



IFRS Transition in The Republic of Uzbekistan: An Analytical Perspective on PP&E Impairment

Andrey Artemenkov ^{1*}, Monomita Nandy ², Jobir Azamov ³,
Omonjon Ganiev ⁴, Anil Kumar ⁵

¹ PhD, MRICS, Senior Lecturer, Westminster International University in Tashkent (WIUT), 12 Istiqbol st., Tashkent, Uzbekistan 100012; Visiting Research Fellow, School of Business, Ariel University, Israel

² Ph.D., Professor, Brunel University of London, Kingston Lane, Uxbridge, UB8 3PH, UK

³ Reader in Finance, Westminster International University in Tashkent (WIUT); 12 Istiqbol st., Tashkent, Uzbekistan

⁴ Head of Department of Finance, Westminster International University in Tashkent (WIUT); 12 Istiqbol st., Tashkent, Uzbekistan

⁵ PhD, Associate Professor, Westminster International University in Tashkent (WIUT), 12 Istiqbol st., Tashkent, Uzbekistan

*Corresponding author E-mail: achudakhin02@gmail.com

Received: July 16, 2025, Accepted: August 23, 2025, Published: September 2, 2025

Abstract

This study examines asset revaluation and impairment under International Financial Reporting Standards (IFRS), with a focus on Uzbekistan's first-time adoption. Specifically, it focuses on the implementation of first-time value-in-use-based impairment tests for PP&E assets.

To address the development gap for highly-granular automated impairment and reversal algorithms identified in the accounting operations literature, we develop a dynamic discrete-period technique for impairment and reversal transformations of assets' costs that efficiently discriminates for the commissionings and disposals in PP&E inventory over the standard two-year IFRS transition period. The case study application of this algorithm finds evidence to indicate successful-performing automated impairment and reversal allocations at the level of individual PP&E assets in the stress-test-like context of Covid-era-associated high volatilities in values-in-use for the transitioning entity. It is shown that the proposed algorithm effectively safeguards against the over-reversal of impairments, ensuring full compliance with IAS 36's paragraph 117 requirements.

The findings will extend the accounting literature related to developing impairment and reversal algorithms of high granularity. In practical terms, the findings will also contribute to the literature on first-time IFRS adoption by highlighting the intricacies of asset revaluation and impairment in IFRS transitional contexts confronted by developing countries, specifically Uzbekistan's unique IFRS transitional context, wherein large state-controlled entities underwent IFRS transition amid the COVID pandemic, necessitating drastic initial impairments followed by partial reversals as economic conditions improved. The description of this experience can be of value in similar transitional contexts.

Keywords : IFRS Adoption; Impairment Tests; Impairment Reversal, Value in Use; Cash-Generating Unit; Uzbekistan; IAS 36.

1. Introduction

In this paper, we examine how to develop and automate dynamic impairment and reversal algorithms for valuing individual PP&E items in connection with the first-time transition to IFRS. According to IFRS 1, such a transition happens over the span of two years, and the potential stock-and-flow movements in the PP&E inventory over the intervening period substantially complicate reconciliations between the initial impairment and subsequent reversal processes, should they occur in that sequence (Ernst & Young, 2023). In existing research, we find that during the transition to IFRS, companies gain substantial knowledge about financial reporting (Demaria et al, 2009; Kamran et al, 2013; Opare et al, 2019; Tashnazarov, 2021; Hien et al, 2023; Abdullaeva et al., 2023; El Idrissi Rioui, 2024). Deemed-cost revaluations and impairments of fixed assets apart from goodwill are occasionally discussed in literature in relation to IFRS transition (Bavagnoli et al, 2007; Deloitte, 2009; Deloitte, 2010; Kasztelnik, 2020; Ernst& Young, 2023). However, it is hard to apply the same findings in emerging countries due to a lack of transparency and inefficiencies associated with local plant and property markets (Golubeva, 2023; Generalova, 2024; Ernst & Young, 2023). Thus, we aim to examine the above question in the context of a unique institutional setup of the Republic of Uzbekistan.

In early 2020, the President of the Republic of Uzbekistan enacted Resolution No. 4611, titled "On Additional Measures to Transition to International Financial Reporting Standards" (Resolution No. 4611)¹. This pivotal resolution mandated that designated large taxpayers, including joint-stock companies, commercial banks, insurance organizations, and other specified legal entities, prepare their financial statements in accordance with IFRS standards starting from January 1, 2021, marking the official IFRS adoption date (IFRS Foundation, 2021). By January 1, 2023, approximately 100 companies in Uzbekistan, predominantly banks, insurance companies, and state-controlled enterprises, have published their inaugural IFRS-compliant financial reports. An additional few hundred companies are scheduled to follow by the 2027 deadline (Ashurova & Pardaeva, 2022).

However, the delayed transition to IFRS in Uzbekistan, compared to other former Soviet Union states, has revealed critical challenges in aligning national accounting practices with international standards. Although there are studies related to neighboring and post-Soviet countries (Kuzmina & Kozlovskaya, 2012; Golubeva, 2023; Abdullaeva et al., 2023; Generalova, 2024), we cannot find any rigorous published evidence of systematic treatment for the PP&E revaluation process at the first-time IFRS transition in Uzbekistan. So, in this paper, we emphasize the underexplored yet significant issue of impairment and deemed-cost revaluation of PP&E assets during the initial IFRS adoption in Uzbekistan, particularly under the guidance of IFRS 1 and IAS 36.

By introducing a dynamic Excel-based allocation-and-reversal algorithm tailored to Uzbekistan's widely used "1C" accounting software (Soligva Buxgalteriya Hisobi, 2021), we propose a practical tool to address specific gaps in asset impairment and reversal processes. In addition, in literature, we find evidence of complexity added during COVID with IFRS adoption (ICAEW, 2023; Elhamma, 2023). Thus, we highlight how the COVID pandemic compounded the timing and complexity of impairments, mandating rapid reversals within the two-year transition period. Moreover, there is a gap in the research about how to align impairment of assets with compliance (Amiraslani et al., 2013; ESMA, 2022). To address this gap, the proposed algorithm for Plant, Property and Equipment (PP&E) asset impairment and reversal at first-time IFRS adoption explicitly allows us to align impairments for cash generating unit (CGU) assets with value-in-use considerations, and also ensures compliance with IFRS standards while preventing tax-related repercussions. Furthermore, in literature we find serious concerns associated with manual adjustments with compliance (Bavagnoli et al., 2007; McPhee, 2012; Piosik, 2013). But in research we also find the advantages of automated standardized process (McPhee, 2012; ICAEW, 2013; Ernst&Young, 2023; Alonge et al., 2024; TheCPAoasis (2024); Accountingtute (2025); IFRS Community, 2025). Thus, in this research, we bridge the existing gap by exploring the interplay between highly-granular algorithmic impairment and reversal processes for plant, property, and Equipment items and Uzbekistan's accounting and economic transitioning context, where discrepancies between national GAAP and IFRS are stark.

From our critical analysis of the available case study data on which the algorithm is tested, we find certain efficiency gains from the use of the proposed algorithm, both in terms of time reduction and post-impairment selectivity to avoid over-reversals of the initially impaired assets. Compared to the described state-of-the-art processes for first-time impairment testing (e.g., Ernst&Young, 2023), this efficiency stems from the fact that the proposed algorithm is sensitive to specific conditions in adjusting carrying amounts of PP&E items newly commissioned over the transition period, thus foregoing manual treatments so convoluted first-time impairment reversals.

The findings of the study contribute to sparse academic literature on impairments and reversals of cash-generating units in the first-time IFRS transitioning context by presenting a dynamic algorithm specially tailored for handling individual PP&E asset valuations in such circumstances. In practice, the findings will be useful for accounting practitioners and asset valuers servicing first-time IFRS transitions for PP&E items, especially in the regions where the initial PP&E accounting protocols are based on the "1C" software. Further research could expand on the scalability of such algorithms and their applicability in diverse emerging accounting environments beyond Uzbekistan. The rest of the article is organized as follows: Section 2 provides a literature review demonstrating a gap in publications on algorithms of sufficiently granular nature to account for some specific IFRS transitional conditions, such as are dominant in Uzbekistan, outlining the particularity of those conditions as well. Section 3 describes the methodology underlying the proposed Plant, property, and equipment (PP&E) restatement and impairment algorithm and its testing pattern in the chosen case study context. Section 4 discusses the performance results obtained for the testing of the algorithm on the case study data from an Uzbek manufacturing company. Section 5 concludes, highlighting the practical significance of the research and indicating its limitations. The Appendix to the paper provides extensive, step-by-step details of the algorithm for those who may be interested in implementing it for similar transitional contexts.

2. Literature review

The adoption of IFRS represents a significant transformation in financial reporting, particularly in emerging markets. A pivotal aspect of this transition is the value relevance proposition of financial reporting for assets and liabilities, which underscores the importance of accurate valuation methods (Imhanzenobe, 2022; Chebaane & Othman, 2014; Golubeva, 2023; Oubahou et al., 2025). Under IFRS 1, assets traditionally carried at cost, such as Property, Plant, and Equipment (PP&E), may be re-measured at their fair value at the date of transition, establishing a new 'deemed cost' basis. This practice has been adopted widely in Uzbekistan, largely driven by the Big Four auditing firms operating within the region. These firms have encouraged fair value re-measurement due to the infrequent use of revaluation practices under the national standards, which typically relied on low-granularity inflation indices mandated by the State Statistical Agency (Saidov, 2023; State Statistical Agency, 2023).

The concept of deemed cost under IFRS 1 is defined as "an amount used as a surrogate for cost or depreciated cost at a given date" (IFRS 1.D6). This adjustment is crucial during the initial transition to IFRS, facilitating a more accurate and relevant financial representation moving forward. The adoption of IFRS in emerging markets, including Saudi Arabia, has shown an improvement in the value relevance of financial reporting, indicating that investors perceive financial information to be more reliable and relevant post-adoption (Perera, 2012). Impairment tests under IFRS are conducted at the level of cash-generating units (CGUs), requiring auditors to segment the assets of an enterprise into these units. The carrying amounts, initially determined under national GAAP, must be written down to the recoverable amount, which is the higher of the value in use (VIU) or fair value less costs of disposal (FVLCD) (ICAEW, 2023; Ernst & Young, 2023). This segmentation and valuation process is essential for compliance and accuracy in financial reporting (Soligva Buxgalteriya Hisobi, 2021). Further challenges and benefits of IFRS adoption for developing countries in the Central Asian region, including Uzbekistan, are highlighted in Tashnazarov (2021), Shamsitdinova (2023), Mukhametov (2023), and Akhmedov (2024). These sources promote the idea that compliance with IFRS can enhance transparency and comparability of financial statements, but stop short of any formal cost-benefit analyses of IFRS transitional challenges, also disregarding the technical challenges of the IFRS transition process, including the macro-economic impact of PP&E restatements and impairments. These technical challenges are, however, weighty on the operational plane. Re-

¹ <https://cis-legislation.com/document.fwx?rgn=152885>

regardless of them, as an evaluation of overall effectiveness of IFRS transition on the asset impairment plane, Malofeeva et al (2025), analyzing a panel of 40 IFRS-transitioning non-financial companies in Russia over 2010-2020 (which was at the time a post-Soviet jurisdiction akin to Uzbekistan in terms of accounting culture) find that with the transition to IFRS, the degree of profit manipulation decreases, however, after the transition of IFRS, no positive effect on the timeliness of loss recognition (impairment) is discovered.

In Uzbekistan, adherence to independence requirements mandates that transitioning entities engage independent valuers for conducting impairment tests. These valuers, typically registered under the Valuation Law of the Republic of Uzbekistan, provide formal valuation reports. When enterprises possess management-approved long-term operating budgets or strategic plans, these documents often inform the VIU calculations for CGUs, potentially with modifications and hindsight adjustments (Saidov, 2023). Similar practices have been observed in other emerging markets, such as the UAE and South Africa, where the role of ownership structure and corporate governance has been crucial in monitoring and implementing IFRS (Hessayri & Saihi, 2015).

While VIU is frequently used for impairment tests (TheCPAoasis,2024), FVLCD is less common, particularly for specialized plants in Uzbekistan, due to the lack of competitive second-hand markets for significant production equipment. The known commissioning price, adjusted for inflation, typically forms the basis of the impairment process (Soligva Buxgalteriya Hisobi, 2021). This preference for VIU-impaired carrying amounts contrasts with the historic cost approach more prevalent during the EU's IFRS transition, reflecting institutional accounting practices and the higher proportion of illiquid assets in Uzbek industrial companies (Demaria & Dufour, 2007; Oliveira et al, 2018).

In select European countries like Italy, first-time IFRS adoption similarly relied on VIU-adjusted deemed costs and impairment tests for CGUs, highlighting the adaptability of this approach across different economic contexts (Bavagnoli, Gelmini, & Grechi, 2007; Amiraslani et al., 2013; Cualain & Tawiah, 2022). However, like in the case of mandatory IFRS transition in Saudi Arabia a few years before (Nurunabi et al, 2022), in Uzbekistan, the revaluation for deemed costs may often result in an inverse effect compared to Europe, where transition date equity typically increases while future net income decreases (Demaria et al., 2009). This difference is attributed to the timing of Uzbekistan's mandatory IFRS transition, which coincided with the aftermath of the COVID-19 pandemic, necessitating initial impairments followed by partial reversals as economic conditions improved (Mukhametov et al, 2023).

While the discussion of recurrent impairment tests for IFRS adopters represents an established strand of accounting research in the literature (e.g. Chen et al, 2019), the literature review has identified a hiatus in the discussion of impairment tests and their reversals for Plant, Property and Equipment items over the IFRS first-time adoption periods (especially those that coincide with high economic volatility requiring a conjunction of impairments followed by reversals). Such tests have their particularities associated with dynamic features of asset movements in the interim period between the IFRS adoption and first report dates. To our knowledge, these particularities haven't been adequately addressed in the literature at a sufficiently granular, algorithmic level. Many prior algorithmic proposals for impairment testing (McPhee, 2012; Deloitte, 2009; BDO Global, 2021; Alonge et al, 2024; and in Excel: TheCPAoasis,2024a; TheCPAoasis, 2024b; Accountingtute,2025; IFRS Community, 2025)) typically assume asset recognition under IFRS is straightforward, but the novelty here lies in addressing the complexities of local accounting practices, specifically asset inclusion and de-recognition in the interim period during the IFRS transition stage. The latter dynamic point (asset inclusion and de-recognition over the transitioning period) is hardly addressed in any of the reviewed impairment models. In other words, while some of the algorithmic sources reviewed (specifically, TheCPAoasis,2024a) are strong on explaining the particularities of value-in-use determination for CGUs (something that our modelling takes for the external valuer-determined input), the mechanics of impairment allocation and reversal over the two-year IFRS transitioning period is inchoate in all of them and calls for an explicit algorithm in its own right.

3. Materials & methods

3.1. General methodology and assumptions of the case study

The Paper relies on the deductive algorithmic procedure implemented in MS Excel and based on the IFRS requirements related to IFRS 1, IAS 16, and IAS 36 standards, following MCPhee (2012), Ernst & Young (2023), BDO Global (2021), and ICAEW (2023). This procedure is then being empirically tested for result validity based on actual case-study data. The underlying hypothesis being thus tested is that it is possible to comply successfully using an algorithmic technique with the requirements of IFRS 1 and IAS 36 in the context of transitional economies using the deemed cost approach instrumented under the rigid rule-based historic cost accounting system and under conditions of high volatility, such as those inaugurated during the time of the COVID-19 crisis. The presented case study that relates to the Republic of Uzbekistan institutional context has all these attributes. Specifically, we test the allocative efficiency of the proposed impairment and impairment reversal components of the algorithm under the conditions of the case study, aiming to evaluate it using the net carrying amount ratios pre-and post –post-impairment reversal. Unlike earlier discussions on the subject that might only address impairment in general terms without an explicit input linkage to the actual particularly-formatted asset inventory lists for a CGU (BDO Global, 2021; Deloitte, 2009; MCPhee, 2012; ICAEW, 2013; TheCPAoasis,2024b), this paper provides a quantitative, dynamic, step-by-step algorithm at the lowest possible (i.e. highly-granular) level of analysis for both the allocation of impairment and its subsequent reversal over the two-year transitioning period in the first-time IFRS adoption context, ensuring that financial statements are accurate and comply with IFRS.

The methodology employed in this study for first-time IFRS adoption in Uzbekistan necessitates the restatement of the carrying amounts of Property, Plant, and Equipment (PP&E) within Cash-Generating Units (CGUs) at deemed costs, especially with respect to property. In Uzbekistan, these deemed costs are typically interpreted and determined as values-in-use (VIUs) for CGUs, as appraised by independent and licensed business valuers. This approach aligns with international practices and ensures compliance with IFRS standards (Ernst & Young, 2023; BDO Global, 2021; ICAEW, 2023).

To achieve this, valuers are required to prepare three distinct asset valuation reports, each stating the VIU results for the CGUs with allocated assets. In our case study, these reports correspond to three critical dates in the IFRS transition timeline (see Fig. 1):

The First Report Date (January 1, 2019): This date marks the beginning of the valuation period, providing a baseline for assessing the VIU of the CGUs as the enterprise transitions to IFRS.

The Second Report Date (January 1, 2020): One year before the IFRS adoption date, this interim report ensures continuity and accuracy in the valuation process.

The Third Report Date (January 1, 2021): This date represents the official IFRS adoption date, culminating in the first IFRS-compliant financial report. The VIU reported on this date finalizes the valuation adjustments necessary for the transition (Ernst& Young, 2023).

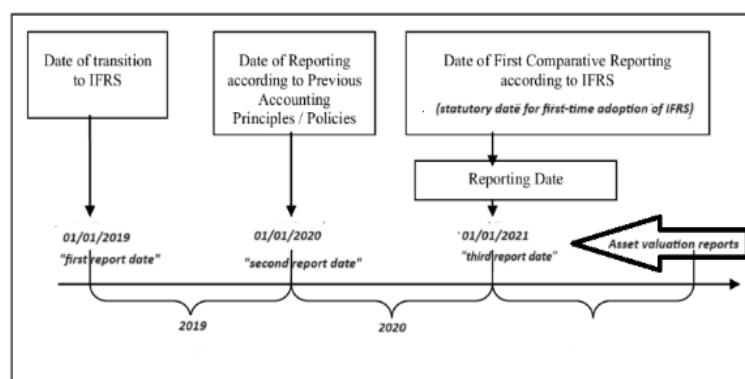


Fig. 1: Nomenclature of the Reporting Dates and Periods Used in the First-Time Adoption of IFRS.

Source: Developed by Authors Based on Deloitte (2009).

These three valuation reports are critical for ensuring that the carrying amounts of the assets reflect their accurate values-in-use at each stage of the transition. The IFRS reporting transition specifies these three key report dates, spaced across two reporting periods, to methodically capture the financial impacts and ensure compliance with IFRS 1 and IAS 36 standards (Deloitte, 2009).

Aiding its simplicity, the case study we use relates to an enterprise represented by a single CGU without goodwill allocations, focusing solely on tangible PP&E assets. This streamlines the discussion of impairment and valuation processes without impairing its generality, as the treatment of other separately identifiable non-current assets of a CGU, including principally non-goodwill related intangibles, proceeds on the same principles as discussed below (only the CGU goodwill impairment proper has a higher priority and is non-reversible). The case study relies on a set of several key assumptions listed below.

Assumptions

- 1) *Consistent Reporting Convention*: The study assumes that the enterprises in Uzbekistan follow the calendar-year reporting convention, a common practice in the region, to maintain consistency in financial reporting (Golubeva, 2023).
- 2) *Uniform Useful Lives*: For simplicity of testing and given that the case study plant/CGU is newly commissioned and operates based on new fixed assets (barely 2 years old at the date of IFRS transition), it is assumed that the enterprise retains the same useful lives for its equipment assets under IFRS as were previously maintained under national GAAP. This assumption, while not generally recommended for older CGUs, simplifies the valuation and depreciation processes during the transition period (Saidov, 2023).
- 3) *Currency and Inflation Adjustments*: The reporting currency is assumed to be the national currency, the Uzbek sum. Valuations account for inflation adjustments to ensure the VIUs reflect current economic conditions (State Statistical Agency, 2023).

The valuation process involves several key analytical steps to ensure accuracy and compliance with IFRS standards. These include:

- 1) *Initial Valuation and Impairment Calculation*: The gross carrying amounts (GCAs) of the PP&E assets listed for the CGU are initially assessed, leading to an impairment calculation based on the VIU of the CGU. This step determines the total impairment amount to be allocated proportionately across individual assets (Deloitte, 2009).
- 2) *Depreciation Recalculation*: Over the interim period, depreciation charges are recalculated based on the new net carrying amounts established after the initial impairment. This ensures that the carrying amounts remain accurate and reflective of the assets' economic realities (Demaria & Dufour, 2007).
- 3) *Final Valuation and Reversal Assessment*: By the IFRS adoption date, economic conditions are re-assessed to determine any necessary reversals of the initial impairments. This step ensures that the net carrying amounts do not exceed what they would have been without the initial impairment (Ernst & Young, 2023).

By adhering to these rigorous methodologies and assumptions, the study aims to provide a comprehensive framework for the IFRS transition in Uzbekistan, ensuring that the financial statements of transitioning entities accurately reflect their economic conditions and comply with international standards.

Since the IFRS transition date for many government-controlled corporations and all financial entities in Uzbekistan was set for January 1, 2021, the restatement of deemed costs coincided with the COVID-19 pandemic. This overlap necessitated impairments of the original carrying amounts reported under the national Uzbekistan GAAP. The pandemic introduced significant volatility and uncertainty, prompting a reassessment of asset values (Thanyaluk et al, 2023). Furthermore, the Big Four auditors, primarily from their Kazakh and Russian branches, advocated for a conservative approach, resulting in more substantial impairments of enterprise assets and, consequently, equity capital, compared to the figures under the Uzbekistan GAAP (Soligva Buxgalteriya Hisobi, 2021).

By January 1, 2021, and particularly for enterprises adopting IFRS on January 1, 2022, the economic impact of COVID-19 had diminished for many businesses. This reduction in impact necessitated the reversal of the initial IFRS-induced impairments to align with the improved economic conditions. The methodology of our case study is designed to reflect this dynamic adjustment process, ensuring compliance with the IFRS framework.

According to IAS 36, impairment charges must first be absorbed by the CGU-allocated goodwill. Any remaining impairment is then distributed proportionally across other assets, excluding goodwill but including PP&E items, based on their carrying amounts under the deemed costs used. Our case study reviews an enterprise represented by a single CGU without any associated goodwill allocation, as it is an associate rather than a subsidiary for any parent shareholders. Additionally, the enterprise does not possess intangible assets, thus focusing the entire valuer-determined impairment on PP&E assets proportionate to their determined carrying amounts at the initial report date. It should be noted in this context that IAS 36 doesn't prescribe any alternative requirements for the impairment of separately identifiable intangible assets in place at a CGU, if their impairment is done at the CGU level (e.g., see TheCPAosis, 2024b for an example of initial impairment of complex CGUs). Respecting goodwill, its presence within a CGU won't complicate the analysis either -- due to the two-tier hierarchical nature of allocation of impairment losses under p. 104 of IAS 36: i.e., CGU-level impairment, once identified, is first fully allocated to the reduction of CGU goodwill, and only then, if the impairment balance remains, it is distributed pro rata to PP&E and non-goodwill intangibles. Additionally, goodwill impairment is non-reversible, thus presenting no subsequent analytical complications once introduced.

The data schedules for fixed asset accounts, downloaded via the widely used "1C" accounting software, serve as the foundation for the proposed analysis. These schedules are initially presented in an "Accounting input" tab within the referenced Excel file and are subsequently

transformed using an algorithm developed for this study. This transformation incorporates inputs from independent valuer reports and aligns with the proposed allocation and reversal methodology for the 2019-2020 period.

The algorithm operates on a recurrent relation model that integrates Gross Carrying Amounts (GCAs), Accumulated Depreciation, and Net Carrying Amounts (NCAs) (see Fig. 2). This model applies to the two consecutive periods spanning from the date of IFRS transition to the first IFRS report date, ensuring a comprehensive and accurate restatement process that adheres to international standards (Demaria & Dufour, 2007; KPMG, 2020).

$\begin{aligned} & \text{GCA } t-1 \\ & + \text{ newly commissioned GCA } t \\ \text{NCA } t = & - \text{ withdrawals of GCA } t \\ & \\ & \\ & = \text{GCA } t \end{aligned}$	$\begin{aligned} & \text{Accumulated depreciation } t-1 \\ & - \text{ withdrawals of accumulated depreciation } t \\ & + \text{ (accumulated) depreciation on newly commissioned items } t \\ & + \text{ depreciation charge } t = \text{NCA } t-1 / \text{RUL at the start of } t \\ & + \text{ impairment } = \sum \text{ Total impairment} * (\text{NCA } i \text{ w/o impairment} / \text{Total NCA w/o impairment}) \\ & - \text{ reversal of impairment from before } t \\ & = \text{Accumulated depreciation } t \end{aligned}$
--	--

Fig. 2: Recurrent Relations Encapsulating the IFRS Impairment Algorithm Under IAS 36 and IFRS 1.

Source: author analysis.

3.2. Details of the proposed algorithm

The "1C" accounting software, widely used across Uzbekistan, generates a comprehensive fixed asset inventory. For our case study, which focuses on the PP&E account, the inventory must be meticulously edited. This involves removing items not recognizable as assets under IFRS and including assets that qualify under IFRS but were omitted in the national GAAP accounting due to discrepancies (IASB, 2021). In this case study, since the plant is relatively new, all recorded assets are recognized under IFRS, thus avoiding recognition or de-recognition issues. However, other complications may arise with land assets due to the unique land use rights in Uzbekistan, which are short of full ownership. Once the edited CGU inventory list is input to the algorithm, with some inventory taken at the initial GAAP carrying amounts and some, e.g. for property, at fair-valued deemed costs (for the first-time adoption purposes, IFRS 1 allows to use a mixture of both valuation bases within each asset category, which is especially explicit for rate-regulated businesses --see IFRS 1 p D8B.(IASB,2022), The following algorithm, consisting of V steps, is elaborated and put to use:

- 1) Calculating impairment and restated accumulated depreciation of fixed assets as of the IFRS transition date vs. initial GAAP carrying amounts.
- 2) Allocating Impairment to Individual Assets to distribute the total impairment charge across individual assets within the CGU (in proportion to their restated net carrying amounts before the impairment).
- 3) Restating Gross Carrying Amounts, Depreciation Charges, Accumulated Depreciation, and Net Carrying Amounts for Fixed Assets over the 1st period in the two-year IFRS transition interval.

Over the duration of the IFRS transition period, the algorithm gives an explicit consideration to the capitalization of additional costs, as well as period-wise acquisition of new and disposal of the existing fixed assets, on top of other matters having to do with the continuing depreciation and impairment of the existing fixed assets -- the matter which is often disregarded in the standard treatments of the first-time-transition impairment process (BDO Global, 2021; Deloitte, 2009; McPhee, 2012; TheCPAoasis (2024b).)

- 1) Performing similar restatements over the 2nd period in the two-year IFRS transition interval.

Similar to Part III, Part IV of the algorithm offers detailed tracking of asset movements in a more granular way than any prior approaches, which may have only focused on impairment adjustments without carefully considering the ongoing changes to asset values during the 2-year adoption phase.

- 2) Reversing Initial Asset Impairments under IAS 36 at the IFRS Reporting date (the 3rd Report date).

Novelty of the impairment reversal algorithm in Part V/step 2 is that the impairment reversal is automatically allocated to "qualifying assets" based on the ratios of deemed-cost net carrying amounts of those assets absent impairment. This ensures that the reversal is proportional and fair, that it excludes impact on the assets acquired during the IFRS transition period, and aligns with the exact reduction in impairment, avoiding exceeding the net carrying amounts that would have occurred had the impairment not been initially recorded. The use of deemed-cost net carrying amounts absent impairment as a basis for impairment reversal allocation in conjunction with the applied criterion for qualifying assets distinguishes the proposed algorithm from other accounting practices where accountants often have to manually guard against the over-reversal of impairment regarding individual assets or choose to prioritize the reversal in respect of some fixed asset groupings over others.

The exact details of the algorithm are outlined step-by-step in Appendix 1 to this Paper.

As the literature review indicates, we believe this sequence of impairments followed by the end-of-transition reversals happening against the backdrop of other fixed asset transactions over the transition period hasn't been addressed at the highly granular algorithmic level in a published accounting literature.

4. Results and discussion: testing the proposed algorithm over the case study data

The case study to test the proposed impairment algorithm is a chemical industry manufacturing process plant located in Central Uzbekistan and newly commissioned (2 years before the indicated date of the IFRS transition). It represents a stand-alone CGU of an SOE transiting to IFRS, with December 31, 2018, being the first Report date, and December 31, 2020, being the third Report date. The plant initially reporting under the Uzbekistan GAAP is housed in newly constructed buildings owned by the CGU and has barely started depreciating them under the straight-line technique as per useful life bands regulated by the Republic of Uzbekistan Tax Code provisions. Besides the buildings and land, the plant also owns almost new specialized and general-purpose equipment imported from China, as well as vehicles, with the inventory list for such equipment and vehicles made up of 1050 items, including the items withdrawn or newly commissioned over the IFRS transition period. The property was fair valued by the valuer as at the IFRS transition date, with the fair value becoming its deemed cost, while the gross and net carrying amounts of equipment before impairment were transposed to IFRS with minimal adjustments.

Problems with the key downstream client in early 2019, compounded by the onset of COVID shortly afterwards, have caused grave repercussions on long-term production budgets of the plant. Therefore, the VIU-based independent valuation report prepared for IFRS transition purposes indicated an impairment of the CGU immediately upon the transition date that persisted for 2 years afterwards only to be partly reversed at the last (third) Report date in line with the stabilization of formal long-term operating plans of the plant (as endorsed by another valuer's VIU report effective as of that date).

The key parameters of the CGU impairment and its reversal processes over the 2-year IFRS transition period are presented in Table 1 and Fig. 3. The initial CGU impairment at the IFRS transition date amounted to 52% of the pre-impaired total net carrying amount of the PP&E assets at CGU, with 80% of that impairment being reversed after 2 years at the end of the transition period once the long-term management budgets of the enterprise had improved subject to their certification by auditors.

Table 1: Key Input and Output Parameters of the Case Study for the IFRS-Transition Impairment Algorithm and Their Evolution Over the Two-Year Transitioning Period

Line	Items (in bln Uzbek sums)	Date of IFRS transition /First report date 01/01/2019	The second report date 01/01/2020	The third report date IFRS statements released 01/01/2021	Comments
1	CGU Gross carrying amount under National GAAP, in bln sum	2 115,74	2116,45	2120,36	The deemed cost restatement of national GAAP carrying amounts was undertaken as per line 2.
2	CGU Gross carrying amount under IFRS restatement at deemed cost, in bln. sum	1 771, 89	1772,6	1776,51	New PP&E commissionings (29 items) prevail over withdrawals (8 items) over the two-year IFRS transition period.
3	Restated accumulated depreciation before impairment	0,42*			The plant is almost new as of the IFRS transition date.
4	Value in use (VIU) for CGU according to the independent valuation report	852,58	797,71	1489,7	The opening VIU suggests the CGU fixed asset impairment of 52%. There are grounds to reverse the initial IFRS transition date impairment at the end of the transition period.
5=2-4	Accumulated depreciation, including impairment/impairment reversal under IFRS	919,31	975,043	286,78	Adjusts fixed assets from gross to net carrying amounts under IFRS
6=5-3	Impairment(+)/Impairment reversal(-) for IFRS	918,88	0	-743,899	Thus, the initially imposed deemed-cost impairment is 80% reversed at the end of the IFRS transition period
7=2-5	Net carrying amount after impairment/impairment reversal	852,58	797,71	1489,7	The resulting Net carrying amount under the IFRS historic cost model used in the transition should be equal to the VIUs reported in Line 4

Source: case study data.

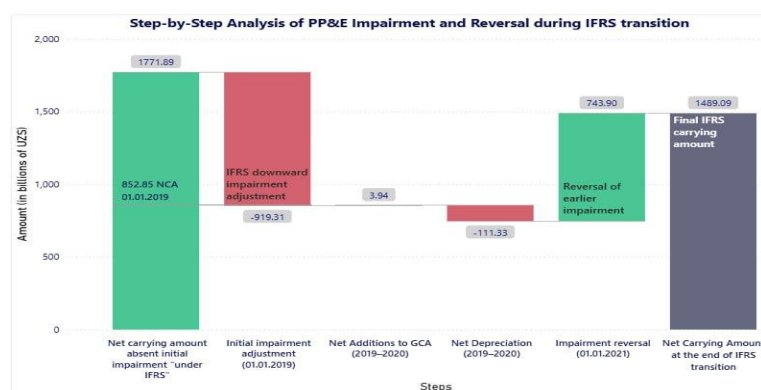


Fig. 3: Waterfall Chart Over the Timeline of the Two-Year Impairment-Reversal Process Coupled with Depreciation for the Case-Study PP&E Assets.

The proposed algorithm has performed as intended over the case study data trial. In the case study context, the ratio of PP&E Net carrying amounts following the impairment reversal on 01/01/2021 to Net carrying amounts before the reversal implementation was centered on 2 for assets with some accumulated depreciation at the impairment date (i.e. those that were subject to the initial impairment process) and at 1 for those assets with no accumulated depreciation as at the impairment date or commissioned later (i.e. those assets have indeed been not affected by the impairment reversal)- see Fig. 4.

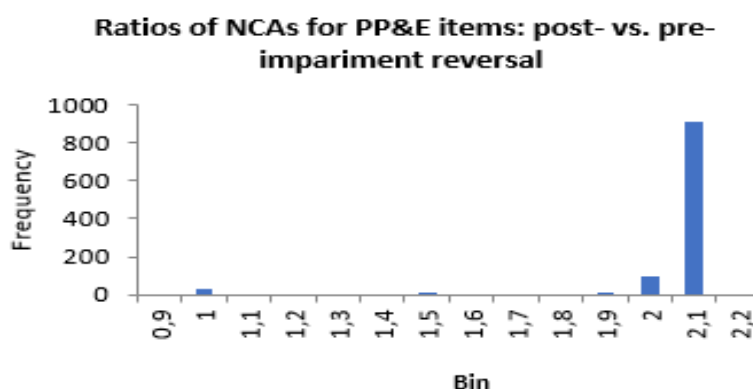


Fig. 4: NCA- Based Allocative Proportionality of the Impairment Reversal Algorithm Component at the Last IFRS Transition Date.

Source: case study results.

The impairment reversal allocations using the algorithm are specifically efficient compared to traditional half-automated Excel methods of impairment reversals, and the assets newly commissioned over the two-year IFRS transition period do remain undisturbed by the workings of the impairment reversal formula design. Limitation-wise, the algorithm only fails to capture and perform impairment and impairment reversal allocations in cases when assets are fully depreciated as at the impairment or impairment reversal date, but such situations are supposed to be captured anyways, especially at the initial transition date, when the fixed assets are supposed to be duly restated at deemed cost or de-recognized if their economic net carrying amount is indeed zero. Additionally, extra care has to be taken when using the algorithm to avoid getting over-reversals when individual assets, like vehicles, have their gross carrying amounts capitalized for overhauls and maintenance over the transition period, but the resulting adjustments to their depreciation have been recorded inconsistently (3 such cases have been identified in the case study).

The algorithm's step-by-step approach ensures meticulous compliance with IFRS standards while addressing the specific nuances of the Uzbekistan context. By utilizing the "1C" software's data outputs, the algorithm facilitates accurate impairment allocation and reversal processes. This method underscores the importance of adopting a robust, data-driven approach to financial reporting transitions, enhancing the reliability and relevance of financial statements during IFRS adoption (Saidov, 2023).

The initial impairments recognized due to the decline of business and pandemic-induced economic conditions were appropriately allocated at the date of transition across the assets, ensuring that the financial statements reflected the true economic value of the assets. As economic conditions improved by the end of the IFRS transition period, the algorithm also facilitated the systematic reversal of these impairments among qualifying assets.

By addressing both the allocation and reversal of impairments, this algorithm provides a comprehensive framework for managing the complexities of first-time IFRS adoption, particularly in transitional economies requiring reliance on deemed-cost restatements. The practical implementation of this algorithm in an Excel environment demonstrates its scalability and adaptability, making it a valuable tool for financial entities undergoing similar transitions globally.

5. Conclusion

This study provides a highly granular and integrated analysis of the PP&E restatement processes involved in the first-time adoption of International Financial Reporting Standards (IFRS) under conditions of wide gyrations in the economic environment of transitioning entities, with a specific focus on the valuation and impairment of PP&E assets. The adoption of IFRS represents a significant shift from national GAAP practices, necessitating the implementation of robust and rigorous procedures to ensure compliance and accuracy in financial reporting. Automating the restatements of PP&E items in the IFRS transitional context and testing the resulting algorithms for consistency and limitations using case studies, therefore, seems to be a demanded research approach with deserving compliance-boosting practical applications, including the reduction in typically very sizeable IFRS transition costs (Deloitte, 2010; Amiraslani et al, 2013; Pawsey, 2017). It was pursued in this paper using the case study data available from the practice of its authors. Further case studies can be brought to bear on the proposed algorithm in the future to test its efficiency under different operating circumstances. Additionally, while the algorithm is now set up to recalculate accumulated depreciation over the IFRS transitional term under the straight-line pattern (which is the only tax-allowable pattern in Uzbekistan at present and is therefore habitually favoured in IFRS transitions), it is amenable to modification for other depreciation patterns, but is limited to this form of depreciation as it is. This limitation should be borne in mind and can be expanded upon should practical necessity call for it.

In summary, the Paper has developed and demonstrated the practical application of a scalable algorithm designed to manage the automated allocation and reversal of impairments for PP&E assets. Thus, this paper has contributed to the literature on operations research applied to financial accounting as far as impairment testing and its reversals are concerned in the IFRS first-time adoption context at deemed costs. Exploring a concatenation of impairments followed by their reversals at IFRS first-time adoption (which was largely characteristic of the Covid-era IFRS transitional circumstances), our paper differs from other similar publications in this largely under-explored domain (Bavagnoli et al.2007; Deloitte, 2009; McPhee, 2012, BDO Global, 2021; Ernst& Young,2023) by its highly-granular approach to recording impairments/reversals at an individual PP&E asset level that automatically discriminates for PP&E movements interim to the two-year IFRS transitional period, thus boosting the efficiency of algorithmic impairment and reversal allocations and promoting compliance. The related algorithm integrates seamlessly with the widely used "1C" accounting software, facilitating accurate data management and reporting. The step-by-step approach outlined in the study ensures compliance with the requirements of IFRS 1 and IAS 36 standards, filling a research and practical operational gap for a workable and easily scalable algorithm released, tested, and fit for actual applications through the analysis of the proposed case study. Thus, his Paper contributes to the broader discourse on global financial reporting harmonization, offering a practical tool for entities navigating the complexities of IFRS transition.

In terms of its institutional aspects in the context of the Republic of Uzbekistan, our analysis highlights the importance of using value-in-use (VIU) as a basis for impairment calculations, reflecting the true economic value of assets. The study underscores the role of independent valuers in determining VIUs, ensuring that the financial statements accurately reflect the enterprise's financial position at various reporting

dates. The algorithm's ability to adjust for both initial impairments and subsequent reversals provides a dynamic tool for managing financial reporting transitions, particularly in transitional economies of the Central Asian region.

The findings of this study emphasize the necessity of a data-driven approach to financial reporting, enhancing the reliability and relevance of financial statements. By ensuring that asset valuations are consistent with IFRS standards, the algorithm supports the transparent and accurate representation of an enterprise's financial health. This is particularly crucial in the context of government-controlled corporations and financial entities undergoing IFRS transition amidst volatile economic environments (Saidov, 2023).

Declaration on conflicts of interest

No conflicts of interest are noted

Declaration on AI use

Given that English is not the first language of authors, AI tools, such as Grammarly and ChatGPT, have been used to a moderate extent to aid in textual paraphrasing and literature search only. AI tools haven't been used for any other purpose, including the development of the proposed algorithm or undertaking the analysis of model findings.

Author contributions

A.A. – conception, methodology, calculations, original draft writing; M.N. – methodology, original draft writing; O.G. – original draft writing, organizational effort; A.K.- original draft writing, revisions; J.A. -- visualization, development of figures, original draft writing.

References

- [1] Abdullaeva, M., Kamrul Hasan, A.K.M, Yodgorova, F., Khajieva, I. & Nusratova, G. (2023). The impact of IFRS adoption on economic growth in transition countries: Evidence from CIS. *Financial Internet Quarterly*, 19(2), 2023. 1-17. <https://doi.org/10.2478/fiqf-2023-0008>.
- [2] Accountingtute (2025). Modeling Impairment Tests Under IAS 36 in Excel and R. URL: <https://www.accountingtute.com/modeling-impairment-tests-under-ias-36-in-excel-and-r/> (accessed on 22.08.2025).
- [3] Alonge E., Oritsematosan F., Alao O. (2024) The impact of digital transformation on financial reporting and accountability in emerging markets. *International Journal of Science and Technology Research Archive*, 2024, 07(02), 025–049 <https://doi.org/10.53771/ijstra.2024.7.2.0061>.
- [4] Al-Shammari, B., Brown, P., & Tarca, A. (2008). An investigation of compliance with inter-national accounting standards by listed companies in the Gulf Co-Operation Council member states. *International Journal of Accounting*, 43(4), 425-447. <https://doi.org/10.1016/j.intacc.2008.09.003>.
- [5] Akhmedov L.M. (2024). Toward Global Integration: Analyzing The opportunities and challenges of IFRS implementation in Uzbekistan, *Central Asian Journal of Education and Innovation*, Volume 3, Issue 2, February 2024.
- [6] Amiraslani H., Iatridis G., Pope P (2013). Accounting for asset impairment: a test for IFRS compliance across Europe Centre for Financial Analysis and Reporting Research, Cass Busi-ness School, March 2013 URL: https://www.bayes.city.ac.uk/_data/assets/pdf_file/0019/168031/CeFARR_AIP_e-book_March_2013.pdf.
- [7] Ashurova N.F & Pardaeva Z.A. (2022). Current state of IFRS application in the accounting and reporting system of the republic of Uzbekistan // *Universum: Economics and Ju-rispondence* 2022. 1(100). Stable URL: <https://7universum.com/ru/economy/archive/item/14811> (Accessed: 27.05.2024).
- [8] Bavagnoli, F., Gelmini, L., & Grechi, C. (2007). First time adoption of IFRS/IAS and impairment test. IR TOP. Retrieved from <https://research.uniupo.it/en/publications/first-time-adoption-of-ifrsias-and-impairment-test-3> and <https://iris.uniupo.it/handle/11579/25222?mode=full>. Also available as a chapter in "Im-proving business reporting: new rules, new opportunities, new trends" ed. by FRAT-TINI GIOVANNI (pp. 27-54). Giuffrè Francis Levebvre, 2017 ISBN: 8814135800,9788814135804.
- [9] BDO Global (2021). IFRS IN PRACTICE 2020-2021. IAS 36 Impairment of Assets Including guidance on the impact of COVID-19 URL <https://www.bdo.co.nz/getmedia/9b5c962d-bca8-4398-ae13-7aa5281cd5c8/IFRS-in-Practice-IAS-36-Impairment-of-Assets-2020-2021.pdf> (Accessed: 01.02.2025).
- [10] Chebaane S., Othman H, "The Impact of IFRS Adoption on Value Relevance of Earnings and Book Value of Equity: The Case of Emerging Markets in African and Asian Regions, *Procedia - Social and Behavioral Sciences*, Volume 145, 2014, Pages 70-80. <https://doi.org/10.1016/j.sbspro.2014.06.012>.
- [11] Chen, V.Y.S., Keung, Edmund C. & Lin I. (2019) "Disclosure of fair value measurement in goodwill impairment test and audit fees," *Journal of Contemporary Accounting and Economics*, Elsevier, vol. 15(3). <https://doi.org/10.1016/j.jcae.2019.100160>.
- [12] Cualain, G., & Tawiah, V. (2022). Review of IFRS consequences in Europe: An enforcement perspective. *Cogent Business & Management*, 10(1). <https://doi.org/10.1080/23311975.2022.2148869>.
- [13] Deloitte (2009). First-time adoption of International Financial Reporting Standards A guide to IFRS 1 November 2009, <https://www.iasplus.com/en/news/2009/November/news5221>.
- [14] Deloitte (2010). The road to cost-effective conversion: Maximizing the return on your IFRS investment. <https://iasplus.com/content/c70afc9-e920-41dd-9b2e-8676dc512884>.
- [15] Demaria S. & Lapointe-Antunes P., Denis Cormier and Teller R. (2009). First-Time Adoption of IFRS, Managerial Incentives, and Value-Relevance: Some French Evidence, *JOURNAL OF INTERNATIONAL ACCOUNTING RESEARCH*. Vol. 8, No. 2, 2009 DOI: 10.2308/jiar.2009.8.2.1 URL: https://www.researchgate.net/publication/240303290_First-Time_Adoption_of_IFRS_Managerial_Incentives_and_Value-Relevance_Some_French_Evidence <https://doi.org/10.2308/jiar.2009.8.2.1>.
- [16] Demaria, S., & Dufour, D. (2007). First-time adoption of IFRS, fair value option, conservatism: Evidence from French listed companies. 30 ème colloque de l'EAA, Apr 2007, Lisbon, Portugal. pp24 <https://shs.hal.science/halshs-00266189/document>.
- [17] Ernst & Young (2023). International GAAP® 2023 - The global perspective on IFRS, 13 Jan 2023, https://www.ey.com/en_gl/technical/ifrs-technical-resources/international-gaap-2022-the-global-perspective-on-ifrs (ch. 5 and 20).
- [18] El Idrissi Rioui S. & al. (2024). The Effects of IFRS Adoption: Analysis of Existing Literature and Suggestions for Further Research, *Revue Internationale des Sciences de Gestion «Volume 7: Numéro 1»* pp : 293 – 317.
- [19] Elhamma Azzouz (2023). Impact of mandatory IFRS adoption on economic growth: the moderating role of Covid-19 crisis in developing countries *Accounting and Management In-formation Systems* Vol. 22, No. 3, pp. 554-568, 2023 <https://doi.org/10.24818/jamis.2023.03007>.
- [20] ESMA (2022). Report 2021: Corporate reporting enforcement and regulatory activities. European Securities and Markets authority Report. ESMA32-63-1249 | 30 March 2022 https://www.esma.europa.eu/sites/default/files/library/esma32-63-1249_2021_corporate_reporting_enforcement_and_regulatory_activities.pdf.

- [21] Generalova Natalia, Pyatov Mikhail, Sokolov Boris (2024). The History of IFRS in Russia in 1991–2021. *Journal of International Accounting Research* 1 November 2024; 23 (3): 51–75. <https://doi.org/10.2308/JIAR-2023-042>.
- [22] Golubeva O. (2023) Accounting for transition: A literature review, *Journal of International Accounting, Auditing and Taxation*, Volume 51, 2023, 100548, ISSN 1061-9518, . <https://www.sciencedirect.com/science/article/pii/S1061951823000277>. <https://doi.org/10.1016/j.intaccudtax.2023.100548>.
- [23] Hien Thi Thu Nguyen, Hoan Thi Thu Nguyen, Cong Van Nguyen, Analysis of factors affecting the adoption of IFRS in an emerging economy, *Heliyon*, Volume 9, Issue 6, 2023, ISSN 2405-8440, <https://doi.org/10.1016/j.heliyon.2023.e17331>.
- [24] Hessayri, M., & Saihi, M. (2015). Monitoring earnings management in emerging markets: IFRS adoption and ownership structure. *Journal of Economic and Administrative Sciences*, 31(2), 86-108. <https://doi.org/10.1108/JEAS-11-2014-0029>.
- [25] IASB (2021). IAS 36 Standard: Impairment of assets, Stable URL: <https://www.ifrs.org/content/dam/ifrs/publications/pdf-standards/english/2021/issued/part-a/ias-36-impairment-of-assets.pdf>, Accessed 29/05/2024.
- [26] IASB (2022). Standard IFRS 1 “First-time Adoption of International Financial Reporting Standards.” <https://www.ifrs.org/content/dam/ifrs/publications/pdf-standards/english/2022/issued/part-a/ifrs-1-first-time-adoption-of-international-financial-reporting-standards.pdf?bypass=on>.
- [27] ICAEW (2023). Applying IAS 36 impairment of assets IFRS Factsheet. ICAEW financial reporting faculty. URL: <https://www.icaew.com/-/media/corporate/files/technical/corporate-reporting/factsheets/ifrs/applying-ias-36-impairment-of-assets-factsheet.ashx>.
- [28] IFRS Community (2025). IAS 36 Excel Examples. URL: <https://ifrscommunity.com/ifrs-excel-examples/> (accessed on 19 August, 2025).
- [29] IFRS Foundation (2021). IFRS® STANDARDS—APPLICATION AROUND THE WORLD JURISDICTIONAL PROFILE: Uzbekistan , Stable URL: <https://www.ifrs.org/content/dam/ifrs/publications/jurisdictions/pdf-profiles/uzbekistan-ifrs-profile.pdf> (Accessed May 27, 2024).
- [30] Imhanzenobe, J. (2022). Value relevance and changes in accounting standards: A review of the IFRS adoption literature. *Cogent Business & Management*, 9(1). <https://doi.org/10.1080/23311975.2022.2039057>.
- [31] Kasztelnik, Karina. (2020). Property, Plant, and Equipment and IFRS Conversion from the U.S. Accounting Perspective—Technical Research Report. *International Journal of Accounting and Finance Studies*. 3. 10.22158/ijafs.v3n2p20. <https://doi.org/10.22158/ijafs.v3n2p20>.
- [32] Kamran Ahmed, Keryn Chalmers, Hichem Khelif, A Meta-analysis of IFRS Adoption Effects, *The International Journal of Accounting*, Volume 48, Issue 2, 2013, Pages 173-217, ISSN 0020-7063, <https://doi.org/10.1016/j.intacc.2013.04.002>.
- [33] Kuzmina Irina, Ieva Kozlovska (2012) ACCOUNTING MEASUREMENT OF LONG-LIVED ASSETS: A CASE OF IMPAIRMENT PRACTICE *Journal of Business Management*, 2012, No.5, Special Edition ISSN 1691-5348 <https://journals.riseba.eu/index.php/jbm/article/view/185/158> .
- [34] Malofeeva T., Ulyanova N. and Dzhiyeva A. (2025) “Effect of IFRS Adoption on Accounting Quality and Reporting: Evidence from Russia”, *Journal of Corporate Finance Research* | ISSN: 2073-0438, 19(2), pp. 96-109. <https://doi.org/10.17323/j.jcfr.2073-0438.19.2.2025.96-109>.
- [35] McPhee D. (2012) Impairment Testing: IAS 36. KPMG Working Paper. 23 October 2012 <https://www.fondazioneoiv.it/wp-content/uploads/2019/05/ImpairmenttestWorkshop-McPhee.pdf>.
- [36] Meilu, R. (2008). Accounting for the impairment of capital assets. *International Journal of Auditing and Assurance Services*; 4(1), 93-105
- [37] Perera H. (2012) Adoption of international financial reporting standards in developing countries. In T. Hopper, M. Tsamenyi, S. Uddin, & D. Wickramasinghe (Eds.), *Handbook of Accounting and Development*. Edward Elgar Publishing: Cheltenham.
- [38] Mukhametov A.B., Matkulieva S.I., Matrasulov B.E. (2023). UZBEKISTAN ON THE WAY TO TRANSITION TO IFRS. "Science and innovation" international scientific journal 02, 2003.
- [39] Nurunnabi M., Donker H., Jermakowicz E., (2022) The impact of mandatory adoption of IFRS in Saudi Arabia, *Journal of International Accounting, Auditing and Taxation*, Volume 49, 2022, 100509, <https://doi.org/10.1016/j.intaccudtax.2022.100509>.
- [40] Oliveira J, Azevedo G., Oliveira B. (2018). Impairment Losses: The Impact of First-time Adoption of the Accounting Standardisation System in Portugal. *Australian Accounting Re-view* Volume 28, Issue 4, December 2018, <https://doi.org/10.1111/auar.12221>.
- [41] Opere, Solomon & Houqe, Nurul & Zijl, Tony. (2019). Meta-Analysis of the Impact of Adoption of IFRS on Financial Reporting Comparability, Market Liquidity, and Cost of Capital. *Abacus*. 10.1111/abac.12237. <https://doi.org/10.2139/ssrn.3319067>.
- [42] Oubahou Y., Ouafa K. Bengrich M. (2025). The impact of IFRS adoption on the relevance of financial reporting in emerging markets: the case of Moroccan listed companies, *EuroMed Journal of Business*, January 2025. <https://doi.org/10.1108/EMJB-05-2024-0128>.
- [43] Pawsey Nicholas, IFRS adoption: A costly change that keeps on costing, *Accounting Forum*, Volume 41, Issue 2, 2017, Pages 116-131, ISSN 0155-9982, <https://doi.org/10.1016/j.accfor.2017.02.002>.
- [44] Piosik Andrzej, Lucyna Poniatowska. Determinants of upward revaluations of property, plant and equipment while adopting IFRS for the first time. *Zeszyty Teoretyczne Rachunkowości*, Vol 70 (2013) p.105-128 <https://www.cceol.com/search/article-detail?id=91469> <https://doi.org/10.5604/16414381.1046266>.
- [45] Saidov J. (2023). CHALLENGES AND OPPORTUNITIES OF ADOPTION OF IFRS FOR THE ACCOUNTING PROFESSION IN UZBEKISTAN: A COMPREHENSIVE ANALYSIS. *World Bulletin of Management and Law*, 21, 163-166. Retrieved from <https://scholarexpress.net/index.php/wbml/article/view/2590>.
- [46] Shamsitdinova S. (2023) THE ADOPTION OF INTERNATIONAL ACCOUNTING STANDARDS IN UZBEKISTAN: A REVIEW OF PROGRESS AND CHALLENGES , in “Iqtisodiyot va innovatsion texnologiyalar” (Economics and Innovative Technologies) ilmiy elektron jurnali, 5/2023, sentabr- oktabr (№ 00067) https://doi.org/10.55439/EIT/vol11_iss5/a7.
- [47] Soligva Buxgalteriya Hisobi (2021), IFRS in practice: How to test assets for impairment, Editorial, Solig Solish va Buxgalteriya Hisobi # 4, 2021 Stable URL: <https://e.nalogiuchet.mcf.uz/889554>, Accessed May 28, 2024.
- [48] State statistical Agency (2023). Revaluation indices, Stable URL: <https://www.stat.uz/ru/74-dlya-predprinimatelej/3773-indeksy-pereotsenki> , Accessed May 27th, 2024.
- [49] Tashnazarov S. (2021). Transition To International Financial Reporting Standards In Developing Countries: Possibilities And Analysis Of Implementation, *The American Journal of Interdisciplinary Innovations and Research* (ISSN–2642-7478), May 31, 2021 | Pages: 135-141 Doi: <https://doi.org/10.37547/tajir/Volume03Issue05-23>.
- [50] Thanyaluk Vichitsarawong, Li Li Eng (2023). Corporate governance, financial indicators and asset impairments during the COVID-19 pandemic period, *Finance Research Letters*, Volume 58, Part D, 2023, 104627, ISSN 1544-6123, <https://doi.org/10.1016/j.frl.2023.104627>.
- [51] TheCPAoasis (2024a). Impairment Test (Value in Use) URL: <https://thecpaoasis.com/2024/10/template-impairment-test-value-in-use/> (accessed 21/08/2025).
- [52] TheCPAoasis (2024b). Calculation of Carrying Amounts for Cash Generating Units.
- [53] Sep 23, 2024. URL: <https://thecpaoasis.com/2024/09/guide-calculation-of-carrying-amounts-for-cgus/> (accessed 21/08/2025).

Appendix 1: Detailed description of the PP&E handling algorithm for impairments and reversals during first-time IFRS adoption period

This Appendix details the implementation of the proposed algorithm, developed in an Excel framework, which aligns with the IAS 36 methodological approach. For the purposes of presentation, the algorithm is structured in V parts, each of which is discussed exhaustively below to methodically address the allocation and reversal of impairments for first-time IFRS adoption, following a sequence of rigorous analytical steps. The references in the algorithm are to the Excel file freely downloadable from the source below:

<https://disk.yandex.ru/i/ts8FpLhPTfz87A>

A1.1. Algorithm Part I: Transformations at the First Report Date / IFRS Opening Balance Date (January 1, 2019 in the case study)

Step 1: Determining Total Impairment

This involves a two-step process:

1) Calculate Accumulated Depreciation + Impairment:

Deduct the VIU of the CGU from the gross carrying amount (GCA) of the fixed assets. This calculation sets the baseline for the accumulated depreciation and impairment to be recorded in the IFRS-compliant PP&E accounts as of the first report date:

Accumulated Depreciation + Impairment = GCA - VIU = 1771.9 bln sum - 852.6 bln sum = 919.3 bln sum (Accumulated Depreciation + Impairment)

(See Cell AM 8 in the spreadsheet).

Establish Impairment to be Charged under IFRS:

Deduct the accumulated depreciation recorded pre-impairment from the total accumulated depreciation + impairment calculated in step 1.

This yields the impairment amount to be charged under IFRS as of the first report date:

Impairment = 919.3 bln sum - 0.426 bln sum = 918.8 bln sum

(See Cell AM 20 in the spreadsheet).

Step 2: Allocating Impairment to Individual Assets

To distribute the total impairment to individual assets within the CGU, an additional Excel column (Column H) is created. The allocation is based on the net carrying amounts of each PP&E item as determined pre-impairment (column K). The formula used in column H "Asset impairment on 01.01.2019" is:

Individual asset impairment under IFRS on the first report date = (Net carrying amount of an individual PP&E item pre-impairment / total net carrying amount for all items in the PP&E account pre-impairment) * amount of total impairment to be allocated to CGU's PP&E (from step 1.2))

Since the net carrying amounts are either zero or positive, no additional safeguards are required to disregard negative values (Ernst & Young, 2023).

Step 3: Recording Date-of-transition Asset Impairment under IFRS

In scenarios where there is no re-evaluation of assets' useful lives for IFRS purposes, the calculation of asset impairments requires a meticulous and systematic approach. For each asset in the inventory list, the resulting impairment must be summed with its accumulated depreciation under the national GAAP to establish the total "accumulated depreciation + impairment" for each asset under IFRS. This combined figure, recorded in column J, is crucial for converting the gross carrying amounts of assets under the national GAAP (from input column G) to their net carrying amounts under the first-time IFRS adoption (reported in column L as "Net carrying amount after impairment on 01.01.2019").

This rigorous process ensures that the total net carrying amount for fixed assets subject to impairment is precisely equal to the Value in Use (VIU) of the subject Cash-Generating Unit (CGU) as of the first report date, ensuring that the sum in Cell L10 matches the target CGU's VIU in Cell AM11.

A 1.2. Algorithm Part II: Recalculating Fixed Asset Depreciation Charges over the First Analysis Period

During the first analysis period, between the 1-st and 2-nd report dates, new depreciation charges effective under IFRS are established. This involves dividing the net carrying amounts of the assets on the first report date (Column L, the result of step 3 in Part I) by the residual service lives of the assets on this date. The formula used is:

Column S "Adjusted depreciation, including impairment" = Column L / Column M

This calculation ensures that depreciation reflects the revised carrying amounts post-impairment. Additionally, allowances must be made for the withdrawal or disposal of assets during the period. When fixed assets are removed from the balance sheet, their original unadjusted gross carrying amounts (found in column G) must be eliminated along with the newly established IFRS-based total accumulated depreciation + impairment (column J). Conversely, assets newly commissioned at historic cost within the first report period transition to IFRS without changes, unless their useful lives are re-evaluated under IFRS.

A 1.3. Algorithm Part III: Restating Gross and Net Carrying Amounts for Fixed Assets at the End of the First Report Period

By the end of the first report period, on December 31, 2019, the gross carrying amount of the assets must reflect movements such as additions and withdrawals. This process follows the accounting identity:

Gross carrying amount on Dec 31, 2019 (Column T) = Gross carrying amount of the asset on Jan 1st 2019 (Column G) + additions to the gross carrying amount over the period (Column P) - withdrawals from the gross carrying amount over the period (Column N).

This identity remains unaffected by the IFRS transition, except where assets recognized under national GAAP may not qualify under IFRS. For accumulated depreciation, the following identity is used:

Accumulated depreciations at the second report date (Column U) = Accumulated depreciation at the first report date (as restated allowing for IFRS impairment in Column J²) + Adjusted depreciation including impairment (Column S³) - Accumulated depreciation on asset withdrawals over the first period (Column O) + Accumulated depreciation on assets newly commissioned over the first period (Column Q)

These calculations ensure that the restated amounts accurately reflect all movements and adjustments in compliance with IFRS standards (Ernst & Young, 2023).

Finally, the net carrying amount of the fixed assets as of the second reporting date is calculated as:

Asset net carrying amount on Dec 31, 2019 (Column V) = Asset gross carrying amount on Dec 31, 2019 (Column T) - Accumulated depreciation as at Dec 31, 2019 (Column U)

This thorough approach ensures that all financial reporting under IFRS is accurate and reflective of the assets' economic realities, providing a robust framework for financial entities undergoing IFRS transition (IASB, 2021).

A1.4. Algorithm Part IV: Restating Gross Carrying Amounts, Depreciation Charges, Accumulated Depreciation, and Net Carrying Amounts for Fixed Assets on the Third (Reporting) Date (IFRS Adoption Date in the case study: December 31, 2020)

The restatement of financial figures for the third reporting date follows a rolling methodology, similar to the process utilized for the second report date. The second report date is now used as the comparative base year, with Parts II and III of the algorithm providing the foundational framework, suitably adapted for the new base year.

Step 1. Restating Depreciation Charges for the first transition year (Year 2020 for the case study)

² See step I.3.

³ See step II.

Given that no circumstances in this case study necessitate revising the useful lives of assets for the second period post-IFRS transition, the 2020 depreciation charge is calculated using the net carrying amount of assets as of the second report date (Column V). This value is divided by the original useful lives of the assets (reported in Column M) minus one year, reflecting the year that has already passed. The formula is:

$$2020 \text{ Depreciation Charge (in Column AA)} = \text{Net Carrying Amount (from Column V)} / [\text{Original Useful Lives (from Column M)} - 1]$$

Step 2. Reporting Financial Figures for the Third Report Date

On the third report date (December 31, 2020), the gross carrying amounts, accumulated depreciation, and net carrying amounts are recorded in Columns AB, AC, and AD, respectively. These figures represent the IFRS-compliant values before any reversal of the initial asset impairment charges introduced in the first period post-IFRS transition.

Crucially, on the date of IFRS adoption, the key comparison is to be made between these IFRS-determined net carrying amounts and the original net carrying amounts for the CGU's fixed assets as determined at historic costs under the national GAAP or deemed costs, displayed in Column AF. Negative values in this column indicate assets impaired during the IFRS transition relative to their original unimpaired values. However, some assets, particularly those commissioned after the first period impairments or affected by interim national GAAP revaluations, will remain unaffected by IFRS impairments and their subsequent reversals.

The differences identified in Column AF will be critical for the proposed impairment reversal technique discussed in Part V of the algorithm. In many instances, original asset impairments recognized in the initial period post-IFRS transition are reversed in the subsequent period. Consequently, the asset carrying amounts under IFRS should reflect these reversals by the IFRS adoption date, aligning with the third report date figures (KPMG, 2023).

A1.5. Algorithm Part V. Reversing Impairment under IAS 36: A Quantitative Analysis for the Calculation of Impairment Reversal

According to IAS 36, impairments, excluding those related to goodwill, can be reversed when evidence from external and internal sources suggests that an impairment loss recognized in prior periods may no longer exist or may have decreased. In Uzbekistan, this process typically involves independent valuers who ascertain the extent of the reversal by reporting Value in Use (VIU) for the subject Cash-Generating Units (CGUs) on subsequent report dates (Soligva Buxgalteriya Hisobi (2021).

In our case study, following the valuer-certified impairment reversal on the third report date (December 31, 2020), the total net carrying amount of assets in the fixed asset inventory should align with the VIU for the CGU as reported by the valuer. This alignment is crucial for estimating the reduction in "accumulated depreciation plus impairment" (Column AC) necessary to record the reversal accurately.

Step 1: Estimating the Impairment Reversal Amount

1) Comparing Gross Carrying Amounts and VIU on the third report date:

In this step, we calculate the accumulated depreciation as it should be after the reversal by subtracting the VIU from the asset's gross carrying amount (GCA) on the third report date:

$$\text{Accumulated Depreciation (Post-Reversal target)} = \text{GCA} - \text{VIU}$$

For instance in our case study, if the GCA is 1,776.5 billion sum (Cell AB10) and the VIU is 1,489.7 billion sum (Cell AE2), then:

$$1,776.5 \text{ bln sum} - 1,489.7 \text{ bln sum} = 286.8 \text{ bln sum (Cell AC2)}$$

2) Calculating the Reversal Amount:

In the proposed algorithm, the impairment reversal amount is determined by comparing the reported accumulated depreciation before the reversal to its target post-reversal value above.

$$\text{Impairment Reversal Amount} = \text{Accumulated Depreciation (Before Reversal)} - \text{Accumulated Depreciation (Post-Reversal target)}$$

In our case study, the accumulated depreciation before reversal is 1,030.6 billion sum (Cell AC10), then: $1,030.6 \text{ bln sum} - 286.8 \text{ bln sum} = 743.9 \text{ bln sum (Cell AC3)}$

Step 2: Allocating the Reversal among CGU's Fixed Assets

Under the proposed algorithm, the total impairment reversal is allocated only to "qualifying assets", i.e. assets with strict negative differences between their IFRS-determined net carrying values (pre-reversal) and their deemed-cost net carrying amounts as they would have been as of the third report date absent the initial impairment (Column AF). The strict negative-difference criterion used also avoids including any new assets commissioned following the IFRS transition date inside the perimeter of the impairment reversal process. The allocation of the reversal to each qualifying asset is based on the ratio of its deemed-cost net carrying amount absent the initial impairment (NCA_{dc-ai}) relative to the NCA_{dc-ai} total for all qualifying assets:

$$\text{Individual Asset Reversal} = \text{Total Impairment Reversal} \times [\text{Asset's NCA at deemed cost (Absent Impairment)} / \text{Total deemed-cost NCA (Absent Impairment) of All Qualifying Assets}]$$

An IF statement in Excel is used for this allocation⁴:

IF (asset is qualifying; impairment reversal for that asset = total impairment reversal * (asset's NCA at deemed cost absent impairment / total deemed-cost NCA absent impairment for all qualifying assets); otherwise no reversal)

For example, one of the fixed assets in our inventory would have had an original deemed cost net carrying amount absent impairment of 3 378 141 sum, while its NCA amount under IFRS on 01.01.2021 (before the impairment reversal) has been calculated as 1 668 391 sum using the discussed algorithm. This is a qualifying asset, because its negative difference stands at $1\,668\,391 - 3\,378\,141 = -1\,709\,750$ sum. Additionally, we know (from Step V.1.2) that the total impairment reversal amount is 743,9 bln. sum (Cell AC3), while the total NCAs absent impairment across all negative-difference assets stood at 1539,3 bln. sum (Cell AE5). Thus, the impairment reversal amount to be allocated to the asset is:

$$743,9 \text{ bln sum} * (3\,378\,141 / 1\,539\,300\,000\,000) = 743,9 \text{ bln.sum} * 0,00022\% = 1\,636\,580 \text{ sum.}$$

This method ensures that the impairment reversal is fully distributed, satisfying IAS 36's criterion that post-reversal net carrying amounts should not exceed what they would have been without the initial IFRS impairment (ICAEW, 2023).

Step 3: Booking the Reversal

The allocated impairment reversal results are then booked to the accumulated depreciation across the asset list. For each qualifying asset:

⁴ Note that with respect to the equipment class, which is new, we use the original NCA amounts as taken from the national GAAP in the context of our simple case study. In other IFRS transitioning cases, when the original NCA amount is adjusted to a relevant IFRS amount for any reasons other than the impairment itself, the original NCAs (before impairment) as determined under IFRS should be used in the allocation.

Accumulated depreciation upon impairment reversal (Column AH) = Accumulated depreciation under IFRS before the reversal (Column AC) - Allocated impairment reversal (Column AG)

Finally, Column AI records the net carrying amounts of the assets as of the third report date, reflecting the impairment reversal. The sum total in Cell AI10 should match the valuer-reported VIU for the CGU on that date (Cell AI5), ensuring the reversal goal is met.

Hence, this rigorous algorithm ensures the CGU's net carrying amounts align with the valuer-determined VIUs across all report dates, providing a robust framework for financial reporting under IFRS.