utility in year *t*

C_t = risk-related costs in year *t*

a = discount rate

D = net terminal cost.

3.4 Hierarchy of Evidence

Level 1: Local comparables from an active market where the risk of erosion is transparently reflected in prices. The Welsh village of Fairbourne offers an example: despite the managed realignment until 2050, it maintains an active property market where buyers purchase property in the knowledge that occupancy will be time limited.

Level 2: Pairwise analysis or hedonic analysis controlling for exposure, distance to the shore, altitude and risk perception. This approach nevertheless runs the risk of overly subjective and economically unjustified assessments.

Level 3: Modelling estimation (RUV) when the market is distorted or non-existent.

The hierarchy of levels 1 and 2 matches the one codified by French law in Article L. 219-7 of the French Planning Code. The legislator never considered level 3 (reliable economic assessment).

4. Determining the Discount Rate

The discount rate is the most sensitive parameter of the RUV model. Valuers should not apply a normative European rate, but should derive a rate using the following components, which they should be transparent in disclosing:

COMPONENT	BASIS OF CALCULATION	INDICATIVE RANGE
Risk-free rate (rf)	Government bonds	2% to 4%
Inflation premium	Expected inflation over the residual term	1% to 3%
Environmental risks	Erosion rate, extreme events, effectiveness of defences	+2% to +4%
Regulatory uncertainty	Change in coastal policies, restrictions on use, purchase option	+1% to +2%
Market risk	Negative perception, difficult resale, decline in insurability	+1% to +3%
Indicative total	Sum of the components	6% to 13%

The French *Charte de l'Expertise* (6th edition, 2025) also provides for incremental adjustments according to the remaining useful life:

RESIDUAL TERM	RISK LEVEL	RATE ADJUSTMENT
More than 20 years	Low	Base rate
10 to 20 years	Moderate	+1% to +2%
5 to 10 years	High	+2% to +4%
Less than 5 years	Very high	+4% to +6%

In general, it is better to integrate the risk into income streams and residual term, rather than overloading the discount rate. Where transactions exist in comparable risk environments, an implicit rate may be obtained by calibration.

“France has developed an integrated legislative and regulatory framework, specifically designed to address the issue of property exposed to coastal erosion.”

5. The French Model: a Legislative and Professional Ecosystem

France has developed an integrated legislative and regulatory framework, specifically designed to address the issue of property exposed to coastal erosion.

5.1 Legislative Basis

The cornerstone is the French Climate and Resilience Act of 22 August 2021 (Act No. 2021-1104, Articles 236 to 250), supplemented by Ordinance No. 2022-489 of 6 April 2022. Together, these texts provide an integrated toolkit:

ZERTC (Zones Exposed to Coastal Retreat). In their planning documents, local authorities define two zones: a zone exposed over a 30-year time horizon and a zone exposed over 30 to 100 years. In the 0- to 30-year zone, new builds must be moveable and cannot increase housing capacity; in the 30- to 100-year zone, financial projections of the demolition and restoration costs are mandatory from the planning permission stage.

DPRTC (Purchase Option for the Adaptation of Territories to Coastline Retreat). This is a special purchase option for the competent local authority, automatically applicable in the 0- to 30-year zone, and applicable in the 30- to 100-year zone subject to approval. It replaces conventional purchase options and takes precedence over the purchase option of the agricultural development authority (SAFER), but not over the one for sensitive natural areas. Cooperation with the SAFER is envisaged for agricultural properties.

Article L. 219-7-9 of the French Planning Code. This article is crucial for valuers. In the absence of an amicable agreement, the purchase price is set by the expropriating jurisdiction “taking into account the exposure of the property to coastline retreat”, excluding any compensation for reuse. There is a two-level valuation hierarchy: first, reference is made to properties with the same classification and similar exposure; failing this, a rebate is calculated according to the period that has elapsed since the zone was first established, relative to the total estimated period. This method also applies to expropriations for natural risk. The tax authorities can advise on the valuation method and rebate.

BRAEC (Property Lease for Adaptation to Coastal Erosion). This is a property lease with a term of 12 to 99 years, determined according to the expected pace of coastline retreat. It automatically terminates when personal safety can no longer be guaranteed. On expiry, the land is rewilded.

The full cycle: **ZERTC** (zoning) → **DPRTC** (purchase option) → **RUV** (valuation) → **BRAEC** (transitory management) → **Rewilding** (exit). Each stage has its own specific legal instrument.

5.2 Professional Standards: the French *Charte de l'Expertise*

The 6th edition of the *Charte de l'Expertise en Évaluation Immobilière* (November 2025), endorsed by 17 professional bodies, recognises RUV as a full-fledged valuation concept (Section 1.22). It codifies the four components, the calculation formula, the incremental rate adjustments and a three-step approach: risk diagnosis, economic valuation and actuarial calculation.

5.3 Statutory Discount Versus RUV

Article L. 219-7 of the French Planning Code provides for a rebate that is potentially *linear* over time, whereas the RUV produces a *convex* curve (discounting effect). The two approaches share the same principle but differ on the type of depreciation. The discount mentioned in the legislation, which is straightforward and applied by the tax authorities, represents a floor, although the quantification of the discount is unpredictable since it is not defined. This is at odds with the search for an estimate that befits the expert valuer. The RUV, which is more granular, is recommended for in-depth valuations. It also makes up for shortcomings in the methodology of the French Planning Code, where the overly haphazard approach could open the door to numerous legal challenges. Moreover, French public law lays down the principle of good management of public funds. This prevents the local authority from paying over the odds when exercising its purchase option, bearing in mind that this is not compensation, since coastline retreat is not a natural disaster.

¹ Net working capital at beginning of projection period

6. Relationship With EVS

EVS remain the gold standard. Market value may still be used if supported by reliable comparable evidence (levels 1 or 2). Where the market is distorted or where the coastal proximity premium masks terminal risk, RUV is the obvious alternative.

RUV is particularly relevant for public acquisition (purchase option, expropriation), asset management and impairment tests, insurance reserving, prudential valuation and strategic decision support, subject to restrictions on future use.

7. The Qualified Valuer

A valuer conducting a valuation based on RUV must meet the requirements of EVS 3 “The Qualified Valuer”. Additional skills are required: familiarity with climate science; ability to interpret risk maps and geotechnical studies; solid understanding of DCF modelling with scenario building; understanding of insurance, regulatory and planning implications; ability to communicate uncertainty. The valuer may work with external specialists, but bears sole responsibility for incorporating the findings into the valuation.

8. Quantified Examples

8.1 Case Study 1: Coastal Villa — Severe Scenario

120 m² detached house built in 1990, 15 metres from the shoreline. Erosion: 1 m/year. No protection. Residual term: 12 years.

The difference between the two case studies illustrates the sensitivity of the RUV to discount rate, residual life and cost assumptions.

PARAMETER	VALUE
Annual equivalent rent (Year 1)	€24,000
Annual decline in utility	-3% per year
Specific costs (growth +5%/year)	€3,000 (Year 1)
Discount rate	10%
Net demolition costs	€35,000
Calculated RUV	≈ €145,000
<i>Traditional market value (excluding risk)</i>	<i>€280,000</i>

8.2 Case Study 2: Modest Dwelling — Moderate Scenario

100 m² house, moderate risk area, erosion 1.5 m/year. Residual term: 15 years.

PARAMETER	VALUE
Equivalent net rental income	€12,000
Specific annual costs	€3,000
Discount rate	6%
Net demolition costs	€20,000
Calculated RUV	≈ €79,000
<i>Traditional market value (excluding risk)</i>	€140,000

The difference between the two case studies illustrates the sensitivity of the RUV to discount rate, residual life and cost assumptions.

9. Sensitivity Analysis and Scenario Building

The valuer should model three scenarios: **optimistic** (longer term, lower costs, base rate), **median** (central estimates) and **conservative** (shorter term, higher costs, premium rate). In practice, the residual term and discount rate are the two most powerful levers: a variation of ±2 years or ±1% can lead to a 10–20% shift in RUV. These sensitivities should be presented transparently.

10. Reporting Requirements

The report must comply with EVS 5 “Reporting the Valuation”, and include:

- ▶ details of the property and the timeframe used, supported by evidence;
- ▶ description of risk exposure and data sources;
- ▶ substantiated assumptions for income, costs and terminal value;
- ▶ construction of the discount rate;
- ▶ RUV calculation and sensitivity results;
- ▶ distinction between market value/RUV;
- ▶ indication of reliability of methods; and
- ▶ disclosure of uncertainties and limits.

11. Conclusion

Residual Use Value provides a fair, transparent and auditable basis for the valuation of assets whose economic life is limited by coastal erosion. It is anchored in existing EVS principles and does not require new value bases – simply the recognition that distorted markets require appropriate methodologies.

France has shown that this is not a theoretical exercise. With the French Climate and Resilience Act, DPRTC, BRAEC, Article L. 219-7 of the French Planning Code and Section 1.22 of the *Charte de l'Expertise*, the French ecosystem offers a comprehensive operating model, from risk identification to rewilding. This model is available for study, adaptation and adoption by other European jurisdictions.

The statistics speak for themselves. In France, €1.2 billion in assets are threatened by 2050, and €94 billion by 2100. On a European scale, the stakes will be much higher. The valuation profession has both the opportunity and the responsibility to provide the tools that governments, courts, financial institutions and citizens need to manage this transition.

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The views expressed in this publication are those of the authors and do not necessarily reflect the official stance of TEGOVA.

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