Lisbon School of Economics & Management
Universidade de Lisboa

MASTERS IN
FINANCE

MASTER'S FINAL WORK
PROJECT

EQUITY RESEARCH NOS, SGPS S.A.:
AN INTEGRATED VALUE APPROACH

MANUEL VIEIRA CUNHA

JULY 2024

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Abstract

The present document consists of an Equity Research report on NOS SGPS, S.A. (NOS.LS). NOS is a leading telecommunications company in Portugal offering a variety of services, including Fixed Pay TV, Fixed Voice, Fixed Broadband, Mobile, IoT, and Data Management services.

This report issues a Buy recommendation for NOS, with a 2024YE price target of €4.15/share. This value was reached through a DCF model based on FCFF and having a Sum-of-the-Parts approach to each segment (Telco and A&C). This valuation represents an upside potential of 27% from the January 12th, 2024 closing price of €3.27, with a medium-low risk. To support this analysis, other methods such as Relative Valuation were developed, as well as a multitude of stress tests.

This report was used for the local Portuguese CFA Institute Research Challenge. To complement the original research used in the competition, a new approach was taken to find a proxy for the company's Integrated Value. This concept goes beyond the traditional financial value calculation by extending its scope to include environmental and social dimensions. The analysis was conducted by updating the model present in the book *Corporate Finance for Long-Term Value* (Schoenmaker and Schramade, 2023) and applying it to the specific case of NOS. The results indicate that the previous Buy recommendation remains valid.

Note that this report only contains public information up to January 12th, 2024.

JEL classification: G10; G17; G32; G34

Keywords: Equity Research; Valuation; Telecommunications; Integrated Value

Resumo

O presente documento consiste num relatório de *Equity Research* sobre a NOS SGPS, S.A. (NOS.LS). A NOS é uma empresa líder no setor de telecomunicações em Portugal, oferecendo uma variedade de serviços, incluindo TV por subscrição fixa, Voz por subscrição fixa, Banda larga por subscrição fixa, Telemóvel, *IoT* e serviços de Gestão de Dados.

Neste relatório é emitida uma recomendação de Compra para a NOS, com um preço-alvo de €4,15/ação para o final de 2024. Este valor foi alcançado através de um modelo DCF baseado no FCFF, utilizando uma abordagem Sum-of-the-Parts para cada segmento (Telecomunicações e Audiovisuais e Cinema). Esta avaliação representa um potencial de valorização de 27% em relação ao preço de encerramento de €3,27 em 12 de janeiro de 2024, com um risco médio-baixo. Para apoiar esta análise, foram desenvolvidos outros métodos, como a Avaliação Relativa, bem como uma série de testes de sensibilidade.

Este relatório foi utilizado para o *CFA Institute Research Challenge* em Portugal. Para complementar a pesquisa original usada na competição, foi adotada uma nova abordagem para encontrar um *proxy* para o Valor Integrado da empresa. Este conceito vai além do cálculo tradicional do valor financeiro ao estender o seu âmbito para incluir dimensões ambientais e sociais. A análise foi conduzida atualizando o modelo presente no livro *Corporate Finance for Long-Term Value* (Schoenmaker e Schramade, 2023) e aplicando-o ao caso específico da NOS. Os resultados indicam que a recomendação anterior de Compra permanece válida.

Note que este relatório contém apenas informações públicas até 12 de janeiro de 2024.

Classificação JEL: G10; G17; G32; G34

Palavras-chave: *Equity Research*; Avaliação de Empresas; Telecomunicações; Valor Integrado

Disclosures

A significant portion of the Appendices were submitted by a group of students from ISEG, including the candidate, for the 2024 CFA Institute Research Challenge Portuguese Local Final. The main work can be read independently of these Appendices, although they provide a better understanding of the analysis.

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This report was prepared by a Master's student in Finance at ISEG – Lisbon School of Economics and Management, exclusively for the Master's Final Work. The opinions expressed and estimates contained herein reflect the personal views of the author about the subject company, for which he/she is solely responsible. Neither ISEG, nor its faculty accepts responsibility whatsoever for the content of this report or any consequences of its use. The valuation methodologies and the financial model contained in this report was revised by the supervisor.

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Recommendation System

Level of Risk	SELL	REDUCE	HOLD/NEUTRAL	BUY	STRONG BUY
High Risk	0%≤	>0% & ≤10%	>10% & ≤20%	>20% & ≤45%	>45%
Medium Risk	-5%≤	>-5% & ≤5%	>5% & ≤15%	>15% & ≤30%	>30%
Low Risk	-10%≤	>-10% & ≤0%	>0% & ≤10%	>10% & ≤20%	>20%

AI Disclaimer

This master's project was developed with strict adherence to the academic integrity policies and guidelines set forth by ISEG, Universidade de Lisboa. The work presented herein is the result of my own research, analysis, and writing, unless otherwise cited. In the interest of transparency, I provide the following disclosure regarding the use of artificial intelligence (AI) tools in the creation of this project:

I disclose that AI tools were employed during the development of this project as follows:

- AI-based research tools were used to assist in literature review and data collection.
- AI-powered software was utilized for data analysis and visualization.
- Generative AI tools were consulted for brainstorming and outlining purposes. However, all final writing, synthesis, and critical analysis are my own work. Instances where AI contributions were significant are clearly cited and acknowledged.

Nonetheless, I have ensured that the use of AI tools did not compromise the originality and integrity of my work. All sources of information, whether traditional or AI-assisted, have been appropriately cited in accordance with academic standards. The ethical use of AI in research and writing has been a guiding principle throughout the preparation of this thesis.

I understand the importance of maintaining academic integrity and take full responsibility for the content and originality of this work.

Manuel Vieira Cunha, 29th June 2024.

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Integrated Value

Executive Summary

External impacts and transition challenges are becoming increasingly important factors for investors assessing the true value of a company. Standard corporate finance methods, such as the Discounted Cash Flow model, are typically employed to estimate a company's Financial Value. This chapter aims to **complement our Equity Valuation by incorporating both Social and Environmental valuation models** to determine the **Integrated Value** of NOS and evaluate if our Buy recommendation remains valid.

The model used by Schoenmaker and Schramade (2023) in the book "Corporate Finance for Long-Term Value" serves as the foundation for this approach. This chapter aims to update the framework used by the authors and apply it to the specific case of NOS.

Integrated Value (IV) is derived from the sum of Financial Value (FV), Social Value (SV), and Environmental Value (EV):

$$IV = FV + SV + EV$$

Financial Value can be seen as Enterprise Value or Equity Value. As our purpose is to complement previous methodologies and understand if our investment recommendation remains the same, Financial Value will be assumed as Equity Value.

Although **developing this method presents significant challenges**, it builds upon the traditional financial value calculation by extending its scope to include environmental and social dimensions. By integrating these aspects, we can achieve a **more comprehensive and accurate estimate of NOS' true value**, offering a better proxy for the company's overall impact.

Why It Is Important | An Inevitable Concept

Before delving into the specifics of how Integrated Value is calculated, it is important to explore the concept itself and understand why managing all three components is crucial for companies.

Integrated Value goes beyond assessing a company's traditional Financial Value (which can be defined as the Net Present Value of its cash flows) by incorporating its Social and Environmental externalities (Schoenmaker and Schramade, 2023). These externalities include various factors, from carbon emissions to water usage or employee well-being.

One might question the necessity of evaluating Social and Environmental value when it is the Financial Value that predominantly influences a stock's price. However, over the long term, companies that prioritize Financial Value at the expense of Social or Environmental considerations are at risk of losing their license to operate (Kurznack et al., 2021; Mayer, 2018).

Regulatory measures and taxation policies are increasingly holding companies accountable for their corporate responsibilities and accelerating the transition phase. For example, carbon taxes are being implemented in several regions to internalize the environmental costs of carbon emissions, encouraging companies to reduce their greenhouse gas outputs (Tax Foundation, 2021; Business & Human Rights Resource Centre, 2021). Furthermore, technological advancements are empowering the rise of newer, greener solutions that now stand as viable competitors to older, more pollutant energy generation methods. This shift is driving a broader adoption of renewable energies, not only due to ethical consciousness but also due to enhanced efficiency.

On another note, customers have shown a tendency to prefer sustainable and ethical companies over those that damage the planet and society (Nielsen, 2015). This preference, while sometimes debated, is backed by numerous real-life examples. A notable example is the backlash faced by Starbucks regarding its use of non-recyclable cups and the environmental impact of its operations. In 2018, a BBC report highlighted that Starbucks was among the companies criticized for contributing significantly to plastic waste, as their cups were lined with plastic, making them difficult to recycle. The public outcry and increased awareness around environmental issues led to significant reputational damage for Starbucks. In response, Starbucks committed to eliminating plastic straws by 2020 and invested in developing more sustainable packaging solutions. This move was essential not only to mitigate the backlash but also to align with the growing customer demand for environmentally responsible practices. This incident underscores the long-term risks companies face when neglecting environmental responsibilities in favor of short-term financial gains (BBC, 2018).

All these factors are shaping the way companies generate value for their shareholders and that is why Integrated Value is emerging as an inevitable concept. It reflects the interconnectedness of financial, social, and environmental dimensions in determining a company's true worth in today's evolving landscape.

External impacts are, thus, becoming an integral part of a company. Governments, companies, investors, consumers, and society as a whole, must all contribute to the gradual internalization of

environmental and social mechanisms that reduce negative externalities. This process involves incorporating the true costs and benefits of business activities into decision-making frameworks, rather than allowing them to be borne by society at large. For instance, the International Monetary Fund (IMF) emphasizes that market failures often occur when the indirect costs of production, such as pollution, are not reflected in the prices of goods and services. This leads to overproduction of harmful goods and underproduction of beneficial ones, thus necessitating government intervention through taxation and regulation to correct these inefficiencies (Helbling, 2010) (IMF).

Overall, the internalization of externalities is essential for aligning corporate actions with broader societal goals, fostering a more sustainable and equitable economic system.

Stakeholders: Identifying NOS' impacts

In the context of Integrated Value, it is crucial to recognize the multifaceted impacts that NOS has on its diverse stakeholders. Grounded in Freeman's (1984) Stakeholder Theory, this perspective emphasizes the importance of balancing the interests of various stakeholder groups to achieve long-term sustainability and corporate responsibility.

Historically, companies have primarily focused on maximizing shareholder value, a perspective that prioritizes short-term profits and stock prices. This shareholder-centric view has been the cornerstone of corporate strategy for decades, driven by the belief that a company's primary obligation is to its owners — the shareholders. Yet, this approach often overlooks the broader impact of corporate actions on other vital groups, including employees, customers, suppliers, communities, and the environment.

Over time, a significant shift has emerged towards a broader approach to value creation. This transformation is largely driven by the recognition that a company's long-term success and resilience are intrinsically linked to its ability to address the needs and expectations of all its stakeholders. The transition from a shareholder view to a stakeholder view reflects an evolving understanding of a company's purpose — not merely as a profit-generating entity but as an integral part of a broader societal and environmental context.

Given these dynamics, companies like NOS are increasingly adopting the stakeholder view to enhance their Integrated Value. This approach involves systematically identifying and managing impacts on all stakeholders, ensuring that the company's growth and success contribute positively to the wider community and environment.

According to NOS' 2023 Annual Report, key stakeholders include customers, shareholders, employees, partners and suppliers, the community, government and regulatory authorities, industry, and the media. This section outlines the specific impacts on each group, underscoring the interconnected nature of these relationships.

Customers benefit significantly from NOS' provision of advanced technology such as 5G and fiber, diverse service bundles, and reliable services, which collectively enhance customer satisfaction. However, issues such as data privacy, service pricing, and the necessity for ongoing technological advancements remain areas of concern that NOS must carefully manage to maintain customer trust and satisfaction.

Shareholders experience strong financial health, robust cash flow, and consistent dividends as a result of NOS' strategic initiatives and market performance. Transparent communication and solid governance practices further bolster investor confidence, aligning with the principles of Agency Theory (Jensen & Meckling, 1976), which emphasizes the importance of aligning the interests of managers and shareholders. However, market volatility and performance uncertainties present inherent risks. Appendix 14 presents most risks associated with investing in NOS. Consistent achievement of financial targets and proactive risk management through mitigation measures are essential to maintaining investor trust and securing ongoing investment.

Employees at NOS benefit from investments in development, competitive wages, and career advancement opportunities, contributing to a supportive and motivating work environment. NOS also has a clear focus on gender equality, as demonstrated by its non-existent levels of discrimination. Nonetheless, challenges such as workplace stress, job security, and the continuous need for skill development can impact employee morale and productivity. Effective human resource strategies are essential to address these challenges and sustain a committed workforce.

Partners and suppliers benefit from timely payments and long-term business opportunities fostered by NOS' commitment to fair business practices. In contrast, smaller suppliers may face challenges due to negotiation power imbalances and stringent payment terms. Ensuring fair treatment and timely payments is critical to promote a cooperative and efficient supply chain.

The community benefits from NOS' engagement in social initiatives, digital inclusion, environmental efforts, and contributions to local job creation. Despite this, the environmental footprint of NOS' operations, including its carbon emissions and water usage, can pose challenges. Implementing sustainable practices and mitigating negative environmental impacts are critical for maintaining the company's social license to operate.

Table 1: Stakeholders Impact map for NOS

Stakeholders	Goals	NOS' Impact
Customers	High-quality service, innovative products, value for money	Provides advanced technology (5G, fiber), diverse service bundles, and high customer satisfaction through reliable services
Shareholders	Return on investment, sustainable growth	Strong financial health, robust cash flow, consistent dividends
Employees	Fair wages, career development, safe working conditions	Invests in development, competitive pay, and career advancement opportunities
Partners & Suppliers	Fair business practices, long-term relationships	Ensures timely payments, fosters long-term partnerships, and offers ongoing business opportunities
Community	Economic development, social well-being, environmental protection	Engages in social initiatives, digital inclusion, environmental efforts, and contributes to local job creation
Government & Regulatory Authorities	Compliance with regulations, contribution to local economy	Complies with regulations, invests in infrastructure and promotes economic development
Industry	Innovation, collaboration, meet industry standards	Drives innovation, sets industry standards with 5G and fiber, and promotes competition
Media	Transparency, accurate information, corporate responsibility	Maintains transparent communication, provides timely updates, and engages in responsible corporate behavior

Source: NOS 2023 Annual Report and Author's Assumptions

Government and regulatory authorities are essential stakeholders for NOS, as compliance with regulations ensures operational legitimacy and market credibility. Proactive engagement with regulators can help shape favorable policies, although regulatory changes often necessitate significant adjustments and costs. Staying ahead of regulatory requirements and ensuring comprehensive compliance are ongoing priorities for NOS, especially after ANACOM's shift towards having a more liberal agenda.

In the industry, NOS drives innovation, sets standards with 5G and fiber, and promotes competition. These activities position NOS as one of the three leaders in the Portuguese telecommunications sector, fostering industry-wide advancements and setting benchmarks for quality and performance. This proactive stance in industry leadership is crucial for maintaining a competitive edge and contributing to the overall advancement of telecommunications technology in Portugal.

The media is another important stakeholder. In a general way, NOS maintains transparent communication, provides timely updates, and engages in responsible corporate behavior. This aligns with the need for accurate information dissemination and corporate accountability, enhancing public trust and media relations. Regarding NOS' Audiovisuals & Cinema segment, the company meets industry standards while also promoting local culture and media development. Ensuring high-quality, diverse content not only satisfies consumer demand but also supports the broader media ecosystem.

In summary, NOS' interactions with its stakeholders are characterized by a complex interplay of benefits and challenges. By thoughtfully addressing these dynamics, NOS can enhance its Integrated Value, offering a more holistic measure of the company's true impact. This balanced approach aligns with the broader societal shift towards sustainability and corporate responsibility, positioning NOS for long-term success and resilience in an evolving market landscape.

In the next section, we will explore the challenges currently faced in calculating Integrated Value. Following that, a specific model will be updated and applied to NOS' case to achieve a reasonable estimate of the company's value.

The Main Problems: Quantification and Monetisation

One of the main challenges in calculating Integrated Value (IV) lies in the quantification and monetisation of social and environmental externalities. Current corporate reporting often lacks the

granularity needed to arrive at the most accurate IV, hence the need to use approximations and shortcuts. Despite significant advancements and improvements in sustainability and ESG reporting, there remains considerable room for enhancement.

For example, carbon emissions reporting has benefitted from standardized measures such as the Greenhouse Gas Protocol, which provides a comprehensive framework for measuring and managing greenhouse gas emissions. This standardization makes it easier to obtain reliable data on carbon footprints. Additionally, water usage reporting has seen improvements, with companies – namely NOS – increasingly adopting metrics to monitor and disclose their water footprint. On the other hand, the voluntary nature of many reporting frameworks allows companies to selectively disclose information, often highlighting data that presents them in the best light to stakeholders.

The complexity increases when dealing with other environmental and social externalities, which are less standardized and more challenging to quantify. For instance, the impacts of biodiversity loss, soil degradation, and social issues like labour practices and community impacts are harder to measure and monetize accurately (U.S. Global Change Research Program, 2023). The Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB) provide guidelines, but there is still variability in how companies apply these standards.

An example of this complexity is seen in the social externalities related to employee well-being. While some aspects, such as employee turnover rates and diversity metrics, are straightforward to report, other factors like mental health and job satisfaction are more subjective and harder to quantify. Furthermore, companies might underreport negative impacts due to concerns over reputation and competitive advantage.

The evolving nature of Integrated Value reflects these ongoing challenges, as new methods and tools for quantification and monetisation are developed to enhance the accuracy and comprehensiveness of IV calculations. By addressing issues of measurement complexity, lack of standardization, and valuation difficulties, companies can more effectively quantify and monetize their social and environmental impacts (Arendt et al., 2020). This not only improves their Integrated Value assessments but also promotes transparency and accountability in their sustainability efforts. Continuous improvement in sustainability reporting practices is essential to meet the evolving demands of stakeholders, highlighting current limitations and the need for ongoing enhancement.

The Solution: Monetisation Factors for True Pricing

As we just discussed, quantifying and monetising environmental (E) and social (S) flows present significant challenges. However, there are frameworks available that can help provide a monetary estimation of these impacts. One such solution is the Impact-Weighted Accounts Framework (IWAF), which offers monetisation factors or shadow prices. These factors can be multiplied by the original units to derive monetary values (Impact Economy Foundation, 2022). There is a more recent framework to follow, developed by True Price, which follows the same approach as the previous one.

The methodology used by True Price involves several critical steps designed to quantify and assign monetary values to the external costs associated with the production and consumption of goods. These external costs encompass environmental and social impacts that are not typically accounted for in market prices. Initially, relevant social and environmental impacts are identified, each associated with specific footprint indicators that measure the impact in quantifiable terms, such as tonnes of CO2 for greenhouse gas emissions.

Economic modelling and existing literature data are then used to quantify the costs associated with each impact. This translation of physical impact units into monetary terms involves sources like marginal abatement cost studies for environmental impacts and studies on social costs for issues like child labor. The quantified costs are then aggregated to create monetisation factors. For impacts with a single footprint indicator, one monetisation factor is developed; for impacts with multiple indicators, separate factors are established for each. These factors, expressed in monetary units (e.g., euros per tonne of CO2), are applied to the measured footprint indicators of a product or process to determine the total external costs. This involves multiplying the physical units of each footprint indicator by its corresponding monetisation factor and aggregating the results to find the total external cost.

Monetisation factors ideally should be specific to different regions, as the impact of an activity can vary by location. Despite this, in the absence of detailed regional data, global averages derived from different countries or regions are often used. The methodology and monetisation factors undergo periodic reviews and updates to incorporate new data and improved models, with stakeholder input and expert reviews ensuring their robustness and applicability.

For instance, the climate change impact uses greenhouse gas emissions measured in tonnes of CO2 equivalent as the footprint indicator, with the monetisation factor derived from marginal abatement cost studies estimating the cost to reduce emissions to meet climate targets. This factor includes only the restoration costs necessary to mitigate the emissions. In the case of child labour impact, the footprint indicator is the incidence of child labour, measured by the number of affected children. The monetisation factor encompasses costs for restoration activities, such as providing quality

education and reintegration programs, and compensation for irreversible damage, like lost future earnings due to missed education.

Table 2: Examples of monetisation factors for true pricing (Environmental impacts)

Impact	Footprint Indicator	Monetisation Factor
Environmental impacts		
Climate change	GHG emissions	€163/ton CO2 equivalent (eq)
Air pollution	Toxic emissions to air	€106,000/DALY (disability-adjusted life year)
	Nitrogen deposition NH3 (animal husbandry)	€13.00/kg NH3 eq
	Nitrogen deposition NOx (use of machines and vehicles)	€1.27/kg NOx eq
	Particulate matter (PM) formation	€66.80/kg PM2.5 eq
	Ozone layer depleting emissions	€57.90/kg CFC-11 eq
Water pollution	Toxic emissions to water	€106,000/DALY (disabilityadjusted life year)
Soil pollution	Freshwater eutrophication	€209/kg phosphorus eq to freshwater
	Toxic emissions to soil	€106,000/DALY (disabilityadjusted life year)
	Terrestrial ecotoxicity	€0.3/ton 1,4 dichlorobenzene (DB) emitted to industrial soil eq
	Freshwater ecotoxicity	€41.70/ton 1,4-DB emitted to freshwater eq
Soil degradation	Soil organic carbon (SOC) loss	€31.00/ton SOC loss
Land occupation	Tropical forest	€2,180/(MSA*ha*year)
	Other forest	€1,040/(MSA*ha*year)
Availability of non-renewable materials	Non-renewable material depletion	€223/ton copper eq
Availability of water	Scarce blue water use	€1.33/m3

Source: Shortened from True Price. (2023). Monetisation Factors for True Pricing v3.0.0.

The True Price framework provides a systematic approach to monetize various environmental and social impacts. This framework includes tables with examples of how different externalities can be quantified in monetary terms. For instance, the framework includes shadow prices for carbon emissions, water usage, and other environmental factors (Table 2), as well as metrics for social impacts like employee well-being and community investment (Table 4).

Applying to NOS: Calculating E flows

In the case of NOS, the available data allows for the calculation of carbon emissions and water usage. These metrics, while not exhaustive, provide a useful proxy for assessing the company's negative environmental impact. By applying the monetisation factors from True Price (2023) to the reported quantities of carbon emissions and water usage, we can derive a monetary value for these impacts.

For Scope 1 and 2 emissions, which originate from the company's own operations, NOS has set a target of 10,077 tonnes of CO2 equivalent (T CO2eq) for 2025 and a Science-Based Target (SBT) of 5,038 T CO2eq for 2030. Scope 3 emissions, which encompass the entire value chain, are projected to reach a SBT of 217,616 T CO2eq by 2030. Given that Scope 3 emissions account for the entire

value chain, 50% of these emissions have been attributed to NOS, recognizing its primary role within the value chain. Water usage projections were based on historical trends, with an average annual growth rate of 5%.

The values assigned to carbon and water usage were then multiplied by the shadow prices derived from Table 2. The monetisation factors in 2023 were €163/ton of CO2 equivalent and 1.33€ per cubic meter (m^3) of water. These values are expected to increase by 3.5% annually, reflecting the projected rise in environmental costs over time.

Finally, Table 3 presents the results for the Present Value of NOS' Environmental flows and their consequent contribution to climate change, using a social discount rate of 2%. According to Dasgupta (2021), most economists agree that a social discount rate of 1–3% is suitable for long-term public investments, hence the use of the midpoint value. The final value is -776M€, primarily reflecting the company's emissions over the years, as water usage at NOS has a relatively minor impact and there is a lack of other relevant information to fully compute its E flows.

Table 3: Calculation of Environmental (E) flows for NOS

Environmental (E) Flows	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Scope 1 + 2 emissions (T CO2eq)	52231	21077	10077	8772	7637	6649	5789	5038
Scope 3 emissions (T CO2eq)	191033	194622	198281	202008	205806	209675	213617	217616
Percentage attributable to NOS	50%	50%	50%	50%	50%	50%	50%	50%
Attributed emissions	147748	118388	109217	109777	110540	111487	112597	113846
Carbon price (€)	163	169	175	181	187	194	200	207
Cost of CO2 emissions (M€)	24,1	20,0	19,1	19,8	20,7	21,6	22,6	23,6
Total water usage (m3)	66327	69643	73126	76782	80621	84652	88885	93329
Shadow price per m3 (€)	1,33	1,33	1,33	1,33	1,33	1,33	1,33	1,33
Cost of water usage (M€)	0,09	0,09	0,10	0,10	0,11	0,11	0,12	0,12
Total E flows (M€)	-24,2	-20,1	-19,2	-19,9	-20,8	-21,7	-22,7	-23,7
Social discount rate	2,0%	2,0%	2,0%	2,0%	2,0%	2,0%	2,0%	2,0%
Terminal value (TV)								-734,3
Period		1	2	3	4	5	6	7
Discount factor		0,98	0,96	0,94	0,92	0,91	0,89	0,87
Present value (PV)		-19,7	-18,4	-18,8	-19,2	-19,7	-20,1	-659,9
Sum of E flows PV (M€)		**-776**						

Source: NOS 2023 Annual Report and Author's Assumptions

It is important to mention that NOS is proactively seeking to improve its environmental sustainability, as highlighted in the ESG section of this report. Besides the impacts from carbon emissions and water usage, which were accounted for in this valuation model, NOS has implemented measures to become more energy-efficient, develop a greener supply chain, and increase business circularity. Furthermore, NOS' activities in areas such as 5G technology, the Internet of Things, and advanced analytics support Portuguese companies in overcoming their own ESG challenges. Some examples of solutions aimed at speeding up ESG adoption include fleet management, bike sharing, smart irrigation, water distribution network management, energy efficiency, and electric chargers and solar energy through a partnership with EDP.

On another note, the company's involvement in several co-funded projects focused on sustainability, such as the development of smart cities in cooperation with 12 municipalities so far, reinforces its role in aiding the local economy's transition to a greener future and the intelligent modernization of the country.

All in all, although this method does not encompass all environmental externalities, it serves as a reasonable approximation for estimating NOS' integrated value. NOS is a company with an increasingly important role in the sustainable development of its local economy, so it is fair to assume that the externalities not accounted for due to the lack of quantifiable data are more than neutralized by the company's impact on other companies' and municipalities' ESG improvements.

Applying to NOS: Calculating S flows

Calculating social (S) flows has proven to be a significantly more complex task than calculating environmental flows. This process requires not only assessing the negative externalities that pose a cost to society but also the positive impacts NOS brings to people's lives. To achieve this, the initial attempt was to use the True Price (2023) framework, allowing us to estimate these values in monetary terms, similar to the approach used for environmental flows. However, when considering the monetisation factors available for social impact measures (Table 4), it becomes evident that this

method faces serious challenges. The lack of available data and the difficulty in accurately quantifying many social impacts leaves very little room to use the developed framework effectively.

Table 4: Examples of monetisation factors for true pricing (Social impacts)

Impact	Indicator	Shadow Price
Social impacts		
Consumer well-being	Consumer surplus	€ based on price elasticity of demand
Well-being of employment	Well-being effect per one additional point of life satisfaction	€1,825/life satisfaction point (scale 0–100)
Occupational health and safety incidents	Non-fatal occupational incidents	€3,710/incident if insured, €3,840/incident if not insured
	Fatal occupational incidents	€3,150,000/incident
	Occupational injuries with breach of health and safety standards	€4,230/incident
Underpayment in the value chain	Wage gap of workers earning below minimum wage	€1.59/€
	Wage gap of workers earning above minimum wage but below decent living wage	€1.09/€
Child labour	Workers below minimum age for light work involved in non-hazardous economic work	€9,910/child FTE
	Underage workers above minimum age for light work and below minimum age involved in non-hazardous light economic work	€2,380/child FTE
	Underage workers who are not attending school	€22,400/children
Forced labour	Forced workers	From €12,300/FTE to €123,000/FTE depending on the severeness
Discrimination	Female workers without provision for maternity leave	€1,760/FTE
	Wage gap from gender discrimination	€1.09/€
	Wage gap from unequal opportunities	€1.09/€
Lack of freedom of association	Instances of denied freedom of association	€379/violation

Source: Shortened from True Price. (2023). Monetisation Factors for True Pricing v3.0.0.

On the negative side, obtaining accurate data is difficult because factors such as poor labor practices are often not reported due to potential reputational harm or legal reasons. For instance, metrics related to child labor or unsafe working conditions are typically underreported or omitted entirely. Similarly, while there are numerous positive social impacts, they are often hard to quantify.

To illustrate, let us consider some monetisation factors available in the framework. Measures related to salary gaps, fatal and non-fatal occupational accidents, and female workers without provisions for maternity leave were initially considered. However, all quantifiable factors reflect NOS' exceptional ESG scores, leaving barely any room for improvement. The average pay ratio between men and women in technological areas is 1, and in non-technological areas is 0.99. Every female worker at

NOS has provisions for maternity leave, and there are no fatal occupational accidents, with non-fatal accidents being so insignificant that their impact on the company's value would be less than 0.01%.

On the positive side, taxes paid by NOS contribute directly to public revenues and can be calculated with relative ease. Nonetheless, there are also important metrics that positively influence NOS' suppliers, employees, customers, and the overall society that are not possible to quantify. For example, even though there are metrics related to NOS' employees being more satisfied than ever, these are mostly not quantifiable. Although there are several survey results about employee happiness, there is no specific survey about life satisfaction points derived from working at NOS. This data could have been used with the monetisation factor of the well-being effect per one additional life satisfaction point.

Another straightforward metric to include in this analysis is consumer surplus — the difference between what consumers are willing to pay for a product and what they actually pay — to reflect the value NOS provides to its customers. In this case, the consumer surplus will end up being a negative value due to the price elasticity for demand of telecommunication services being inelastic.

Despite the lack of quantifiable data, NOS' strong ESG performance, both on an absolute basis and when compared to its peers and national or international averages, indicates significant positive social impacts. NOS aims to be a benchmark employer, promoting the health and well-being of its employees through various policies and benefits. The company's remuneration policy follows principles of equity, balance, simplicity, flexibility, performance, and competitiveness. Employee satisfaction is high, with 75% of employees satisfied or very satisfied with the basic benefits offered by NOS, a 70% rating on the work-life balance index (up from 59% in 2022), and an 83% recommendation rate as a great company to work for (up from 69% in 2022). Moreover, an external audit of the occupational health and safety management system certified according to ISO 45001 revealed no findings. Finally, NOS has several initiatives to support an inclusive digital transition of Portuguese society, such as the ZERO1 project, which aims to provide computing education to children and youth across the country.

Given NOS' ESG execution and significant role in the Portuguese community, it is reasonable to conclude that the positive social impacts on its various stakeholders, which cannot be quantified, likely offset any negative impacts that also could not be included in this analysis. Therefore, the focus of this subsection will be on the straightforward and measurable aspects of social flows, such as paid taxes and consumer surplus. Paid taxes represent a direct contribution to public revenues, supporting public services and infrastructure, and can be easily quantified from financial reports. Consumer surplus can be estimated by evaluating the value consumers derive from NOS' services compared to their costs.

Table 5 shows the results for positive S flows, which in this case only include the taxes paid by NOS to support the local economy. Paid taxes were derived based on our team's estimates, previously discussed in the Valuation section of this report. The final value is 1,645M€.

Table 5: Calculation of Positive Social (S) flows for NOS

Positive Social (S) Flows	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Paid taxes (€M)	43,1	46,3	47,7	51,1	53,5	52,6	50,9	49
Total Positive S flows (€M)	43,1	46,3	47,7	51,1	53,5	52,6	50,9	49
Social discount rate	2%	2%	2%	2%	2%	2%	2%	2%
Terminal value (TV)								1517
Period		1	2	3	4	5	6	7
Discount factor		0,98	0,96	0,94	0,92	0,91	0,89	0,87
Present value (PV)		45,4	45,9	48,2	49,4	47,6	45,2	1363,5
Sum of S flows PV (M€)		**1645**						

Source: Team Estimates and Author's Assumptions

Regarding the negative S flows, it is possible to estimate the Consumer Surplus, or Consumer Deficit in the case of NOS, which measures consumer welfare as the social valuation of a product above its actual price. The calculation is the following:

$$\left(\frac{Sales}{Price\ elasticity\ of\ demand} x \frac{1}{2}\right)$$

Given that NOS operates two distinct business segments — Telecommunications (Telco) and Audiovisuals & Cinema (A&C) — we must estimate different consumer surpluses for each segment due to the variations in their price elasticity of demand (PED).

For telecommunication services in Portugal, the PED is relatively inelastic. This implies that price increases generally lead to only a modest decrease in demand. The market is dominated by three major players, leading to an oligopolistic structure where pricing offers are quite similar. Despite this, telecommunications are essential in modern life, resulting in less price sensitivity compared to the A&C segment. The latter, predominantly driven by cinema ticket sales, exhibits a higher price

sensitivity. Cinema is considered a discretionary activity and has numerous alternatives, such as streaming services and other leisure activities. This makes consumers more responsive to changes in cinema ticket prices.

Looking forward, we anticipate that PED will become even more elastic (i.e., consumers will become more price-sensitive) in both segments. For the Telco segment, the anticipated entry of new competitors in the Portuguese market will expand the availability of substitutes, increasing consumer price sensitivity. Similarly, in the A&C segment, emerging disruptive technologies in the media and entertainment sector are expected to make consumers gradually more price-sensitive as they have more entertainment options available.

It is important to note that this negative consumer surplus arises not only from NOS but also from its supply chain partners. As discussed when calculating E flows, NOS assumes a primary role in its value chain, so we attribute 50% of this negative surplus to the company.

Table 6: Calculation of Negative Social (S) flows for NOS

Negative Social (S) Flows	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Telco Revenue (€M)	1472	1503	1522	1527	1526	1520	1516	1512
Telco PED	-0,3	-0,33	-0,36	-0,39	-0,42	-0,45	-0,48	-0,51
Telco Consumer Surplus (€M)	-2454	-2277	-2113	-1958	-1817	-1688	-1579	-1483
A&C Revenue (€M)	107	113	115	117	119	121	124	126
A&C PED	-1,2	-1,23	-1,26	-1,29	-1,32	-1,35	-1,38	-1,41
A&C Consumer Surplus (€M)	-44,7	-45,9	-45,8	-45,5	-45,3	-45,0	-44,9	-44,8
Percentage attributable to NOS	50%	50%	50%	50%	50%	50%	50%	50%
Attributed Consumer Surplus	-1249	-1161	-1080	-1002	-931	-867	-812	-764
Total S flows (€M)	-1249	-1161	-1080	-1002	-931	-867	-812	-764
Social discount rate	2%	2%	2%	2%	2%	2%	2%	2%
Terminal value (TV)								
Period		1	2	3	4	5	6	7
Discount factor		0,98	0,96	0,94	0,92	0,91	0,89	0,87
Present value (PV)		-1138,6	-1037,6	-944,0	-860,1	-785,0	-721,2	-664,9
Sum of S flows PV (€M)		**-6151**						
Adjusted Sum of S flows PV (€M)		**-615**						

Source: Team Estimates and Author's Assumptions

Table 6 shows the results for negative S flows. There were a few adjustments made to ensure higher accuracy and a better estimate of the true impact on NOS' consumers. First, the Terminal Value was excluded. These social effects are not likely to continue over the long term, especially as the telecommunications sector faces severe transformations, with major disruptive technologies like the 6G posing uncertainty regarding the future of these social externalities. Additionally, the initial result of negative 6151M€ was overstating NOS' effect on consumers' welfare, requiring a different adjustment. The Portuguese telecommunications market is characterized by having oligopolistic characteristics, with three main players dominating the market. For many years these three players have coordinated their price increases to follow inflation and to happen at more or less the same time. As such, even though the price elasticity of demand exists and it is negative, the probability of having a change in prices that captures it is practically inexistent, as NOS changes prices according to its competitors and the overall market. If every player in the market changes the prices in the same proportion, the social effect ends up being null and so the initial result given was overstating the odds of that happening.

Even though this is unlikely to happen, there is always that possibility. As such, a 10% probability of NOS increasing its prices without its competitors doing the same was given. Adjusting the initial value for that probability, the result is -615M€, a much more reasonable value that is useful for our model.

In summary, while calculating social flows involves certain complexities, focusing on measurable components such as paid taxes and consumer surplus provides a reasonable estimate of NOS' social contributions. This approach highlights NOS' significant role in societal well-being and reinforces its commitment to sustainable and responsible business practices, with paid taxes more than offsetting the effects of having a negative consumer surplus.

The importance of evolving reporting standards for social impact metrics cannot be understated. Current challenges, such as the lack of comprehensive data and the difficulty in quantifying many social impacts, underscore the need for more robust and standardized reporting frameworks. By developing better methodologies and enhancing transparency, companies like NOS can provide a clearer picture of their true social contributions. This advancement will not only facilitate more precise valuation of social and environmental flows but also encourage businesses to adopt more sustainable and responsible practices, ultimately leading to greater societal well-being. As the field of social impact assessment matures, the integration of these improved standards will enable stakeholders to make more informed decisions, reflecting the full spectrum of a company's value

beyond financial performance alone. Therefore, the evolution of these standards is essential for a more accurate proxy of the Integrated Value of companies in the future.

Adjusting FV to incorporate Transition Risk

Before summing up the Environmental (E) and Social (S) flows to the Financial Value (FV) for NOS calculated earlier, it is crucial to adjust the FV to incorporate transition risk. Transition risk refers to the financial risks and opportunities associated with the shift towards a low-carbon economy influenced by policy changes, market dynamics, and technological advancements.

Incorporating transition risk into the FV is essential for several reasons. First, it ensures that the valuation reflects the potential costs associated with regulatory changes, such as carbon pricing or stricter emission regulations, which could impact NOS' operational costs and profitability. Second, it accounts for market dynamics, where shifts in consumer preferences towards more sustainable products could affect revenue streams. Third, technological advancements could either pose a risk if NOS fails to keep up or present opportunities if it can leverage new technologies to improve efficiency and reduce emissions.

By considering these factors, the scenario-weighted FV provides a more comprehensive and forward-looking valuation of NOS, integrating both financial performance and the company's ability to navigate the transition to a low-carbon economy. This approach not only aligns with best practices in sustainable finance but also ensures that investors have a clearer picture of the long-term value and risks associated with their investment.

Table 7: Transition valuation scenarios for NOS

	Successfull global climate transition by 2030	Unsuccessful global climate transition by 2030
NOS is well prepared for climate transition	Scenario A: The company proactively invested in climate transition, and these investments yielded expected benefits	Scenario C: Despite proactive investments, the company's efforts did not produce the expected payoffs
NOS is ill poorly prepared for climate transition	Scenario B: The company faced significant costs and missed opportunities for not aligning with global climate trends	Scenario D: The company conserved resources by not investing in climate transition and ended up not being penalized for that

Source: Author's assumptions, based on Schoenmaker and Schramade (2023)

Thus, a scenario-weighted valuation was developed. This valuation includes four scenarios that depend on the success of the global transition and how well-prepared NOS is for this shift (Table 7). As previously discussed in the ESG section of this report, NOS has both Environmental and Social scores well above national and sector averages. Consequently, an 80% probability was assigned to the likelihood that NOS is well-prepared for climate mitigation efforts. For the global transition success rate, a 50% probability was assigned to each scenario to reflect the significant uncertainty and balanced likelihood in achieving a global low-carbon transition. This approach, while seemingly simplistic, aims to avoid 'cherry-picking' optimistic or pessimistic probabilities without sufficient evidence. Instead, it adopts a 'naive approach' by treating the success and failure scenarios as equally probable due to the current unpredictability and complexity of the factors involved in the global low-carbon transition.

Each scenario was assessed based on the terminal growth rate used in our Discounted Cash Flow model. The terminal growth rate reflects the company's long-term growth prospects considering the impact of transition risks. The scenario-weighted financial value (FV) achieved was €4.16 per share (Table 8). This value does not yet incorporate the E and S flows, which will be added subsequently to arrive at the Integrated Value. The scenario-weighted FV closely matches our previously calculated FV of €4.15 per share, which shows that our initial valuation had already factored in the ESG risks associated with the company.

The assumptions and probabilities assigned to each scenario are based on current data and trends in sustainability and corporate governance. As these factors evolve, the valuation model should be updated to reflect new information and ensure the most accurate assessment of transition risk. This continuous updating process is crucial as the landscape of sustainability, regulations, and market dynamics is rapidly evolving.

Ultimately, adjusting the FV to incorporate transition risk enhances the robustness of the Integrated Value (IV) calculation, providing a more accurate and holistic view of NOS' overall value in the context of a changing global landscape.

Table 8: Scenarios-weighted valuation for NOS

Scenario	FV per share (DCF)	Probability	Value driver: Terminal growth rate
A. (well prepared & successful global transition)	€4.34	40% (80%*50%)	1.2%
B. (poorly prepared & successful global transition)	€3.80	10% (20%*50%)	0.6%
C. (well prepared & unsucessful global transition)	€3.97	40% (80%*50%)	0.8%
D. (poorly prepared & unsuccessful global transition)	€4.55	10% (80%*50%)	1.4%
Weighted Average	€4.16		

Source: Author's assumptions, based on Schoenmaker and Schramade (2023)

Integrated Valuation of NOS

After estimating the values of both Environmental and Social externalities, as well as the Financial Value adjusted for transition risk, we can now use the Integrated Value equation to arrive at a final value for the true value of NOS.

Table 9 summarizes the results obtained earlier. For the purpose of assessing the validation of our previous investment recommendation on NOS, the value assigned to its Financial Value will be €2,127 million, the Equity Value achieved through our scenario-weighted DCF valuation.

Table 9: Integrated Value calculation for NOS

IV calculation (equal-weights)	Value (€M)	Value per share
Enterprise Value	4 178	8,17
Adjustments to Equity	2 051	4,01
Equity Value (adj. for Transition Risk)	2 127	4,16
Environmental flows	-776	-1,52
Positive Social flows	1645	3,22
Negative Social flows	-615	-1,20
Integrated Value	**2 375**	**4,64**

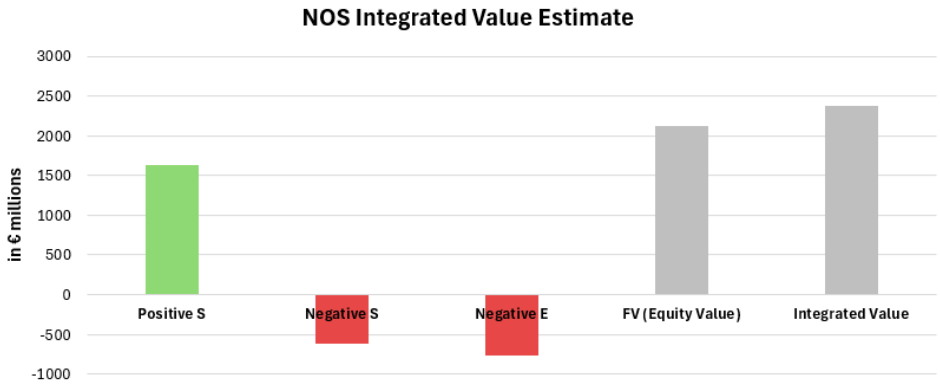
Source: Team and Author's Estimates

The Integrated Value of NOS is 2,375M€, or €4.64/share, which is higher than its previously estimated Financial Value. This increase is mainly due to its contribution to the local economy through paid taxes, which more than offset the impact of carbon emissions and water usage, as well as the probability-adjusted negative consumer surplus.

As discussed throughout this chapter, given the nature of the data and assumptions, coupled with the limited quantifiable data available in the company's reporting standards, these estimates are challenging to pinpoint accurately. Nonetheless, it is evident that NOS is making significant progress towards a sustainable and socially responsible business model.

Figure 1 visualizes the impact of each variable on the final Integrated Value. One can clearly see that the positive Social flows, driven by the company's tax payments over the years, have the highest impact. NOS, being one of the largest companies in Portugal, plays an essential role in the local economy. Moreover, the technology and services provided by the company allow several other smaller and similar firms to improve their ESG measures, positively impacting both the environment and society. Thus, it is not surprising to see the Integrated Value of NOS coming higher than its Financial Value. Our previous ESG analysis had already pointed in a similar direction.

Figure 1: Composition of NOS' Integrated Valuation model



Source: Author's Assumptions and Team Estimates

Conclusions

The main conclusion is that our "Buy" recommendation for NOS shares remains valid. The Integrated Valuation method shows a higher value than the purely financial valuation, affirming NOS' positive direction in terms of sustainability and social responsibility. This holistic approach to valuation underscores the importance of incorporating environmental and social factors into traditional financial metrics. The higher IV suggests that NOS not only has strong financial performance but also substantial environmental and social value. Consequently, this enhanced valuation may improve the company's ability to issue financing instruments like green bonds, which usually carry a 'greenium' and are attractive to investors focused on sustainability. Additionally, a higher IV can enhance the company's reputation and stakeholder trust, also potentially leading to better terms on financing and more favorable investor relations. Understanding NOS' higher IV is relevant as it indicates a more comprehensive measure of the company's worth, reflecting its commitment to sustainable and socially responsible practices, which can drive long-term growth and stability.

Nonetheless, it is crucial to acknowledge that the IV methodology still has significant room for improvement. While it provides a more comprehensive estimate than traditional financial valuation alone, it has notable limitations. One major limitation is the reliance on available data, which may not always be comprehensive or up-to-date. Regional variations in impacts and costs are sometimes generalized due to the lack of specific local data, potentially leading to less accurate estimations. Additionally, the methodology assumes that the monetisation factors remain constant over time, which may not account for dynamic changes in environmental and social conditions or in economic factors influencing these costs. Finally, the process of translating complex social and environmental impacts into monetary terms involves inherent uncertainties and simplifications that can affect the precision of the estimated values.

Despite these limitations, the True Price (2023) framework represents a significant advancement in the effort to integrate external costs into financial decision-making, promoting more sustainable and responsible business practices. Companies should adopt this framework to enhance their transparency and accountability. Corporate finance is increasingly aware of externality risks, and companies that fail to adapt will inevitably face challenges.

To improve the accuracy of this methodology, several measures can be suggested:

- Regulation: Governments and regulatory bodies should implement and enforce regulations that mandate the inclusion of more specific environmental and social impacts in financial reporting.
- Improved Reporting Standards: Standardizing reporting frameworks to include environmental, social, and governance (ESG) factors will provide more consistent and comparable data. Although there have been improvements in this regard over the past years, there is still much to be done.

- Ongoing Data Updates: Regularly updating the data and assumptions used in the IV methodology to reflect current conditions and trends will improve accuracy.

- Stakeholder Collaboration: Engaging with a broad range of stakeholders, including local communities, environmental groups, and industry experts, can provide more comprehensive and localized data.

By addressing these areas, the IV methodology can evolve to provide even more accurate and reliable assessments, further aligning financial performance with sustainable and responsible business practices.

Appendix A: Equity Research NOS, SGPS S.A.

Recommendation: **BUY** January 2024

NOS: Disconnected From Its Value

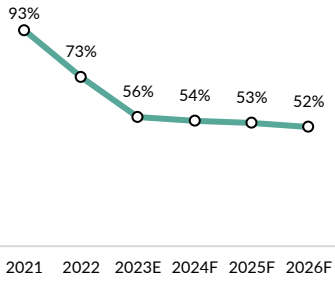
NOS is a large and established player in the Portuguese Telecommunications Market, focusing on delivering advanced technology to enhance its customers' connectivity. With a commitment to keep innovating, NOS is ready to face its future onwards with an upwards share price.

Table 10 - NOS.LS Overview

Company Name	NOS SGPS, S.A.
Price Target (2024YE)	**€4.15**
Upside	**27%**
Closing Price (Jan 12, 2024)	€3.27
Stock Exchange	Euronext Lisbon
Industry	Telecommunication
Ticker (Refinitiv)	NOS.LS
52w Price Range (€)	3.13 – 4.46
Average Volume (Th)	466,178
Shares Outstanding	511M
Market Cap (Jan 12th, 2024)	1.69B
Free Float	36%
Dividend Yield	8.5%

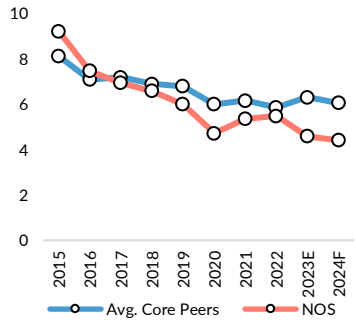
** As of January 12th*
Source: Team Estimates, NOS' data, Refinitiv

Figure 2 - CAPEX/EBITDA evolution



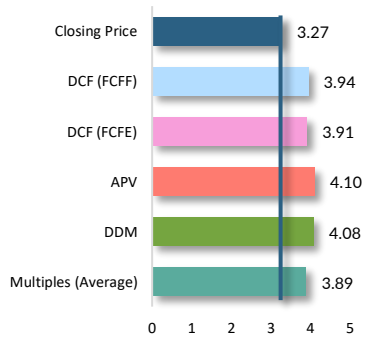
Source: Team Estimates

Figure 3 – EV/EBITDA evolution



Source: Refinitiv

Figure 4 – Valuation Summary



Source: Team Estimates

Investment Summary

We initiate coverage on NOS SGPS, S.A., a prominent player in the Portuguese telecommunications market, with a **BUY** recommendation and a price target of €4.15 per share by 2024YE, using a DCF model. This price target implies a 27% upside potential from the January 12, 2024 closing price of €3.27 per share (Table 10), with a medium-low risk. Our recommendation stems from three main pillars.

PILLAR 1 | Free Cash Flow to Ramp Up as Capex Stabilizes

NOS has completed a period of intensive investment after the deployment of Fiber and 5G networks. The accumulated **Capex from 2019-2022** was €1.74bn, averaging **€495M per year** (excluding the atypical year 2020). With the expansion phase mostly concluded, we expect Capex to gradually decrease towards a **long-term level of €350 million**. This will enhance cash flow generation, enabling distributions without compromising financial health. Since 2019, shareholders have received a steady remuneration of €0.27 per share. As Capex normalizes, **we anticipate an increase in NOS' payout by €0.055 per share** (potentially raising the dividend yield by 150 basis points). Our Capex/EBITDA projections support this expectation (Figure 2).

PILLAR 2 | Bundled Services to Protect Incumbents

The imminent entry of Romanian player Digi Communications into the Portuguese telecom market has been widely anticipated. However, we believe the market is overestimating this threat. The **oligopolistic nature of the Portuguese market**, with three dominant players, along with service **penetration rates above 90%** and **consumer preferences for bundled services**, create substantial **barriers to entry for new players**. Digi's strategy primarily targets consumers seeking only internet connections, a niche that represents a small fraction of NOS' business. Despite ANACOM's efforts to promote competition, Portuguese consumers typically prefer established domestic companies over new foreign entrants. For example, NOWO, a Spanish company owned by the Másmóvil group, only captured a 3% market share despite offering bundled services priced 20%-30% lower than those of NOS and other incumbents. While there is potential for market liberalization, we do not foresee a significant impact on the market share of the major players.

PILLAR 3 | Valuation Gap compared to Peers

Using a DCF model based on FCFF with a Sum-of-Parts (SoP) approach, we derived a price target of €4.15 per share, implying a 27% upside. This potential for value creation is attractive given an average cost of equity capital of 8.4%. Moreover, NOS is currently **trading significantly below the average of its peers**, reinforcing our buy recommendation. Before COVID-19, NOS consistently traded at or above the average multiples of its peers; now it trades at a **19% discount** (Figure 3). While the A&C segment has raised some concerns, it only accounts for c.7% of overall revenue. Given that the company has already surpassed its pre-pandemic Revenue, EBITDA, and FCF values, we expect a revaluation of the company's multiples. Our EV/EBITDA 2024F valuation suggests a price target of €4.59/share, while the average of four multiples assessed points to €3.89 per share. Alternative valuation methods also support our recommendation (Figure 4).

OUTLOOK | Insights on Market Trends and NOS' Position

High market penetration (Figure 13) suggests that traditional Telco growth will primarily come from inflation-linked price increases and new technologies. The Telco sector requires ongoing Capex to avoid obsolescence. While NOS' Capex peaked in recent years, it will decelerate but must rebound in the long run.

Bundles are likely to remain the cornerstone of the sector. Consumers increasingly seek more comprehensive bundles, including **4-5 products**, as opposed to lower-cost packages with limited features. Our projections indicate this trend will continue, with the number of 4-5 product bundles rising steadily over the coming years. Currently, these bundles represent around 55% of total market bundles, and we expect this to increase by 550 basis points by the end of the decade. NOS is well-positioned to capitalize on this trend, having focused on expanding its number of convergent customers, which has led to a significant EBITDA margin increase, rising 300 basis points from 2018 to 42.8% in 2023E. In the period from 2024 to 2030, we expect the margin to fluctuate around 43.3%. The competitors' average EBITDA margin is 37.4%. We believe the entire market will shift towards more comprehensive bundles, with NOS leading this movement.

POTENTIAL RISKS TO PRICE TARGET ACHIEVEMENT

While NOS is expected to generate strong cash flows and maintain a solid market position, several risks could impact our price target. These include the potential for new entrants due to eased regulatory requirements and abrupt regulatory changes, as well as the competitive dynamics of the tech-driven market. Established competitors like Vodafone and Altice could pose threats to market share and margins, although historical data shows minimal volatility in these figures. Governance risks are associated with the stake of ZOPT, but no significant issues have been observed (Table 24). Additionally, potential geopolitical events affecting the macroeconomic environment and the rise of cyber-attacks should be considered. Despite these risks, stress tests indicate that NOS remains a stock to buy (Appendix 16).

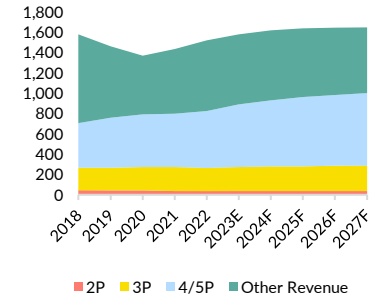
Table 11 - Abbreviations

FttH	Fiber-to-the-Home
IoT	Internet-of-Things
RGU	Revenue Generating Unit
M2M	Machine to Machine
MVNO	Mobile Virtual Network Operator
GHG	Greenhouse Gas
OTT	Over-the-Top
VoIP	Voice Over internet Protocol
WISPs	Wireless Internet Service Providers

Figure 5 – Stock Evolution

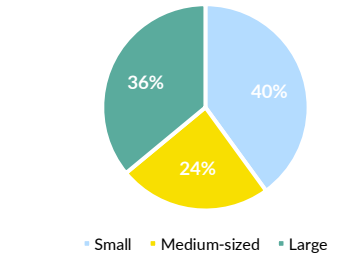
Source: Refinitiv, Team Analysis

Figure 6 –Revenue Breakdown (Bundles and Other Revenue)



Source: NOS' data, Team Estimates

Figure 7 – B2B Revenue Sources



Source: NOS' data

Business Description

NOS, S.G.P.S., S.A. (NOS.LS), headquartered in Lisbon, is a leading telecommunications company in Portugal. The company provides a wide range of services, including Fixed Pay TV, Fixed Voice, Fixed Broadband, Mobile, IoT, and Data Management services, which constitute about 92.3% of its estimated revenue for 2023. The remaining 7.7% of the business comes from its Audiovisuals and Cinema (A&C) segment.

NOS was established in 2013 through the merger of ZON Multimedia and Optimus, two significant players in the telecommunications sector. ZON Multimedia, founded in 1999 following a mandatory spinoff by the antitrust authority, was largely owned by Angolan businesswoman Isabel dos Santos and specialized in cable TV, internet, and landline services. Optimus, the telecommunications arm of the Sonae group founded in 1998, was a major mobile telecommunications operator in Portugal.

The merger aimed to capitalize on the increasing demand for convergent services in the telecommunications industry. ZON Multimedia was a dominant force in Fixed Pay TV, holding over 40% market share, while Optimus was a key player in mobile telecommunications with around 18% market share in the personal mobile segment but no presence in TV. The merger allowed for significant synergies and growth opportunities by combining ZON Multimedia's fixed services with Optimus's mobile offerings. This strategic move enabled NOS to offer a comprehensive range of services, culminating in the launch of ZON4i, the first integrated package designed to meet the market's demand for bundled services.

The success of this strategy was evident within the first three months of launching ZON4i, with 89% of new customers coming from the existing Fixed Pay TV subscriber base. This demonstrated the effectiveness of offering a complete package of TV, internet, landline, and mobile services. Additionally, NOS' market share in the mobile segment grew from 18% in 2013 to 28.9% by the third quarter of 2023.

In recent years, NOS has focused on implementing 5G technology. In 2020, NOS sold its tower management business, NOS Towering, to Cellnex for an initial payment of approximately €375 million and an additional €175 million to be paid over six years (with €163 million received in 2022). Leveraging its strong financial position, NOS acquired the most 5G spectrum in ANACOM's auction, investing €165 million. More spectrum generally translates to higher capacity and faster data speeds, enhancing the quality and efficiency of its services and improving customer retention. Furthermore, NOS is exploring new revenue streams emerging from ongoing developments in the telecommunications sector, particularly in digital transformations within the B2B segment. This includes acting as an intermediary for cloud computing services such as AWS, Azure, and Google Cloud Platform. By continuously innovating and adapting to market changes, NOS aims to maintain its competitive edge and solidify its position in the industry.

NOS Segments

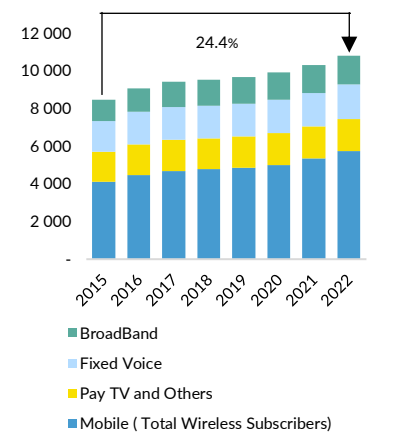
Telco Segment | Since its inception in 2013, NOS has achieved a revenue growth of approximately 6% CAGR, while its EBITDA margin has improved from 35.7% to 41.2% (+550 bps). NOS categorizes its Telco customers into three segments: Consumer, Business, and Wholesale. In the Fixed Services division, Fixed TV offers a wide range of TV channels and streaming content; Fixed Voice provides home fixed phone lines; and Fixed Broadband delivers fast and reliable internet connections. The Mobile Services division includes access to 4G and 5G networks, as well as roaming and hotspot solutions. Revenue in this segment is split between bundled services (details and forecasts will be provided later) and other revenue streams (Figure 6).

NOS has established a competitive advantage by creating bundled service packages, focusing on convergent customers—those who subscribe to both fixed and mobile services. This strategy leverages ZON's market share in fixed segments (>40%) to upsell Optimus's mobile services, thereby increasing revenue per customer. Convergent customers now represent 69.0% of NOS' total subscribers, rising from 384.6K (29% of total customers) in 2014 to 1126K currently (+192.77%, +12.7% CAGR). Over the same period, NOS' total number of Telco RGUs (Revenue Generating Units) increased from 7.611M to 10.980M (+44.26%, +4.2% CAGR). This growth trajectory is particularly notable in the mobile segment, which has grown by 95.5% since 2014 and now represents over 50% of total RGUs, primarily due to the significant increase in convergent customers. Fixed Broadband and Fixed Voice RGUs have also shown growth, increasing by 69.8% and 41.8%, respectively. In contrast, the Fixed Pay TV segment has seen minimal growth (4%) due to already high market penetration at the time (Figure 8).

The Business segment has the highest proportion of sales from traditional telecommunications services, mirroring the revenue profile of residential customers. This segment also offers a range of products and services tailored to client needs, particularly focusing on IoT and Data Management Solutions. As of 3Q2023, the Business segment accounted for 21.5% of total Telco revenues, having grown by 17.2% since 2018, compared to a 5.6% growth in the consumer segment. This highlights NOS' commitment to revenue diversification. However, most firms in Portugal are SMEs with limited interest in IoT and Data Management solutions, posing a challenge for NOS' growth in this area. As of November 2023, 40% of NOS' business customers were small businesses (such as restaurants and cafes), approximately 24% were mid-sized companies, and around 36% were large corporations with volatile revenue profiles that rely mainly on large projects (Figure 7).

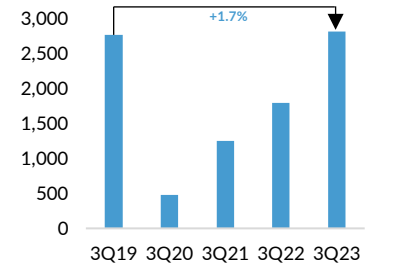
Wholesale revenues come from various sources. Operating revenues are generated from providing telecommunication services to other operators, such as network infrastructure, data transmission, or data storage. Roaming revenues are generated from customers of other operators using NOS' networks. Value-

Figure 8 - NOS' RGUs (number of units)



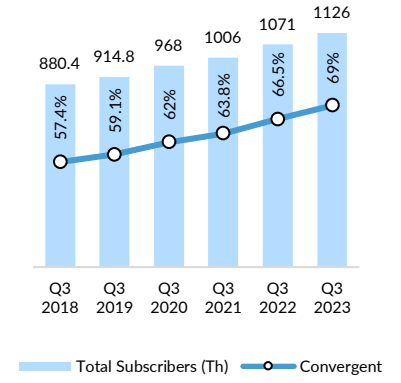
Source: NOS' data

Figure 9 – Cinema tickets sold



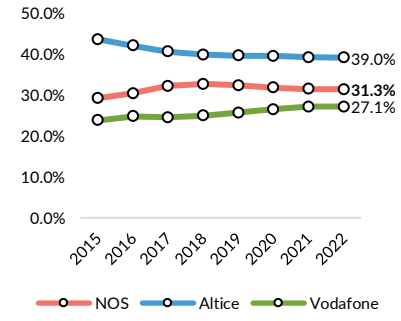
Source: NOS

Figure 10 –Convergent Customer Growth



Note: Convergent customers – bundled consumers with fixed and mobile services.
Source: NOS' data

Figure 11 – Market Share Evolution



Source: ANACOM

Added Call revenues include cloud computing, data centers, IT services, and other IoT services. As of 3Q2023, these accounted for 6.5% of Telco revenues.

Audiovisuals and Cinema (A&C) Segment | The A&C segment handles the production, distribution, and exhibition of audiovisual content, including television and cinema. This segment achieved its best quarter ever in 3Q2023, with €32.2 million in revenue and €15.4 million in EBITDA (Figure 9). This exceptional performance was driven by the release of blockbuster movies such as Barbie, Oppenheimer, Mission: Impossible, and Elemental, which boosted ticket sales by 57.4% YoY. Despite being a smaller segment, NOS has no plans to divest from it, recognizing its differentiation value. The strong recovery from the COVID-19 impact, where the segment was heavily affected by lockdowns, indicates that despite the rise of streaming platforms, there remains a robust demand for cinema experiences.

Company Strategies

To be a leader in 5G | NOS is steadfast in its commitment to lead in 5G technology, aiming to ensure high-quality services and reduce customer churn, a common challenge in the telecommunications industry. Following the 5G auction in 2021, NOS emerged as the leader in 5G spectrum frequencies. This leadership is crucial as data-intensive applications gain prominence in the current era of digitalization. NOS has already achieved 5G network coverage for over 90% of its customer base, positioning itself strongly in the market.

To excel in Customer Experience | Digitalization offers a unique opportunity to transform the customer experience. NOS aspires to be at the forefront of this transformation, leveraging the growing digital landscape. This goal is supported by NOS' solid track record of innovation and its recent strategic shift towards a B2B approach, aiming to become the primary partner for Portuguese companies embracing digitalization.

To further deepen Customer Relationships | With a significant market share in the Portuguese telco sector and the potential entry of new competitors, retaining customers is increasingly challenging. NOS plans to address this by deepening customer relationships. This involves introducing new offerings for both consumers (e.g., home security systems) and enterprises (e.g., partnerships in digital transformations). By expanding its range of services, NOS aims to enhance customer loyalty and strengthen its market position.

Key drivers of profitability

Convergent customers | The strategic shift to convergent offers was fundamental to the merger that created NOS. Convergent customers subscribe to bundled services that include Fixed Pay TV, Fixed Broadband, and Mobile services. These customers are crucial for driving revenue and profitability. Since its formation, NOS has significantly increased the proportion of convergent customers from 29.2% in 2014 to 69.0% by 3Q2023 (Figure 10). This growth was fueled by a successful upselling strategy that capitalized on NOS' extensive existing customer base in other telecommunications segments, boosting its market share in the Mobile segment from 13% in 1Q 2014 to 29% in 3Q2023.

Ability to maintain above-market EBTIDA margins | NOS has historically outperformed its domestic and international peers in terms of EBITDA evolution, a trend expected to continue. The company's use of Artificial Intelligence for Robotic Process Automation (RPA) has enhanced efficiency and improved financial performance by automating repetitive tasks, thereby reducing G&A costs. This strategic adaptation has enabled NOS to thrive in a mature and saturated market, evident in the increase of its EBITDA margin from 35.7% in 2013 to an estimated 44.28% in 2023, compared to an average of 37.4% among peers (Table 19). Maintaining these above-market margins is crucial for future profit growth and financial stability, especially when considering the low growth rates associated with operating in this industry.

Infrastructure sharing partnerships | NOS has entered into an agreement with Vodafone to share network infrastructure. This partnership allows both companies to share greenfield areas encompassing 2.6 million households, evenly divided between NOS and Vodafone. The primary goal is to enhance cost efficiency by avoiding redundant investments in network coverage. While specific cost savings figures are undisclosed, this collaboration has enabled both companies to expand their network reach to over 30% of households nationwide. This expansion, achieved without additional capital expenditure, has improved profit margins and provided a strategic advantage by extending network reach without incurring incremental costs.

Industry Overview and Competitive Positioning

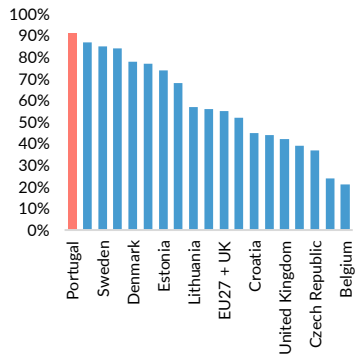
Economic Outlook

In 2022, Russia escalated the Russo-Ukrainian War, which began in 2014, by invading Ukraine. This conflict triggered an energy crisis in Europe, intensifying the ongoing rise in prices. The increase in raw material costs, starting in 2021, led to higher prices for goods and services, resulting in inflation reaching 7.8% in 2022. The European Central Bank (ECB) raised interest rates to control inflation, but this also increased debt costs, impacting the highly leveraged telecom sector. While telecom prices in the EU rose by only 0.9% year-over-year (as of September 2022), prices in Portugal increased by 2.9%, 200 basis points above the EU average. Despite these challenges, Portugal's real GDP grew by 6.7%, outpacing the EU average growth of 3.61%. However, the unemployment rate in Portugal increased to 6.1% in the third quarter of 2023 (+30bps YoY).

Telco Sector

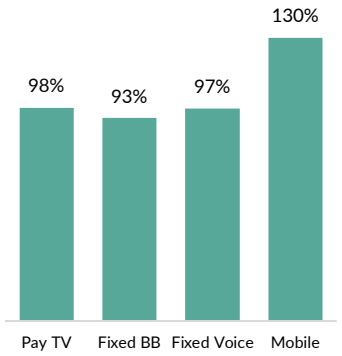
The European telecommunications sector is characterized by liberal market policies that intentionally foster competition. Despite the EU's clear objectives for digital advancement, the sector faces challenges including profitability pressures, demand and pricing uncertainties, and the depreciation of existing technologies. These

Figure 12 – FTTH coverage in Europe 2023



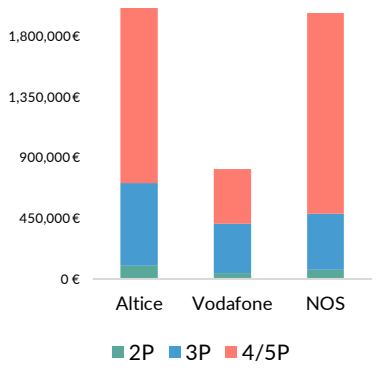
Source: FttH Council Europe Market Intelligence Committee and Moody's Investors Service

Figure 13 – 3Q23 Service Penetration



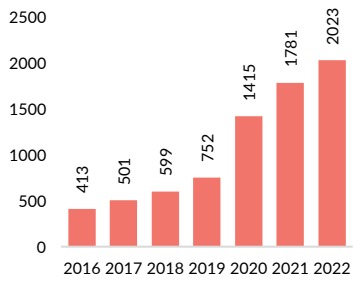
Source: ANACOM data

Figure 14 – TTM Bundle Revenue per Player



Source: ANACOM data

Figure 15 – Total of cyberattacks recorded in Portugal



Source: CNCS

factors create hurdles for companies, necessitating continuous investment to prevent obsolescence. Additionally, a trend of vertically separating the value chain (decoupling) has emerged and is expected to persist for the next decade. Although this strategy can lead to higher market capitalization and more efficient business models, it also opens the door for non-EU competitors to enter the market.
In Portugal, the telecommunications expansion includes 92.5% fiber-to-the-home (FttH) coverage and an extensive 5G deployment, positioning it among the highest in the EU. For instance, NOS covers over 90% of its customer base. Households are increasingly opting for bundled services, with penetration reaching 92.8% by the first half of 2023, up from approximately 2.5M subscribers in 2013 to around 4.7M currently.
Furthermore, in the domestic market, mobile service penetration has reached 180% (130% when considering only active usage, excluding machine-to-machine, or M2M). In terms of fixed services, Fixed Voice has a penetration rate of 97%, Fixed Broadband stands at 93%, and Fixed Pay TV has reached 98% penetration.

Market Overview

The Portuguese telecommunications industry, led by Altice (38.8%), NOS (31.6%), and Vodafone (27.2%), is known for its maturity and steady growth, with a 3.6% year-over-year revenue increase, following a 2.3% growth in 2021 (Figure 11). NOS aimed to expand its mobile services within its large fixed customer base, raising its mobile market share from 23.1% in 2016 to 29.5% by the third quarter of 2023. This focus has led to declines in other segments, benefitting Vodafone. Despite steady growth across these segments, NOS did not keep pace with the overall market.

The Portuguese telecom market is notable for its price-sensitive consumers and significant churn rates. Smaller competitors, such as NOWO and LYCAMOBILE, have secured a small market share through Mobile Virtual Network Operator (MVNO) agreements. These operators used cost leadership strategies (bundle prices 20% to 30% below the market average). However, since 2017, they have experienced a decline in market share (NOWO's market share decreased by 90bps over six years, and LYCAMOBILE's share remains minimal). Their struggle to expand market share demonstrates significant entry barriers, highlighting the value of being an established market player. These foreign competitors, lacking brand recognition, face challenges in market expansion and high marketing costs to alter the current market dynamics. Recently, Vodafone has announced its acquisition of NOWO, which is under investigation by ANACOM, with the acquisition price yet to be disclosed.

he anticipated entry of Digi, which focuses on internet services, prompted NOS to launch the WOO service package (internet standalone), to which Vodafone responded with the "amigo" internet offer. Digi's successful entry into the Spanish telecom market showed strategic acumen by targeting an underserved area. However, its entry into Portugal's more developed market, with high FttH coverage (90% compared to Spain's below 30% at the time), presents a more challenging environment. As a budget-friendly option, Digi's entry raises uncertainty about the overall market pricing trajectory and potential shifts.

Additionally, satellite service providers such as Starlink and SpaceMobile are developing technologies to overcome telecom limitations by enabling cell phones and mobile devices to access the internet via satellite links by 2025. While regulatory processes might delay their availability in Portugal, they have the potential to become global competitors and disrupt the industry.

Supply drivers

Regulatory Incentives | ANACOM, the regulatory authority, plays a crucial role in promoting healthy competition among telecom providers. By implementing regulations that encourage fair competition and deter anti-competitive behavior, ANACOM fosters innovation, improved services, and competitive pricing. Additionally, it sets strategic objectives and performance targets for telecom companies, pushing them to broaden their service offerings, upgrade network infrastructure, and invest in technological advancements. ANACOM's market interventions also aim to stimulate investment. For example, ANACOM accepted the 2022 BEREC draft to mitigate Altice's cost of capital rate increase by over 150 basis points, ensuring investment incentives and protecting consumers from high prices while preventing anti-competitive practices.

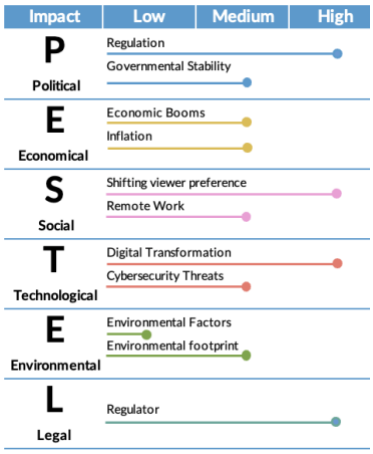
Operational Efficiency Improvement | Telecom companies focus on enhancing operational efficiency and reducing costs in critical areas such as network infrastructure, equipment procurement, and energy usage. This emphasis on efficiency drives the adoption of new technologies, including cloud computing and artificial intelligence, which help telecom providers streamline their processes and improve profitability.

Technology | The incorporation of advanced technologies is key to expanding supply in the telecom sector. Companies investing heavily in new technologies, such as 5G infrastructure, IoT solutions, AI-driven services, and cloud-based platforms, significantly boost their supply capabilities. Besides optimizing costs, cutting-edge technology allows companies to offer innovative services, extend connectivity, and enhance operational efficiency, further increasing their supply potential.

Demand drivers

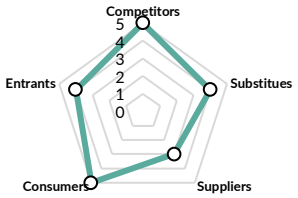
Changing Consumer Preferences | Shifting consumer preferences fuel demand in the telecom sector. The growing reliance on mobile data (projected to increase by 5.3% annually from 2023-2027, according to the Economist Intelligence Unit), along with the rise in remote work, heightens the need for improved internet connectivity and data services. Additionally, there is a growing demand for larger service bundles that include extras, such as access to streaming platforms. It is anticipated that 4/5P bundles will comprise 61% of the total market by 2030, up from the current 55%. Telecom firms that cater to these preferences for reliable, high-speed data solutions attract increased demand.

Figure 16 – PESTEL Analysis



Source: Team Analysis

Figure 17 – Porter's 5 Forces



Source: Team Analysis

Table 12 – SWOT Analysis

Strengths	Weaknesses
Established Infrastructure	Rural Connectivity
Market Reputation	Saturated Market
Diversified Offerings	Economic Conditions
High Penetration	Regulations
Opportunities	**Threats**
More Efficient Networks	New Entrants
Emerging Technologies	New Substitutes
Improved Customer Experience	Cybersecurity
Strategic Partnerships	Changing Consumer Preferences

Source: Team Analysis

Table 13 – ESG scores

Pillar	Source	NOS
ESG	Refinitiv	B (64/100)
ESG	Bloomberg	4.73/10 - "Leading"
ESG risk	Sustainalytics	14.3 - low
ESG risk resiliece	MSCI	AA (6.1)
E	Refinitiv	A
E	Bloomberg	3.75/10 - "Above Median"
S	Refinitiv	B+
S	Bloomberg	5.35/10
S	Moody's	70
G	Refinitiv	C - "Below Average"

Note: E – Environment; S – Social; G – Governance

Technological Advancements and Increased Connectivity | The telecom industry thrives on addressing evolving consumer demands for the latest technologies and seamless connectivity. Companies that continuously innovate by offering faster network speeds, broader coverage, and pioneering services attract customers seeking advanced solutions. According to ETNO, total European Mobile 5G coverage expanded from 13% in 2019 to over 70% in 2022. This innovation meets consumer desires for faster internet speeds, extensive coverage, and reliable connectivity in their daily activities. Telecom providers delivering superior coverage and dependable services capitalize on this growing demand, positioning themselves as preferred providers among consumers seeking robust connectivity solutions.

Privacy and Security | In Portugal, cyber-attacks increased significantly between 2016 and 2022, with a CAGR of 30.3% (Figure 15). The rising value of data and the complexity of cyber threats drive the demand for enhanced privacy, security, and resilience in the telecommunications sector. As individuals become more concerned about the safety of their data, the ability of operators to combat such threats becomes a critical factor for consumers. Telecom operators that strategically address and effectively manage these security concerns not only lead the industry's evolution but also protect themselves from potential incidents that could harm their reputation.

PESTEL Analysis

Political: ANACOM promotes fair competition, ensures regulatory compliance, and establishes standards, providing consumers with innovative services and competitive pricing. Additionally, stable government policies enhance telecom companies' confidence to make significant investments in infrastructure and innovation.

Economic: Economic growth typically leads to increased spending on communication services due to higher disposable income. Conversely, inflation and rising borrowing costs can impede growth in the telecom industry, which is characterized by substantial infrastructure investment requirements.

Social: Changing viewer preferences from traditional TV to on-demand streaming services and increased mobile data usage indicate a desire for flexibility and personalized content. Additionally, the rise in remote work increases the demand for reliable broadband services.

Technological: The ongoing digital transformation of the telecom sector drives innovation but also introduces cybersecurity risks, necessitating the adoption of new measures to protect consumer data and infrastructure.

Environmental: Environmental factors, such as adverse weather events, can affect service reliability and the consumer experience. Moreover, telecom companies strive to reduce their environmental impact through eco-friendly practices during infrastructure upgrades.

Legal: ANACOM regulates the telecom industry, protecting consumer rights with data protection laws, pricing transparency, and fair contract management. It also prevents anti-competitive practices by establishing a legal framework governing mergers and acquisitions.

Competitive Positioning

Rivalry Among Competitors - HIGH | The Portuguese telecom market is dominated by three major players: ALTICE, NOS, and VODAFONE. Although price competition is limited due to the oligopolistic nature of the industry, these companies aggressively seek to increase their market shares through intense advertising and strategic alliances. Additionally, the possibility of mergers and acquisitions, such as VODAFONE's pending acquisition of NOWO currently under regulatory review, adds another layer of competition.

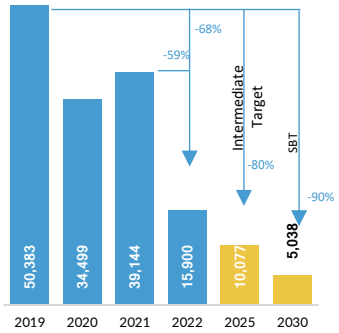
Threat of Substitute Products – MODERATE | While there are no complete substitutes for traditional telecom services, alternatives like Over-the-Top (OTT) services, Voice over Internet Protocol (VoIP), and certain social media platforms compete in specific areas. In remote or underserved regions, Fiber to the Home (FttH) faces competition from Wireless Internet Service Providers (WISPs) and satellite service providers like Amazon's Project Kuiper and Starlink, which could reshape the industry landscape. Regulatory oversight will be crucial in determining the impact and market integration of these new technologies.

Bargaining Power of Suppliers – MODERATE | In 2022, NOS worked with over 6,250 suppliers, spending around €1,575M, with 86% of this sourced domestically. This extensive network significantly supports the local economy, especially in telecommunications, underscoring NOS' strategic influence. Since 2019, NOS has conducted rigorous annual supplier evaluations focusing on proactivity, contract compliance, quality, ethics, and ESG considerations, reflecting its commitment to positive supplier relationships. Despite its significant market presence and diversified offerings, NOS' leverage over suppliers is moderate due to the strategic importance of certain supplies. Reliance on specialized suppliers gives them some negotiation power, as NOS seeks to avoid disruptions by switching suppliers. Overall, there is a balanced power dynamic between NOS and its suppliers.

Bargaining Power of Customers – HIGH | Portuguese consumers are highly price-sensitive and face minimal switching costs, making it easy for them to switch between telecom providers. Previously, 24-month contract terms with fidelity clauses imposed higher switching costs, but now mandatory options without such clauses exist. Despite the presence of established telecom firms, the competition to attract and retain customers remains fierce, with operators focusing on decreasing churn rates. Consequently, consumers hold significant power, compelling companies to continually innovate and offer improved services at competitive prices to maintain their market share.

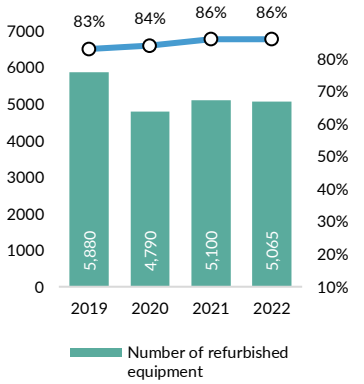
Threat of New Entrants – MODERATE | The liberalization of the telecom market creates a favorable environment for new entrants, provided they meet ANACOM's stringent requirements designed to protect consumers and encourage competition. While significant capital investment is traditionally required, potential entrants can now reduce costs through MVNO agreements. However, established telecom giants pose

Figure 18 – Emissions from own operations (tCO_2e)



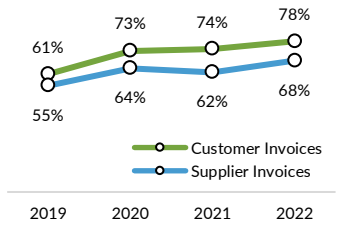
Note: SBT – Science Based Target
Source: Team Analysis

Figure 19 – Collection and recovery of customer equipment in the fixed service (in 00's)



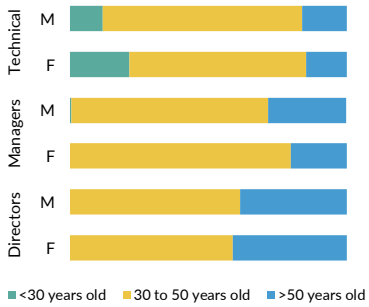
Source: Team Analysis

Figure 20 – Level of digitalization of billing processes



Source: Team Calculation

Figure 21 – Distribution of employees



Source: Team Calculation

Table 14 – NOS' Management Team

Women	33%
Men	67%

Source: Team Analysis

significant barriers for new entrants aiming to gain market share and achieve economies of scale. They proactively develop lower-cost solutions (like NOS' WOO) to counter emerging threats such as DIGI. Despite ANACOM's efforts, new entrants may struggle to compete effectively against well-prepared strategies of dominant companies.

SWOT Analysis

Rural connectivity, market saturation, and regulatory hurdles present significant challenges for Portuguese Telecom companies. Firms such as NOS capitalize on their established infrastructure and brand strength. The potential for growth lies in optimizing network efficiency, integrating emerging technologies, enhancing customer experiences, and pursuing strategic partnerships. However, the industry also faces threats from new market entrants and cybersecurity issues.

Environment, Social and Governance

The 2021-2025 strategic sustainability plan developed by NOS consists of four key pillars: "On behalf of the planet," "For a digital future," "More for our people," and "Ethical and responsible management." This plan supports 11 of the 17 United Nations Sustainable Development Goals (SDGs). NOS has impressive ESG scores (Table 13). To ensure all partners, suppliers, and subcontractors adhere to their sustainability standards, the company has outlined Sustainability Requirements for Suppliers and Partners.

Environment

NOS showcases a strong commitment to environmental sustainability, achieving impressive scores (Table 13) and earning a spot on the A List of the CDP Climate 2022 Program. As the only Telecom company in Portugal evaluated by CDP, NOS consistently surpasses the international sector average and has maintained a Leadership level evaluation for three consecutive years. Furthermore, NOS actively participates in the Global e-Sustainability Initiative (GeSi) and is a signatory to the Manifesto Towards COP 27, aligning its efforts with the Paris Agreement and the 2030 Sustainable Development Goals.

Carbon Efficiency | In 2022, NOS achieved a 59% YoY reduction in its operational GHG emissions and a 68% reduction compared to the base year 2019. The company aims to reduce GHG emissions from its own operations by 90% and from its value chain by 30% by 2030, relative to the 2019 baseline (Figure 18). As a founding member of the European Green Digital Coalition, NOS is committed to achieving carbon neutrality by 2040.

Energy Efficiency | NOS is planning the complete electrification of its fleet and aims to offset unavoidable emissions by supporting reforestation projects in Portugal by 2030. The company is progressively replacing high-impact gases and increasing energy efficiency. However, NOS is actively addressing increased emissions linked to the production and purchasing of capital goods, mainly due to network expansion. In 2022, electricity consumption rose by 39% YoY. The activation of intelligent network management features allowed the processing of increased data volumes at greater speeds, saving 5-10% of energy costs during low-traffic periods. Overall, energy consumption increased by 27% YoY, primarily driven by the growth in energy needs and activity recovery.

Supply Chain | NOS participates in the Eco Rating project, providing consumers with data on the environmental impact of mobile phones, and has seen a 2pps increase in the average Eco Rating score since its launch in 2021. The company plans to extend this initiative to all main suppliers and include data on emissions from network equipment. This empowers consumers to make informed and sustainable choices, encourages supplier improvements, and promotes sector-wide transparency and reduction of environmental impact.

Circular Economy | From 2022 to 2025, NOS aims to continually increase business circularity. In 2022, the company recycled 98% of its total waste, an increase of 1pp YoY. Amidst the introduction of 5G technology, NOS enhanced recovery and reuse processes, refurbishing and reintegrating equipment while selling legacy items to reduce energy and material consumption (Figure 19). Additionally, NOS digitized billing and contractual processes, boosting efficiency, and reducing printing and transportation energy use (Figure 20).

Sustainability-Linked Bonds | NOS' Sustainability-Linked Financing Framework helps reduce the company's environmental footprint and aligns with its long-term emissions reduction goals. In January 2023, NOS secured 350 million euros in bank loans. These funds, distributed among bond loans and commercial paper programs set to mature in 2028, are linked to sustainable objectives. According to the S&P Global Ratings report, the company is aligned with all Sustainability Performance Targets. This type of financing allows NOS to benefit from lower interest rates, reducing its cost of debt. In an environment of rising interest rates, such debt has enabled NOS to maintain a manageable cost of debt. Currently, 70% of the company's debt is linked to sustainability KPIs, resulting in interest rate benefits known as a 'greenium'.

Social

With its strong workforce, NOS achieved an 84.11% score from Bloomberg's 2023 Gender-Equality Index, exceeding both sector and national averages. The commitment to gender diversity is evident with women making up 41% of the workforce and holding 33% of management roles (Table 14). NOS has also implemented a certified Occupational Health and Safety (OHS) management system, emphasizing the importance of health and safety by collaborating with ENSICO to launch "Projeto ZER01." This initiative aims to introduce computer science education in schools across the country, highlighting NOS' dedication to digital literacy and inclusion. However, employee turnover at NOS has risen by 4% from 2018 (10% turnover) to 2022.

Table 15 – Shareholders

Sonae Com, SGPS, S.A.	26%
ZOPT, SGPS, S.A.	26%
Sonae, SGPS, S.A.	11%
Mubadala Investment Company PJSC	5%
Free Float	32%

Source: NOS' data

Table 16 – Management Team

Name	Position (Since)
Miguel Almeida	CEO (2013)
José da Costa	CFO (2007)
Luís Nascimento	Member of EC (2017)
Jorge Graça	CTO (2016)
Manuel Eanes	Member of EC (2013)
Filipa Carvalho	CCO (2021)
Daniel Beato	Member of EC (2021)

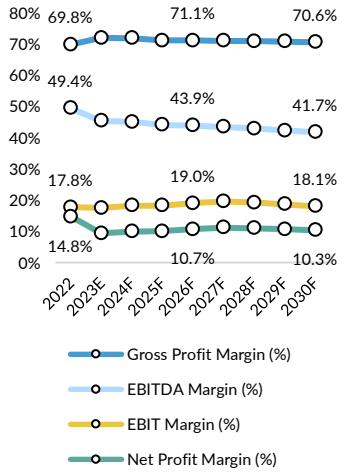
Source: NOS' data

Table 17 – Valuation

	Model	g	%EV	M €
Telco	FCFF	1.0%	92.3%	3,920,562
A&C	FCFF	1.0%	7.7%	251,119
NOS				4,171,682
Adjustments for Net Debt				-1,690,895
Other Adjustments				-359,773
Equity Value				**2,121,013**
# Shares ('Th)				511,382
Price Target (€/sh)				**4.15 €**

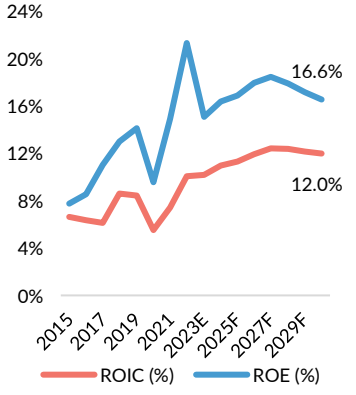
Source: Team Estimates

Figure 22 – Margin evolution



Source: Team Estimates

Figure 23 – Ratios evolution



Source: Team Estimates

Governance & Management

Shareholder Structure | NOS has 4 major shareholders (Table 15), with approximately 36% of its shares available for trading on the open market. While there are no restrictions on the transfer or ownership of shares, shareholders competing with NOS' subsidiaries are limited to holding a maximum of 10% of the capital without General Meeting approval. In 2022, the General Meeting authorized a program for the repurchase and sale of company shares over an 18-month period. Furthermore, certain financing agreements include provisions for a change of control (including takeovers), potentially triggering early repayment. NOS does not currently employ defensive measures against public takeover bids or to safeguard the company's assets in the event of changes in Board of Directors or ownership.

Controversies | In 2020, several close associates of Isabela dos Santos, such as Jorge Brito Pereira, Mário Leite da Silva, and Paula Oliveira, resigned from the NOS board in the aftermath of the Luanda Leaks scandal. Isabela dos Santos, an Angolan businesswoman, faced accusations of diverting more than €100M from Sonangol to a company based in Dubai. Subsequently, a UK court froze her assets, including her stake in NOS. More recently, in June 2023, Isabela dos Santos was found guilty by a Dutch court of embezzlement and document forgery, involving the misappropriation of €52.6M from Sonangol. Following the departure of these associates, Ana Rita Cernadas, Cristina Maria de Jesus Marques, and José Carvalho de Freitas were appointed to serve out the remainder of the mandate (2019-2021). Notably, two of the newly appointed directors have ties to Isabela dos Santos through their association with Santoro Finance, a company implicated in the scandal. In 2022, ANACOM fined Portuguese Telecom companies, including NOS, for inadequate customer communication regarding price adjustments. Furthermore, in April 2023, NOS received a €50K penalty for entering into service contracts via phone, in violation of the rules set forth in the Electronic Communications Law.

Board Composition | NOS operates under a single-tier governance structure, featuring a Board of Directors responsible for daily operations and oversight. The Board consists of seven executive and eight non-executive directors, with a gender distribution of 67% male and 33% female, collectively bringing an average of 15 years of experience in the telecommunications sector.

Executive Leadership | Miguel Almeida, serving as President of the executive committee from 2022 to 2024, leads a team that advises the Board on strategic direction. As the longest-serving CEO in the sector, Almeida's primary objective has been to foster long-term shared value. This strategic focus is evident in NOS' proactive approach to deploying 5G technology, which enhances the company's competitive standing in the telecommunications industry.

Remuneration Policy | Over the past decade, executive remuneration at NOS has seen significant growth. The company's remuneration policy includes a fixed component supplemented by a capped variable component for executive directors. This variable pay, tied to profit-sharing and/or stock allocations, is based on both individual performance (30%) and company-wide performance metrics (70%), reflecting NOS' overall performance indicators.

Valuation

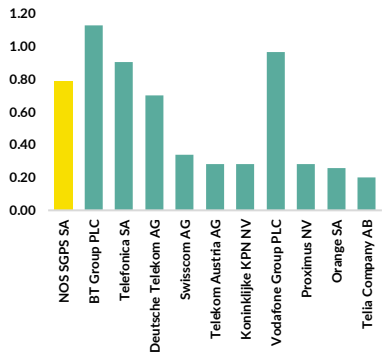
Free Cash Flow to the Firm: A Sum-of-the-Parts Approach (SoP)

We issue a **BUY** rating with a 12-month price target of €4.15, indicating a potential upside of 27% from the January 12th closing price of €3.27 per share. Our target price is derived from a Discounted Cash Flow (DCF) model using a Sum-of-the-Parts (SoP) approach, which entails valuing each business segment separately. Various Weighted Average Cost of Capital (WACC) calculations were performed to accommodate the distinct risk profiles of each segment's peer group (**Error! Reference source not found.**). In addition to DCF, supplementary valuation methodologies were employed to reinforce our initial assessment. Financial projections were formulated using a hybrid top-down approach, heavily leveraging macroeconomic forecasts specific to Portugal.

Revenue Breakdown

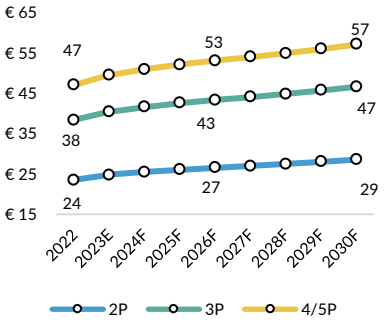
NOS' revenue forecast is segmented into Telco and A&C, each further divided into three categories. The primary segment, **Services Rendered**, constitutes approximately 90% of total NOS revenues. Within Telco's services rendered, we utilized ANACOM data, supplemented by other sources and our own estimates, to determine the average bundle pricing across various types (from 2P to 5P bundles). Pricing for each bundle type was forecasted independently, considering anticipated market dynamics, including adjustments for inflation linked to contractual clauses used by the three major operators to facilitate price increases. Our projections also included forecasts for the evolution of bundle quantities in the market, as well as the market shares of NOS and its competitors (Figure 26). Market analysis reveals a discernible trend: while NOS continues to attract customers preferring 4/5P bundles, its growth rate trails the industry average, resulting in a gradual loss of market share to competitors like Vodafone, consistent with recent trends. Nonetheless, NOS is expanding its customer base and Revenue Generating Units (RGUs). These rendered services also encompass content such as Video-On-Demand (VOD) and other supplementary services, projected based on their expected trajectory relative to the percentage composition within each bundle. The A&C segment, primarily driven by cinema-related revenues, was independently forecasted. This segment's services rendered include box office receipts, film distribution, advertising, and audiovisual content production. Revenue projections for these services considered inflation-adjusted forecasts. The remaining revenue sections for NOS consist of **sales and other operating revenue**, collectively contributing 10-11% of total revenues from 2023E to 2030F. Our estimates for these revenue streams considered the evolution of services rendered and adjustments for inflation.

Figure 24 – Market Levered Beta



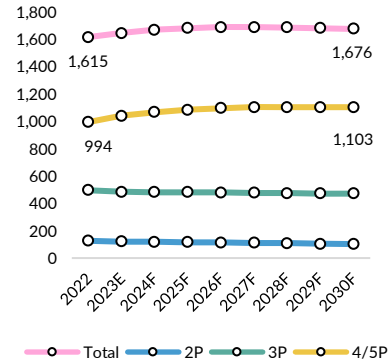
Source: Refinitiv

Figure 25 –NOS' Bundles Average Selling Price (€)



Source: Team Estimates

Figure 26 –NOS' Number of Bundles



Source: Team Estimates

Table 18 – WACC

	2024F	TV
Debt ratio	50.8%	46.2%
Cost of debt	3.2%	3.2%
Cost of equity		
Telco	8.1%	8.9%
A&C	12.3%	11.6%
WACC		
Telco	5.7%	6.5%
A&C	7.7%	7.9%

Source: Team Estimates

Table 19 – Peers and industry comparison (%)

	NOS	Industry Average	PT sector's average
ROE	14.9	9.3	-
ROCE	0.1	-	-0.62
EBITDA	42.5	37,4	30.19
Current Ratio	56.9	-	64.97

Note: Most updated data used
Source: Team Estimates, Orbis

Capex and D&A

NOS has passed the peak of its capital expenditure (Capex) related to the deployment of Fiber-to-the-Home (FttH) and 5G networks. We anticipate a decrease in Capex, with a compound annual growth rate (CAGR) of -1.9% until 2030, starting from an estimated expenditure of approximately €400M in 2023 and declining to a terminal value of €350M. Since 2015, Depreciation and Amortization (D&A) has consistently averaged about 110% of Capex. We project that this trend will continue, where D&A will surpass Capex in the coming years. However, long-term deployment of new technologies may necessitate net adjustments in Capex.

Weighted Average Cost of Capital

The different segments within the NOS Group exhibit distinct risk profiles. To accurately assess these risks, we computed two separate WACC rates to discount the Free Cash Flow to Firm (FCFF) of each segment. The **cost of equity** was determined using the Capital Asset Pricing Model (CAPM), incorporating leveraged adjusted Betas from relevant peer groups. NOS' **cost of debt** was calculated as a composite of three components. Initially, we utilized the normalized 10-Year German Government Bond Yield (2.14%) as the proxy for the Risk-Free Rate. Subsequently, we added NOS' additional spread (2.0%), corresponding to its BBB Fitch rating. As of 2024, the after-tax cost of debt stands at approximately 3.2%. Throughout our forecast horizon, we assume the cost of equity will fluctuate in line with NOS' annual changes in capital structure, while the cost of debt is held constant.

Terminal Period | Value from the Long-Run

In our terminal period forecast, we incorporated additional uncertainties that both the market and NOS may face. The telecommunications sector is in a continual state of technological innovation; for instance, there are already expectations regarding the transition from 5G to 6G technology in the next decade. This necessitates ongoing reinvestment by companies to maintain relevance and profitability. Simultaneously, regulatory bodies are advocating for a more competitive market environment, intensifying existing competition. Specifically for NOS, uncertainties regarding the governance issues related to Isabel dos Santos' heavily frozen stake in the company add further complexity to its future ownership.

In response to these factors, our models incorporate adjustments. Firstly, we increased Telco's unlevered beta to 0.55, reflecting the heightened business risks that NOS faces amidst the industry's long-term uncertainties (**Error! Reference source not found.**). Additionally, we applied a conservative 1% terminal growth rate. This approach allows us to account for the challenges outlined while still allowing for potential growth in future cash flows, as detailed in our projections.

FCFF and APV

In our DCF model, we discounted NOS' Free Cash Flow to Firm (FCFF) using a Sum-of-the-Parts (SoP) approach, incorporating the Telco and A&C segments at the company's consolidated annual Weighted Average Cost of Capital (WACC). This methodology underwent various adjustments from enterprise value to equity value (Appendix 11), resulting in a target price of €4.15 per share. Meanwhile, the Adjusted Present Value (APV) model indicated a slightly lower target price of €4.10 per share. Both models, based on the FCFF application within the SoP framework, reinforce our recommendation.

FCFE

Considering NOS' evolving capital structure, we applied the Free Cash Flow to Equity (FCFE) method up to the terminal value. These cash flows were discounted using the company's cost of equity (**Error! Reference source not found.**), adjusting for non-controlling interests, resulting in a price target of €3.90 per share.

Relative Valuation

In our multiples valuation, we had a Sum-of-Parts approach, forming distinct peer groups for NOS' Telco and A&C segments. Telco peers were selected using the Sum of Absolute Rank Differences (SARD) method, focusing on companies closely aligned with NOS' core business areas (refer to Appendix: Peers). We excluded Altice USA and other firms with extensive capital expenditures for a more representative comparison. For the A&C segment, we chose cinema operators exhibiting similarities in pre- and post-COVID-19 conditions. The multiples valuation, based on EV/EBITDA for 2024, incorporated a weighted average of multiples derived from NOS' Telco and A&C peers, resulting in a price target of €4.59 per share, suggesting a 40% upside. An equal-weighted average of the four multiples assessed yielded a price target of €3.89 per share, reflecting a 19% upside (see Appendix: Multiples Valuation). Historical multiples analysis further supports our evaluation, indicating that NOS has consistently traded below its peers post-COVID-19 correction.

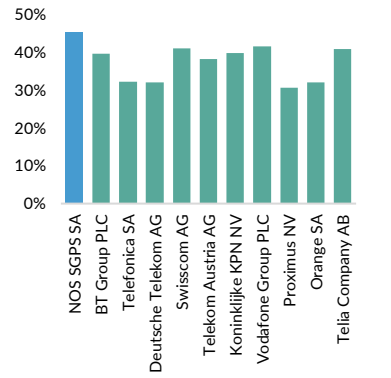
DDM

The Dividend Discount Model (DDM) analysis relied on NOS' recent stable dividend payments (€0.27 per share since 2019). Anticipating a period of reduced capital expenditures and improved margins, we adjusted the dividend upward to €0.325 per share. This adjustment led to a DDM-derived price target of €4.04 per share, representing a 24% upside.

Sensitivity Analysis

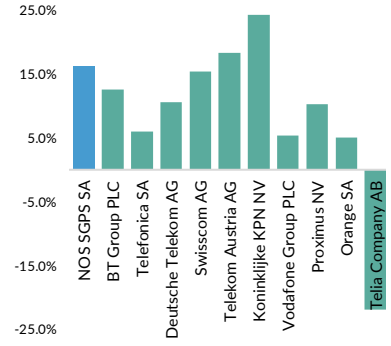
We conducted sensitivity analyses to evaluate the impact of key variables on our valuation. Notably, a reduction in NOS' terminal growth rate to 0.2%, coupled with an increase in WACC to 7.18%, could necessitate a revision of our recommendation. However, such a scenario is deemed improbable given NOS' strategic focus on growth following a significant period of capital expenditure. Moreover, NOS has contracts indexed to inflation, aligning with a long-term inflation rate expectation of 1.5-2%, rendering a terminal growth rate below 1% unlikely. A terminal growth rate of 0.6% might influence our confidence in the recommendation, but considering NOS' ongoing efforts in a mature industry, we do not foresee sustained rates falling below 1%.

Figure 27 – EBITDA Margin



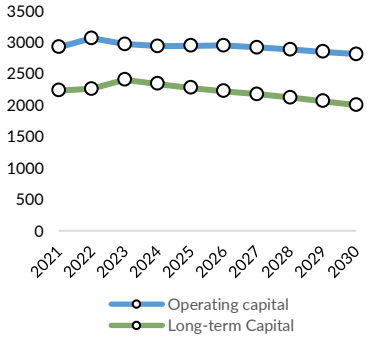
Source: Refinitiv

Figure 28 – Peers ROE



Source: Refinitiv

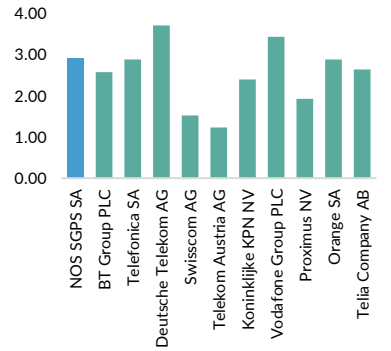
Figure 29 – Financing Strategy (in 000's)



Note: The spread between Operating Assets and Equity and Long Term-Debt corresponds to the Short-Term Debt

Source: Team Estimates

Figure 30 – Net Debt / EBITDA



Source: Refinitiv

Nonetheless, a downward adjustment of this variable would lead to a recommendation downgrade in only 30% of scenarios (Appendix 16).

Financial Analysis

Profitability | Bottom Line Consistency

NOS has shown steady growth in both EBITDA and EBIT, with CAGRs of +3.1% and +7.0% respectively from 2015 to 2023YE. The industry average EBITDA margin stands at 37.4%, with NOS performing above this level (Figure 27). After this period of consistent growth, it is anticipated that the company will begin to stabilize its margins. The entry of new competitors, particularly Digi, potential shifts in market demand, and further market liberalization by ANACOM are expected to reduce EBITDA margins by up to 460 basis points, with minimal impact on the bottom line. We forecast the net profit margin to stabilize around 11%. Despite steady growth in the net profit margin, the pace has slowed due to market saturation.

Overall profitability has been on an upward trajectory, with ROA growing at a +5.5% CAGR from 2015 to the end of 2023. We project this positive trend to continue at a +1.9% CAGR from 2024 to 2030. This sustainable profitability is attributed to reduced capital requirements and margin stability. Additionally, NOS' asset turnover ratio of 0.45 surpasses the industry average of 0.43. Most profitability ratios show a slight initial increase in the early forecasted years, followed by modest consolidation, resulting in a consistent and stable overall trend. Regarding ROCE, NOS has maintained relative stability alongside Vodafone, outperforming competitors such as Altice, which experienced a significant downturn with a -102.45% ROCE in 2019. For both NOS and Vodafone, ROE has improved, while Altice's ratio has remained volatile and consistently underperforming. Overall, NOS exceeded the industry average ROE of 9.3% by more than 300 basis points (Figure 28).

Liquidity | Embracing Risks for Strategic Advantages

The company's financing strategy involves a higher degree of risk (Figure 29), attributed to its ability to secure shorter-term financing with more attractive yields, ensuring the necessary levels for investment and payout targets. Consistent negative net liquid balance and working capital indicate that current assets are insufficient to meet short-term obligations. Stable funding does not cover operating assets. Our treasury forecast does not indicate significant risks despite short-term imbalances, aligning with the adopted risky financing strategy. Overall, operating assets are partially financed by short-term financing, made possible by NOS' ability to access the market for short-term funding with attractive yields. While this strategy minimizes interest payments, it increases risk, as the company must continually renew its short-term financing. Nevertheless, NOS seems comfortable with this approach, leveraging its status as a major corporation with easy access to capital in financial markets. These characteristics explain the consistently low liquidity ratios, similar to other Portuguese players.

Moreover, NOS has established a target Net financial debt to EBITDA AL ratio of 2.0x, indicating a conservative approach to leverage. This figure has fluctuated among NOS' competitors, averaging 2.55x. The company's ability to cover interest payments has remained robust, averaging 7.0x from 2015 to 2023YE and is estimated to stabilize at 6.0x from 2024 to 2030.

Efficiency | Stability

NOS demonstrates stable efficiency ratios. These metrics result in an anticipated negative operating cash cycle of -567 days by 2024YE. As a reputable and established company, NOS can afford to extend payment terms to its suppliers without affecting its credit standing, which is a necessity given its business model.

Dividends | Opportunity to Increase

Despite not having an official payout policy, NOS has consistently conveyed a commitment to rewarding shareholders. At times, these remunerations have exceeded the company's bottom line figures (2018-2020). Following a significant capital expenditure period, NOS distributed an extraordinary dividend of €0.152 per share in 2023, in addition to the ordinary dividend of €0.278 per share, which has remained constant since 2019. This extraordinary dividend was funded by additional cash proceeds and capital gains from the towers' transaction. With expectations of rising margins, reduced investment, and increased financial robustness, we foresee NOS increasing its dividend up to €0.325 per share. This increase aligns with the company's historical profit-sharing philosophy and its commitment to rewarding shareholders.

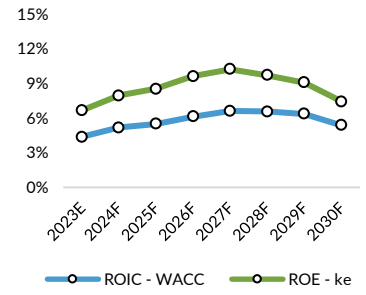
Financial Risk | Under Control

NOS was attributed a credit score of BBB- by Standard and Poor's and BBB by Fitch Ratings. While the financing strategy is risky, highly dependent on short-term financing, the capital structure is conservative with Net Debt/EBITDA after leases target of 2.0x. The incursion on sustainability-linked bonds has also provided an estimated 'greenium' over similar issuances of the company.

Value Creation | Executing

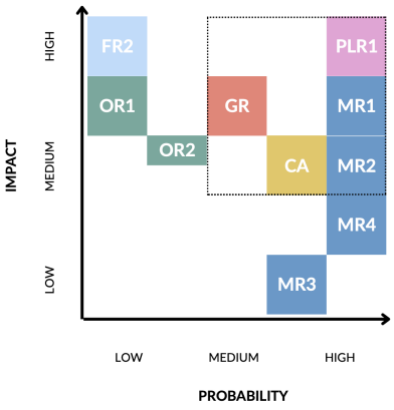
NOS' ROIC consistently exceeds the WACC by over 400bps. Additionally, the ROE provides a spread above the cost of equity of 245bps, thereby enhancing shareholder value. These substantial positive spreads indicate that NOS is well-positioned to deliver consistent value to its shareholders and is likely to sustain its strong historical payout. With an estimated cost of equity of 8.1% for the telecommunications segment and an expected dividend yield of 8.5% by the end of 2024, NOS seems to offer significant value to its shareholders.

Figure 31 – ROIC spread to WACC and ROE spread to Cost of Equity



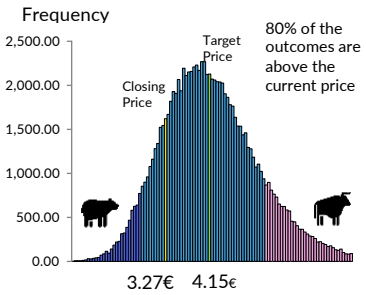
Source: Team Estimates

Figure 32 – Risk Matrix



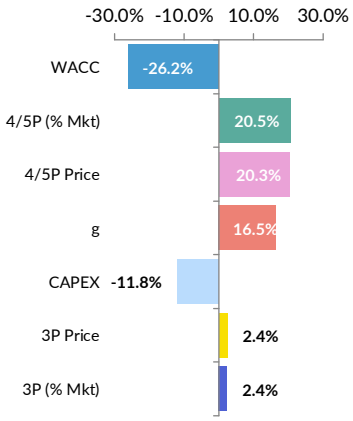
Source: Team estimates

Figure 33 – Monte Carlo Simulation



Source: Team calculations

Figure 34 – Sensitivity analysis



Source: Team calculations

Investment Risks

These are the main risks, although in ***Error! Reference source not found.*** *is presented additional investment risks.*

Market Risk | Existing Competition (MR1)

NOS operates in a penetrated market, with 5.6 million households in Portugal, a country with a population of around 10.3 million. It competes directly with two major players, Vodafone and Altice, offering similar services and products. These three market leaders are in constant competition to maintain and expand their market shares. **Mitigation:** NOS implements proactive strategies centered on Telco growth, prioritizing improved customer experience, product quality, and additional services such as Alarms. These initiatives are designed to attract new convergent customers and, in turn, lower churn rates. Furthermore, NOS plans to keep innovating within the B2B segment of Telco by offering competitive IT and IoT services to small and medium-sized enterprises (SMEs), thereby diversifying its revenue sources.

Market Risk | Entry of New Players (MR2)

The appearance of newcomers such as Digi Communications, which provide cost-friendly alternatives, could attract a new customer base interested solely in Fixed Broadband and Mobile services at lower costs. In this situation, competitive pricing could heavily influence established companies, testing their capacity to expand and retain market presence while protecting profit margins. **Mitigation:** NOS has openly discussed the unique challenges of the Portuguese market compared to others, particularly its high penetration and difficult-to-capture market share. However, NOS has been aware of the potential threat posed by new low-cost competitors targeting the expanding mobile sector for several years. In response, in 2020, NOS introduced the "WOO" offering, a low-cost package for customers only seeking internet connectivity, including Fixed Broadband and Mobile services. It is important to note that NOS is not aggressively promoting this alternative but rather preparing itself for potential shifts in market preferences or changes in customer behavior driven by competitors.

Political, Regulatory and Legal Risk | Recent changes in Regulations (PRL1)

NOS confronts significant political, regulatory, and legal risks in Portugal's telecommunications sector, primarily influenced by ANACOM's actions. The regulatory decisions of ANACOM have been characterized by unpredictable shifts that disrupt market stability and facilitate the entry of new competitors. For instance, the 5G auction rules introduced in February 2020 markedly lowered barriers to entry for new players, requiring them to cover only 25% of the population within three years and 50% within six years, using existing infrastructure from larger operators until then. In contrast, when NOS entered as the third-largest player, it faced a mandate to cover over 90% of the population within four years without access to other networks, leading to tensions and legal disputes with ANACOM over perceived discriminatory practices. Recently, ANACOM mandated Altice to grant access to its FttH network in 402 rural areas where it held a monopoly, signaling potential abrupt shifts in regulatory policy within the sector.

Governance Risk | NOS' Shareholders (GR)

Sonaecom holds a 37.37% stake in NOS. As a diversified conglomerate with investments spanning various industries, it may prioritize its own interests over those of minority shareholders of NOS. Additionally, the second-largest shareholder of NOS, ZOPT, which owns 26.08% of the company, presents significant risks due to uncertainties surrounding its status. Controlled by Isabel dos Santos, ZOPT is currently facing legal challenges in Angola concerning allegations of mismanagement and document falsification. Recently, UK authorities have frozen ZOPT's shares in NOS following a request from Angola's state-owned Unitel. **Mitigation:** Despite previous pressures from influential shareholders advocating for adjustments to its strategies and financial structure, NOS has consistently maintained a cautious approach towards debt. The company has steadfastly adhered to its strategic priorities and long-term plans. Nevertheless, given ZOPT's prior ownership by Isabel dos Santos, NOS remains subject to court decisions (Table 15).

Cybersecurity Attacks | (CA)

Portugal has seen a notable increase in cyberattacks affecting various sectors, according to the Portuguese National Cybersecurity Centre (CNCS). This surge has heightened awareness of cybersecurity risks nationwide. While such incidents are increasingly common in today's digital landscape, their impact can vary based on factors such as severity, duration, and potential compromise of customer privacy data. In February 2022, Vodafone Portugal encountered a significant cyberattack affecting all clients in the country for at least one day, though it did not involve a breach of customer private information. Interestingly, this incident did not appear to affect the company's market share trends across all telecommunications segments. **Mitigation:** In addition to providing B2B cybersecurity services and introducing a collaborative integrated solution with Fidelity in 2022 that combines proactive and reactive security measures, NOS has implemented multiple initiatives to strengthen its operational security. The company remains dedicated to a strategy of continuous vigilance while upgrading its technological infrastructure to keep pace with advancements in the field. This approach prioritizes comprehensive training for its cybersecurity team in critical areas such as cyber strategy, intelligence, architecture, and defense. Furthermore, NOS has appointed a new Chief Information Security Officer (CISO) to oversee and enhance all aforementioned cybersecurity initiatives.

Scenario and Sensitivity analysis

A Monte Carlo Simulation comprising 100,000 iterations was conducted on the DCF model to evaluate its resilience. The findings are summarized in Figure 33 and Figure 34. Additional details and outcomes of the analysis can be found in Appendix 15.

Appendix B: Supplementary Materials to EQR NOS

Appendix 1: Income Statement

(in € millions)	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Operating revenues	1 579	1 616	1 637	1 645	1 645	1 641	1 640	1 639
Services Rendered	1 435	1 466	1 484	1 489	1 487	1 480	1 476	1 472
Telco	1341	1368	1383	1387	1383	1374	1368	1361
A&C	94	98	101	102	104	106	108	111
Sales	114	117	120	122	124	126	129	131
Telco	101	104	106	108	110	112	114	116
A&C	13	13	14	14	14	14	15	15
Other Operating Revenue	31	32	33	34	34	34	35	36
Telco	30	31	32	33	33	33	34	35
A&C	1	1	1	1	1	1	1	1
Operating costs	864	888	915	923	931	937	946	955
Wages and salaries	91	93	95	97	99	100	102	104
Direct Costs	341	351	366	367	367	366	365	365
Cost of Products Sold	101	104	106	108	110	112	114	117
Marketing and advertising	38	39	40	40	41	42	43	44
Support services	93	95	97	97	97	97	97	97
Supplies and external services	164	168	172	175	178	181	185	188
Other operating losses / (gains)	1	1	1	1	1	1	1	1
Taxes	35	36	37	38	38	38	39	39
EBITDA	716	728	722	722	715	704	694	684
Depreciation and Amortization	440	434	423	409	393	388	388	388
EBIT	276	294	299	313	322	316	306	296
Net Financial costs	(85)	(88)	(87)	(85)	(84)	(82)	(80)	(79)
Income before tax	192	206	212	227	238	234	226	218
Income Tax	43	46	48	51	54	53	51	49
Net Income from continuing operations	148	160	164	176	184	181	175	169
Net Income	148	160	164	176	184	181	175	169

Appendix 2: Statement of Financial Position

	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Assets	3 482	3 457	3 431	3 408	3 380	3 345	3 306	3 262
Non-current assets	2 886	2 846	2 808	2 771	2 735	2 700	2 664	2 629
Tangible assets & Investment Property	1 092	1 075	1 060	1 044	1 029	1 015	1000	986
Intangible assets	1 185	1 161	1 137	1 115	1 093	1 071	1 049	1 028
Contract costs	162	163	164	165	166	167	168	170
Rights of use	298	297	297	297	297	297	296	296
Investments in jointly controlled and associated companies	39	39	39	39	39	39	39	39
Other accounts receivables & non-current financial assets	10	10	10	10	10	10	10	10
Deferred income tax assets	90	90	90	90	90	90	90	90
Derivative financial instruments	11	11	11	11	11	11	11	11
Current assets	596	611	623	638	645	645	642	633
Inventories	70	71	72	73	73	73	72	72
Accounts receivable and other current assets	370	380	385	386	386	384	383	382
Contract assets	63	64	65	65	65	65	65	64
Tax receivable & other accounts receivable	25	25	26	26	26	26	26	26
Prepaid expenses	52	53	55	55	56	55	55	55
Cash and cash equivalents	15	16	19	33	40	43	41	33
Shareholders' Equity	983	975	972	981	997	1 011	1 019	1 020
Share capital	855	855	855	855	855	855	855	855
Capital issued premium	4	4	4	4	4	4	4	4
Own shares	(14)	(14)	(14)	(14)	(14)	(14)	(14)	(14)
Legal and other reserves & accumulated earnings	(17)	(36)	(44)	(47)	(39)	(22)	(8)	0
Net Income	148	160	164	176	184	181	175	169
Equity before NCI	977	969	966	974	991	1 005	1 013	1 014
Noncontrolling interests	6	6	6	6	6	6	6	6
Liabilities	2 499	2 482	2 459	2 428	2 382	2 334	2 288	2 241
Non-Current Liabilities	1 600	1 542	1 482	1 422	1 355	1 288	1 224	1 162
Borrowings	1 424	1 365	1 306	1 246	1 179	1 112	1 048	986

Provisions	81	81	81	81	81	81	81	81
Accounts payable - other	42	42	42	42	42	42	42	42
Deferred income & tax liabilities	53	53	53	53	53	53	53	53
Current Liabilities	899	940	977	1 005	1 027	1 046	1 063	1 079
Borrowings	313	341	368	393	414	432	449	464
Accounts payable - trade	258	264	267	268	268	266	266	265
Accounts payable - other	54	54	54	54	54	54	54	54
Tax payable	39	39	39	39	39	39	39	39
Accrued expenses	198	204	210	212	213	215	217	219
Deferred income	37	38	39	39	39	39	39	39
Total Liabilities & Equity	3 482	3 457	3 431	3 408	3 380	3 345	3 306	3 262

Appendix 3: Cash Flow Statement

(in € millions)	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Operating Activities (CFO)	**608**	**675**	**672**	**672**	**663**	**655**	**647**	**638**
EBIT	276	294	299	313	322	316	306	296
Depreciation, Amortization, and Impairment losses	440	434	423	409	393	388	388	388
Taxes	43	46	48	51	54	53	51	49
Change in NWC	65	7	2	(1)	(2)	(4)	(3)	(3)
Investment Activities (CFI)	**(400)**	**(394)**	**(385)**	**(372)**	**(357)**	**(353)**	**(353)**	**(352)**
CAPEX (Tangible Assets)	(122)	(120)	(117)	(113)	(109)	(108)	(108)	(108)
CAPEX (Intangible Assets)	(91)	(90)	(88)	(85)	(82)	(81)	(81)	(80)
CAPEX (Contract costs)	(81)	(80)	(78)	(75)	(72)	(72)	(72)	(71)
CAPEX (Rights of Use)	(105)	(104)	(101)	(98)	(94)	(93)	(93)	(93)
Financing Activities (CFF)	**(201)**	**(280)**	**(284)**	**(287)**	**(299)**	**(299)**	**(296)**	**(294)**
Net Borrowings	99	(30)	(33)	(35)	(47)	(49)	(47)	(47)
Interest and related expenses	(85)	(88)	(87)	(85)	(84)	(82)	(80)	(79)
Dividends	(220)	(167)	(167)	(167)	(167)	(167)	(167)	(167)
Accounts payable Trade	5	6	3	1	(0)	(1)	(1)	(1)
Change in Cash	**7**	**1**	**4**	**14**	**7**	**3**	**(2)**	**(8)**
Beginning	8	15	16	19	33	40	43	41
End	**15**	**16**	**19**	**33**	**40**	**43**	**41**	**33**

Appendix 4: Financial Ratios

Key Financial Ratios	2021	2022	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F	CAGR (2015-2023)	CAGR (2024-2030)
Liquidity Ratios												
Current Ratio (%)	56.9%	52.5%	66.3%	64.9%	63.8%	63.4%	62.8%	61.7%	60.4%	58.6%	1.0%	-1.7%
Quick Ratio (%)	39.7%	34.3%	44.3%	43.4%	42.6%	42.9%	42.6%	42.0%	42.0%	39.5%	-1.1%	-1.5%
Efficiency Ratios												
Total Assets Turnover (x)	0,44 x	0,44 x	0,45 x	0,47 x	0,48 x	0,48 x	0,49 x	0,49 x	0,50 x	0,50 x	-0.8%	1,2%
DSO (days) - core	82	76	83	83	83	83	82	82	82	82	-0.6%	-0.2%
DIO (days)	162	214	252	250	248	245	241	236	231	227	2.4%	-1.6%
DPO (days)	1 013,4	662,0	895,7	899,5	895,7	887,9	874,4	857,5	837,2	818,3	-2.7%	-1.6%
Operating Cash Cycle (days)	(769,8)	(372,2)	(561,1)	(566,2)	(565,0)	(560,5)	(551,2)	(539,0)	(523,6)	(509,7)	-2.7%	-1.7%
Profitability Ratios												
Gross Profit Margin (%)	69.4%	69.8%	72.0%	71.8%	71.1%	71.1%	71.0%	70.9%	70.7%	70.6%	1.1%	-0.3%
EBITDA Margin (%)	42.5%	49.4%	45.3%	45.0%	44.1%	43.9%	43.4%	42.9%	42.3%	41.7%	2.6%	-1.3%
EBIT Margin (%)	13.9%	11.2%	17.5%	18.2%	18.3%	19.0%	19.6%	19.2%	18.7%	18.1%	5.3%	-0.1%
Net Profit Margin (%)	10.1%	14.8%	9.4%	9.9%	10.0%	10.7%	11.2%	11.0%	10.7%	10.3%	6.4%	0.7%
ROA (%)	4.4%	6.5%	4.3%	4.6%	4.8%	5.2%	5.5%	5.4%	5.3%	5.2%	5.5%	1.9%
ROIC (%)	7.4%	10.0%	10.2%	11.0%	11.3%	11.9%	12.4%	12.4%	12.2%	12.0%	5.5%	1.5%
ROE (%)	14.9%	21.3%	15.1%	16.4%	16.9%	18.0%	18.5%	17.9%	17.2%	16.6%	8.7%	0.2%
EPS	0.28	0.44	0.29	0.31	0.32	0.34	0.36	0.35	0.34	0.33	7.6%	0.9%
DPS	0.28	0.28	0.43	0.33	0.33	0.33	0.33	0.33	0.33	0.33	15.0%	0.0%
Payout Ratio (%)	98.8%	63.4%	148.2%	104.9%	101.9%	95.1%	90.8%	92.5%	95.6%	99.1%	6.8%	-0.9%
Solvency Ratios												
Total interest-bearing Debt Ratio (%)	62.08%	60.88%	64.61%	65.00%	65.26%	65.23%	65.01%	64.87%	64.90%	65.11%	2.6%	-1.3%
Interest Coverage Ratio (x)	5.5	8.6	3.3	3.3	3.4	3.7	3.8	3,8	3.8	3.8	-7.5%	2.1%

Appendix 5: Income Statement Assumptions

Income Statement Assumptions	Unit	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F	Notes for assumptions
Portuguese inflation	YoY	5.4%	2.8%	2.3%	1.8%	1.7%	1.7%	2.0%	2.0%	Data from EIU forecasts
Operating Revenues										
Telco										
Services rendered	M€	1,341	1,368	1,383	1,387	1,383	1,374	1,368	1,361	See Valuation Revenue Breakdown
Sales	M€	101	104	106	108	110	112	114	117	
Other operating Revenue	M€	30	31	32	32	33	33	34	35	
A&C										
Services rendered	M€	94	99	101	103	104	106	108	111	See Valuation Revenue Breakdown
Sales	M€	13	13	13	14	14	14	14	15	
Other operating Revenue	M€	0.7	1	1	1	1	1	1	1	
Operating Costs										
Wages and salaries	% operating costs	10%	11%	11%	11%	11%	12%	12%	12%	Linked to inflation
Direct Costs		39%	41%	42%	42%	42%	42%	42%	42%	Projection resulting from 2022 direct costs over Revenues
Cost of Products Sold		12%	12%	12%	13%	13%	13%	13%	14%	Projection from 3 prior years of COPS over Sales
Marketing and advertising		4%	5%	5%	5%	5%	5%	5%	5%	Linked to inflation
Support services		11%	11%	11%	11%	11%	11%	11%	11%	Projection from 7 prior years of Support services over Sales
Supplies and external services		19%	19%	20%	20%	21%	21%	21%	22%	Linked to inflation
Other operating losses / (gains)		0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	Projection from 6 prior years Other operating losses over Other Operating Revenues
Taxes		4%	4%	4%	4%	4%	4%	4%	5%	Projection from last three years taxes over sum of Direct Costs, COPS and Supplies and External Services
Provisions and adjustments		0%	0%	0%	0%	0%	0%	0%	0%	Kept at 0, See Appendix with Balance
EBITDA										
D&A	M€	400	394	385	372	357	353	353	352	Maintaining the company's depreciation rate, adjusted for new Capex
EBIT										
Borrowings	%, Kd	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	See Appendix WACC
Finance leases	% RoU	-9.8%	-9.8%	-9.8%	-9.8%	-9.8%	-9.8%	-9.8%	-9.8%	Expectation from 2 prior years of finance leases over Rights of Use
Others	% interest expense	6.3%	6.0%	5.8%	5.5%	5.3%	5.0%	4.7%	4.5%	ratio over interest expense. Yearly decrease of 25bp
Income tax	% of EBT	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	For our forecasts we will assume the nominal tax rate of 21%+ Derrama municipal tax rate of 1.5%
Dividends	€/share	0.43	0.325	0.325	0.325	0.325	0.325	0.325	0.325	See Financial Analysis, Dividends

Appendix 6: Balance Sheet Assumptions

Balance Sheet Assumptions	Unit	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F	Notes for assumptions
Non-current assets										
Tangible assets	%NCA	38%	37%	37%	36%	36%	35%	35%	34%	Team Calculations of tangible Assets ˙A) as prior year TA + TA Capex – TA epreciation
Investment property	M€	514	514	514	514	514	514	514	514	Assumed constant due to lack of ecessary information to estimate
Intangible assets	%NCA	41%	40%	39%	39%	38%	37%	36%	36%	Team Calculations of Intangible Assets A) as prior year IA + IA Capex – IA ˙ortization
Contract costs	%NCA	6%	6%	6%	6%	6%	6%	6%	6%	Team Calculations of Contract Costs ˙C) as prior year CC + CC Capex – CC epreciation
Rights of use	%NCA	10%	10%	10%	10%	10%	10%	10%	10%	Team Calculations of Rights of Use ˙oU) as prior year RoU + RoU Capex – oU depreciation
Investments in jointly ontrolled companies and ssociated companies	M€	39	39	39	39	39	39	39	39	Assumed constant due to lack of ecessary information to estimate
Other Non-Current Assets	M€	111	111	111	111	111	111	111	111	Assumed constant due to lack of ecessary information to estimate
Current assets										
Inventories	DIO	252	250	248	245	241	236	231	227	Projection from 7 prior years
Accounts receivable - trade	DSO	83	83	83	83	82	82	82	82	Projection from 7 prior years
Contract assets	% Services Rendered	4,4%	4,4%	4,4%	4,4%	4,4%	4,4%	4,4%	4,4%	Projection from 7 prior years of ontract Assets over Services Rendered

Accounts receivable - other	% Services Rendered	1,4%	1,4%	1,4%	1,4%	1,4%	1,4%	1,4%	1,4%	Projection from 5 prior years of AR ver Services Rendered
Tax receivable	% Revenues	0,3%	0,3%	0,3%	0,3%	0,3%	0,3%	0,3%	0,3%	Projection from 5 prior years of tax ceivable over Services Rendered
Prepaid expenses	% Direct Costs	15,1%	15,1%	15,1%	15,1%	15,1%	15,1%	15,1%	15,1%	Projection from 2022 Prepaid xpenses over Direct Costs
Other current assets	M€	9	9	9	9	9	9	9	9	Assumed constant due to lack of ecessary information to estimate
Non-Current Liabilities										
Borrowings	%Total Debt	82%	80%	78%	76%	74%	72%	70%	68%	See Appendix 6: FCFE
Provisions	M€	81	81	81	81	81	81	81	81	Assumed constant due to lack of ecessary information to estimate
Other Non-Current iabilities	M€	95	95	95	95	95	95	95	95	Assumed constant due to lack of ecessary information to estimate
Current Liabilities										
Borrowings	%Total Debt	18%	20%	22%	24%	26%	28%	30%	32%	See Appendix 6: FCFE
Accounts payable - trade	DPO	896	899	896	888	874	857	837	818	Projection from 5 prior years of AP ver Services Rendered
Accrued expenses	% Operating Costs	22,93%	22,93%	22,93%	22,93%	22,93%	22,93%	22,93%	22,93%	Projection from 5 prior years of ccrued expenses over Services endered
Deferred income	% revenues	2,36%	2,36%	2,36%	2,36%	2,36%	2,36%	2,36%	2,36%	Projection from 5 prior years of eferred Income over Services Rendered
Other Current Liabilities	M€	93	93	93	93	93	93	93	93	Assumed constant due to lack of ecessary information to estimate

Appendix 7: SWOT Analysis

Strengths

Established infrastructure | Existing players own large networks of communication infrastructure, needing significant CAPEX, posing hurdles for the new entrants to replicate.

Market Reputation | Established operators have built strong brand recognition, challenging the entry of new players.

Diversified Offerings | Portuguese Telecom companies offer diverse bundled services, attracting consumers with varied needs.

High Penetration | High penetration eases the upselling of new services to existing users, lowering acquisition costs.

Weaknesses

Rural Connectivity | Telecom operators struggle with high-speed internet in remote areas, seeing competition from satellite service providers.

Saturated Market | Portuguese telecom market, with 92,8% penetration, has limited growth potential due to saturation.

Economic Conditions | Telecom usage is tied closely to economic conditions, with booms driving consumption, and recessions lowering it.

Regulations | Regulators aim to protect consumers and encourage competition, but strict compliance restrict flexibility in the decision making.

Opportunities

More Efficient Networks | New technologies enhance efficiency, flexibility, and cost reduction, improving network performance.

Emerging Technologies | New technologies allow operators to offer higher performance and a more services, improving quality and meeting consumer needs better.

Improved Customer Experience | Improving service, personalization, communication, and security drives loyalty and attract new subscribers.

Strategic Partnerships | Partnering with tech-focused companies can help telecom companies stay ahead in technology.

Threats

New Entrants | New players with innovative technologies can intensify competition, pressuring the market share and profitability of established firms.

New Substitutes | Over-the-Top services and satellite providers have been gaining traction potentially disrupting the industry.

Cybersecurity | New tech brings better services, but also cyber threats, compelling companies to enhance cybersecurity measures.

Changing Consumer Preferences | Consumer preferences drive telecom companies to continuously invest in newer services to meet evolving needs.

Appendix 8: WACC Assumptions

The business of NOS is divided into two distinct segments, each with its own risk profile and corresponding required rate of return. Therefore, our team has determined different discount rates for the Telco and A&C segments.

Cost of Equity (Ke) | The cost of equity was calculated using the Capital Asset Pricing Model (CAPM: Ke = RFR + b * ERP + FRP). Due to the year-over-year variability in NOS' capital structure affecting the model's beta, the cost of equity will vary, showing a downward trend linked to NOS' deleveraging process. Adopting a conservative stance, we included a 1% firm premium to account for the risks identified in the report. We believe this adjustment allows for a realistic valuation of the firm, reflecting its business, industry, and market conditions.

Betas | The betas used to determine the cost of equity were derived from a sample of 65 European companies functioning as integrated telecom service providers. Initially, we collected the levered betas of these peers and adjusted them using the Hamada formula by removing leverage based on each peer's capital structure. We then calculated the average unlevered betas for each segment and estimated the unlevered beta for NOS' segments (0.45 for Telco and 0.83 for A&C). Finally, we re-levered the betas for each forecasted year, considering NOS' projected yearly capital structure. For the terminal value of the unlevered Telco beta, we increased it to 0.55. This adjustment accounts for the long-term risks in the industry, such as regulatory changes and technological developments, which justify our model's adaptation to future uncertainties.

RFR and MRP | For the risk-free rate, we applied the normalized 10-year German Bond Yield as of January 6, 2024 (2.1%). The market risk premium was sourced from "Country Default Spreads and Risk Premiums," last updated January 5, 2024 (Aswath Damodaran), resulting in a value of 6.85%.

Cost of Debt | The cost of debt was calculated by summing two components. The first component is the risk-free rate, for which we used the normalized 10-year German Government Bond Yield (2.14%). The second component is NOS' spread relative to its BBB Fitch rating (2%). These factors combined to yield an after-tax cost of debt of 3.21%.

	2024F	2025F	2026F	2027F	2028F	2029F	2030F	TV
Debt ratio	50.8%	50.3%	49.8%	49.3%	48.6%	47.8%	47.0%	46.2%
Cost of debt	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%
Cost of equity	**2024F**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**	**2030F**	**TV**
Telco	8.1%	8.1%	8.0%	8.0%	7.9%	7.8%	7.8%	8.9%
A&C	12.3%	12.2%	12.1%	12.0%	11.8%	11.7%	11.7%	11.6%
WACC	**2024F**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**	**2030F**	**TV**
Telco	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	6.5%
A&C	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.9%

Appendix 9: Peers

Rank	SARD	Company	ROE	Rank	Asset Turnover	Rank	EBITDA Margin	Rank	Net Debt/EBITDA	Rank	Beta	Rank
	0	**NOS SGPS SA**	**16,3%**	**5**	**0,45**	**10**	**45,3%**	**4**	**2,90**	**8**	**0,80**	**9**
1	25	BT Group PLC	12,6%	8	0,40	13	39,7%	9	2,57	12	1,13	4
3	32	Telefonica SA	6,0%	14	0,37	17	32,1%	13	2,88	9	0,90	8
3	32	Deutsche Telekom AG	10,6%	9	0,39	16	32,0%	15	3,71	6	0,70	11
2	27	Swisscom AG	15,4%	7	0,45	11	40,9%	6	1,51	16	0,34	15
7	48	Telekom Austria AG	18,3%	4	0,58	7	38,1%	11	1,22	19	0,28	17
5	34	Koninklijke KPN NV	24,3%	3	0,43	12	39,7%	8	2,39	13	0,28	17
6	36	Vodafone Group PLC	5,4%	15	0,30	18	41,4%	5	3,42	7	0,96	7
10	53	Proximus NV	10,3%	10	0,59	5	30,5%	17	1,93	14	0,28	17
8	51	Orange SA	5,1%	16	0,40	15	32,0%	16	2,87	10	0,26	20
8	51	Telia Company AB	21,9%	21	0,40	14	40,7%	7	2,64	11	0,20	22

Source: Refinitiv

To value NOS using a multiples valuation, we applied a Sum-of-Parts (SoP) approach to Relative Valuation, identifying distinct peer groups for each segment: Telco and A&C. For selecting the peer group for the telecommunications segment, we utilized the Sum of Absolute Rank Differences (SARD) method as outlined by Knudsen et al. (2017). This method involved choosing various financial metrics — Return on Equity, EBITDA margin, Net Debt/EBITDA, Asset Turnover, and Beta — and ranking them across the entire group. Initially, companies within the telecommunications sector (excluding non-European firms) were chosen as a basis for our SARD analysis. However, due to currency discrepancies among the selected companies, we refined our scope by excluding firms from certain Eastern European countries, such as Poland, Romania, and Hungary. This adjustment was made to create a more cohesive and representative sample, aligning with similar macroeconomic risks. Following this, our team examined the different types of businesses operating within the sample. The telecommunications sector encompasses various business models, prompting us to focus on companies that are pure plays in the focal areas addressed by NOS, such as Fixed TV, Fixed Voice, Broadband, and Mobile services. This approach ensured that the peer group was closely aligned with NOS' core operations.

Peers	Market Cap (€)	FttH Coverage*	Capex	EV/EBITDA *	Description
BT Group	14,20B	MEDIUM	Increasing	4.34	Headquartered in London, the United Kingdom, the company operates in the UK, Europe, the Middle East, Africa, the Americas, and the Asia Pacific. BT Group plc is the largest telecom operator in the UK with over 30% market share.
Telefónica	20,36B	HIGH	Decreasing	5.32	Telefónica, S.A. is a telecommunications giant headquartered in Madrid, Spain, serving Europe and Latin America. Its services cover mobile, fixed telephony, broadband, and wholesale offerings, with a market share exceeding 35% in Spain.
Deutsche Telekom	107,78B	LOW	Stable	6.44	Deutsche Telekom AG, based in Germany, is a leading provider of integrated telecommunication services globally. It operates in over 50 countries, having ~30% market share in Germany and being the 3rd largest operator in the U.S.
swisscom	27,89B	MEDIUM	Stable	7.38	Headquartered in Bern, Switzerland, Swisscom AG leads the telecommunication sector in Switzerland, having over 50% market share in the Mobile segment. It is also growing significantly in Italy and internationally.
A1 Telekom Austria Group	5,06B	MEDIUM	Stable	4.10	Based in Austria, Telekom Austria AG and its subsidiaries provide integrated telecommunication solutions across several countries within Central and Eastern Europe, including Belarus, Bulgaria, Croatia, North Macedonia, Serbia, and Slovenia.
kpn	12,30B	HIGH	Stable	7.18	Koninklijke KPN N.V., headquartered in the Netherlands, is a premier provider of telecommunications and IT services within the region, with over 40% market share in most of the segments.
vodafone	21,46B	MEDIUM	Increasing	4.02	Vodafone Group PLC, based in UK, is a global leader in telecommunications services across Europe and internationally. It operates through both digital and physical channels and it is a pioneering force since its establishment in 1984.
proximus	2,90B	LOW	Increasing	3.77	Proximus PLC, headquartered in Brussels, Belgium, is a leading provider of digital services and communication solutions within Belgium, with over 40% market share, and with a small international presence.
orange	27,37B	HIGH	Decreasing	5.17	Based in France, Orange S.A. is a leading provider of telecommunications and data transmission services globally, operating in 26 countries across Europe, Africa, and the Middle East, having over 35% market share in its domestic market.
Telia	9,12B	HIGH	Decreasing	6.39	Telia Company AB (publ), based in Solna, Sweden, is a leading telecommunications provider in Sweden, Norway, and Finland, and the second-largest provider in Denmark, Estonia, Latvia, and Lithuania.
NOS	1,65B	HIGH	Decreasing	4.58	
		*Domestic		*2023E	

Source: *Refinitiv and Companies' guidance*

It is important to highlight that Altice Portugal's parent company, Altice USA, Inc., was excluded from our peer comparison due to its reported debt and capital structure issues. According to Financial Times and Bloomberg, the company is exploring the potential sale of its Portuguese operations, with several interested buyers, including António Horta Osório, the Warburg Pincus investment fund, billionaire Xavier Niel, and Saudi Telecom. These

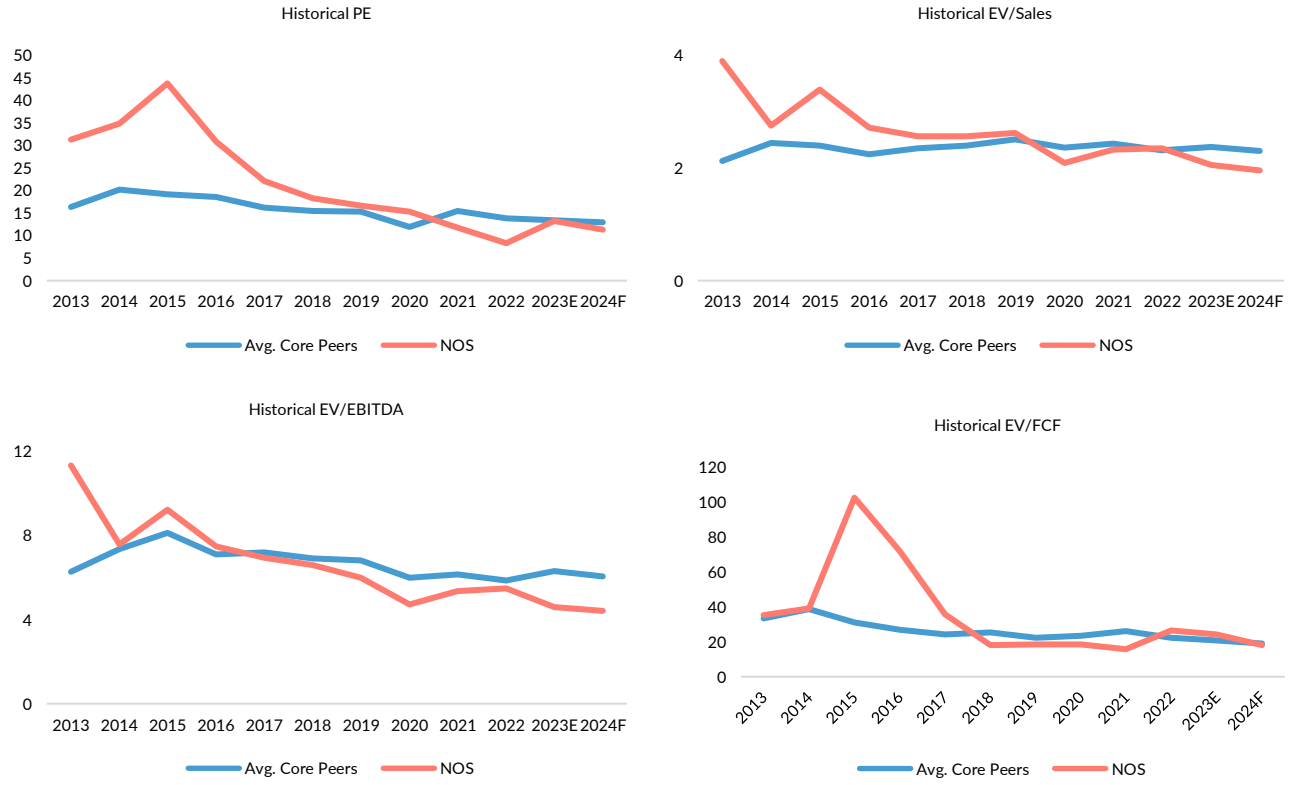
uncertainties have led to Altice being priced below its peers due to increased risk. Consequently, including Altice would distort the average valuation of our peer group. To ensure accuracy, we selected a Core Peers group, taking into account disparities in capital expenditure (capex) cycles. Companies undergoing a capex expansion cycle were excluded due to the distinct risks they pose in contrast to NOS.

In the A&C segment, given the lack of listed pure play companies in this sector, our team assembled a sample of six cinema theatre operators exhibiting similar behavior to NOS' A&C segment before and after COVID-19, considering the significant impact of the pandemic on cinema operators. The selected peer group includes Kinepolis Group NV (KIN.BR), AMC Entertainment Holdings, Inc. (AMC), Cinemark Holdings, Inc. (CNK), Cineplex Inc. (CGX.TO), Wanda Film Holding Co., Ltd. (002739.SZ), and CJ CGV Co., Ltd. (079160.KS).

Appendix 10: Multiples Valuation

Our multiples valuation is based on the 2024F data obtained from Refinitiv Multiples. Initially, we gathered multiples data for each of NOS' segments from our selected peers. By applying the weighted average of EV/EBITDA for 2024F, we derived a price target of €4.59 per share, indicating a 40% upside. Using an equal-weighted average of the price targets from the four multiples assessed, we arrived at a price target of €3.89 per share, reflecting a 19% upside. We prefer EV/EBITDA due to the distinct capital structures among the companies, and this choice is further supported by the fact that some members of the A&C Peers group were not profitable and had a negative book value. However, the average upside of 19% confirms our buy recommendation.

Analysing NOS' historical multiples reveals a consistent trend of trading at or slightly above its Core Peers group across various metrics. However, following the COVID-19 correction, NOS is currently trading below the average of its comparables. We expect this to normalize in the near future. Specifically, NOS is now trading at 4.41x EV/EBITDA 2024F, representing a discount of approximately 27.1% compared to its Core Peers group. This further supports our analysis.



	P/E			EV/Sales			EV/EBITDA			EV/FCF		
	2022	2023E	2024F	2022	2023E	2024F	2022	2023E	2024F	2022	2023E	2024F
Avg. Peers Telco	11,75	10,70	11,15	2,02	2,01	1,95	5,17	5,41	5,34	24,38	26,08	24,05
Avg. Core Peers Telco	13,87	13,41	12,96	2,32	2,37	2,30	5,86	6,31	6,05	22,27	20,76	19,04
Avg. Peers A&C	40,72	15,27	13,33	2,48	1,71	1,50	58,78	8,80	8,10	31,71	18,03	15,38
NOS Multiple	8,30	13,25	11,24	2,35	2,05	1,96	5,48	4,58	4,41	26,55	24,17	18,13
Price Target*			**3,78**			**3,76**			**4,59**			**3,39**

***Average price target** of **€3.89/share,** indicating **upside of 19%.**

Appendix 11: FCFF Valuation

FCFF TELCO	2024F	2025F	2026F	2027F	2028F	2029F	2030F	TV
Revenues	**1 502 778**	**1 521 575**	**1 527 286**	**1 526 033**	**1 519 572**	**1 516 293**	**1 512 428**	**1 512 428**
OPEX (including provisions)	825 899	850 380	857 251	863 275	867 749	874 476	881 144	881 144
EBITDA	**676 879**	**671 194**	**670 035**	**662 758**	**651 823**	**641 817**	**631 284**	**631 284**
D&A	-403 346	-393 327	-379 683	-364 264	-359 379	-358 603	-357 689	-357 689
EBIT	**273 534**	**277 867**	**290 351**	**298 494**	**292 444**	**283 213**	**273 595**	**273 595**
Taxes	-43 105	-44 360	-47 475	-49 629	-48 675	-47 015	-45 258	-45 258
NOPAT	**230 429**	**233 507**	**242 876**	**248 865**	**243 769**	**236 198**	**228 337**	**228 337**
+ D&A	403 346	393 327	379 683	364 264	359 379	358 603	357 689	
- Change in NWC	6 208	2 245	-1 259	-1 796	-3 608	-2 884	-3 018	
- Capex	366 678	357 570	345 167	331 149	326 708	326 003	325 172	
Reinvestment Value = (CAPEX - D&A + DNWC)								-35 535
FCFF	**260 889**	**267 019**	**278 652**	**283 776**	**280 048**	**271 682**	**263 872**	**192 802**
WACC	5,66%	5,66%	5,66%	5,66%	5,66%	5,66%	6,51%	6,51%
Discount Factor	0,95	0,90	0,85	0,80	0,76	0,72	0,67	0,67
Telco Discounted FCFF	**246 914**	**239 179**	**236 226**	**227 679**	**212 647**	**195 237**	**178 035**	**2 384 645**
Telco Enterprise Value			**3 920 562**					

FCFF A&C FLOWS	2024F	2025F	2026F	2027F	2028F	2029F	2030F	TV
Revenues	**112 797**	**115 391**	**117 468**	**119 465**	**121 496**	**123 926**	**126 404**	**126 404**
OPEX (including provisions)	-61 991	-64 490	-65 934	-67 581	-69 380	-71 470	-73 643	-73 643
EBITDA	**50 806**	**50 901**	**51 534**	**51 884**	**52 116**	**52 455**	**52 761**	**52 761**
D&A	-30 275	-29 829	-29 203	-28 516	-28 734	-29 308	-29 895	-29 895
EBIT	**20 531**	**21 072**	**22 332**	**23 367**	**23 382**	**23 147**	**22 866**	**22 866**
Taxes	-3 235	-3 364	-3 651	-3 885	-3 892	-3 843	-3 783	-3 783
NOPAT	**17 296**	**17 708**	**18 680**	**19 482**	**19 490**	**19 304**	**19 084**	**19 084**
+ D&A	30 275	29 829	29 203	28 516	28 734	29 308	29 895	
- Change in NWC	466	170	-97	-141	-288	-236	-252	
- Capex	27 522	27 117	26 548	25 924	26 122	26 644	27 177	
Reinvestment Value = (CAPEX - D&A + DNWC)								-2 970
FCFF	**19 582**	**20 250**	**21 432**	**22 215**	**22 391**	**22 204**	**22 054**	**16 114**
WACC	7,70%	7,71%	7,71%	7,71%	7,71%	7,71%	7,71%	7,94%
Discount Factor	0.93	0.86	0.80	0.74	0.69	0.64	0.6	0.6
A&C Discounted FCFF	**18 181**	**17 456**	**17 153**	**16 508**	**15 447**	**14 222**	**13 086**	**139 066**
A&C Enterprise Value			**251 119**					

Several adjustments were implemented to determine an accurate Equity Value from NOS' Enterprise Value within our FCFF model. We considered Debt (including short and long-term borrowings), Cash & Equivalents, and Net Trade Accounts Receivable. Non-controlling interests, Provisions, and other financial commitments were excluded due to their potential negative impact on the company's value. Within Provisions, €22.9 million in contingent liabilities were identified, suggesting a 41% implicit probability of incurring these potential losses, which we conservatively adjusted to 75%. Other financial commitments included €61.5 million in tax guarantees and €299.5 million in assignment agreements for football broadcast rights. It is noteworthy that the incremental cash flows generated by these rights are incorporated into our forecasted market share evolution, justifying the adjustments made from Enterprise Value to Equity Value.

The FCFF (SoP) tables are presented separately for the Telco and A&C segments. The calculation of terminal values for each segment follows a distinct methodology, incorporating the reinvestment value (calculated as the ratio of NOS' terminal value growth to its ROIC) subtracted from NOPAT, and discounting the perpetuity. Throughout the valuation, we applied an effective tax rate of 22.5% to both segments.

NOS Enterprise Value	4 171 682
Adjustments from EV to Equity Value	
Noncontrolling interests	-6 251
Cash & Equivalents	15 783
Debt	-1 706 678
Provisions and Contingent Liabilities (revised)	-99 842
Net Accounts Receivable - trade	107 332
Other financial undertakings	-361 012
Equity Value	2 121 013
Share Price	**€ 4,15**
Nos SGPS SA (XLIS: NOS)	**€ 3,27**
Upside	**27%**

Appendix 12: FCFE Valuation

The equity value of NOS was determined by computing the typical steps to Free Cash Flow to Equity (FCFE) from Net Income, incorporating adjustments related to the company's non-controlling interests. In 2023, net borrowings reflected the financing required for operations, particularly highlighting the additional dividend payment and tower sale from the previous year. For 2024 and beyond, net borrowings were projected considering NOS' cash generation and its strategy to reduce leverage.

FCFE	2024F	2025F	2026F	2027F	2028F	2029F	2030F	TV
NI	159 616	164 384	176 102	184 326	181 062	175 176	168 917	168 917
D&A	433 620	423 156	408 886	392 780	388 113	387 912	387 584	387 584
CAPEX	394 200	384 687	371 714	357 073	352 830	352 647	352 349	352 349
dNWC	6 674	2 415	-1 356	-1 936	-3 896	-3 119	-3 270	-3 270
Net Borrowings	-29 692	-32 532	-34 591	-46 804	-48 535	-47 376	-47 348	-47 348
FCFE	**162 671**	**167 905**	**180 038**	**175 165**	**171 706**	**166 184**	**160 073**	**160 073**
Discount rate	8,43%	8,38%	8,34%	8,27%	8,20%	8,14%	9,13%	9,13%
Discount factor	0,92	0,85	0,79	0,73	0,67	0,62	0,57	0,57
FCFE 0	**150 024**	**142 872**	**141 409**	**127 072**	**115 120**	**103 033**	**90 945**	**1 130 420**
Equity Value	**2 000 895**							**g = 1%**

Appendix 13: Dividend Discount Model

DDM		2024	2025	2026	2027	2028	2029	2030	TV
Dividends		167 427	167 427	167 427	167 427	167 427	167 427	167 427	167 427
Discount Factor		0,92	0,85	0,79	0,73	0,67	0,62	0,57	0,57
Discounted Dividends		154 410	142 466	131 504	121 459	112 251	103 804	95 123	1 223 942
Equity Value	2 084 960								
Non-Controlling Interests	-6 251								
Equity Value	2 078 709								
Equity Value per Share	**€4,06**								

Appendix 14: Risk Matrix

Market Risk | Energy Prices (MR3)

The volatility and unpredictability of energy prices, influenced by geopolitical conflicts in recent years, represent a significant risk for companies across various sectors, including NOS. However, it is essential to note that this risk's potential impact is relatively limited, as energy costs constitute only approximately 2% of the company's overall expenses. Mitigation: NOS has implemented an energy provisioning strategy based on a long-term Power Purchase Agreement (PPA) that secures "very attractive prices," as highlighted by the CFO during the 3Q 2023 conference call. This arrangement covers 35% of the company's energy consumption, with the remaining 65% procured at spot market rates.

Market Risk | Inflation and Interest Rates (MR4)

Inflation has been a persistent concern globally, affecting companies and consumers alike. Despite a slight easing to 2.1% year-over-year in Portugal's latest reported month, uncertainty remains regarding the future trajectory of inflation rates. This uncertainty directly impacts interest rates, influencing NOS' average cost of debt, which has increased from 1.3% (4Q2022) to 3.9% (3Q2023) recently. Mitigation: NOS' contracts include provisions allowing

for price adjustments in line with inflation rates. Additionally, the company employs interest rate swaps to hedge against future interest payment risks on bond loans.

Operational Risk | Intense Capex (OR1)

The telecommunications sector is characterized by substantial capital expenditures necessary for maintenance and expansion, posing financial risk from upfront investments in infrastructure and technology upgrades that may not yield expected returns. Mitigation: Following an intensive period of capital expenditure aligned with advancements in Fiber-to-the-Home (FttH) and 5G technologies, NOS plans to reduce its annual capex. This strategic shift aims to enhance cash flows and fortify the company's strong financial position.

Operational Risk | Potential Natural Disasters (OR2)

Climate-related factors, including the increased frequency and intensity of extreme weather events due to global warming, pose significant risks to NOS. Natural disasters have the potential to damage infrastructure, disrupt supply chains, and cause substantial business interruptions, impacting financial performance and shareholder returns. Mitigation: NOS has implemented a comprehensive Business Continuity Management (BCM) program, focusing on enhancing resilience and ensuring the availability of critical functions essential for daily operations. This program covers infrastructure, business activities, and prioritizes employee health and safety through established Occupational Health and Safety (OHS) management systems.

Financial Risk | Solvency and Liquidity (FR2)

NOS relies primarily on operating cash flow, committed commercial paper programs, and cash & equivalents for liquidity. Operating in a capital-intensive industry underscores the importance of maintaining robust liquidity to manage unforeseen events and upcoming obligations effectively. Mitigation: NOS maintains a proactive risk management approach, targeting a Net Financial Debt / EBITDA AL ratio consistently at or below 2, a level emphasized by management as optimal leverage. The company benefits from €267.5 million in unissued available committed commercial paper programs and €11.9 million in cash & equivalents. Strong operating cash flows consistently cover capital expenditures, further bolstering NOS' financial resilience, particularly as it transitions into a period of significantly reduced capex.

Appendix 15: Scenario Analysis

A Monte Carlo simulation was conducted to assess valuation key drivers amidst uncertainty. The variables utilized in this analysis are detailed in the accompanying figure. Additionally, both bull and bear case scenarios were evaluated. In the bear case scenario, we incorporated the potential entry of new competitors into the market and increased price competition, resulting in a decline in NOS' market share and pricing. Conversely, in the bull case scenario, NOS achieves market leadership in 4/5P Bundles and successfully maintains price increases. Further details are provided below:

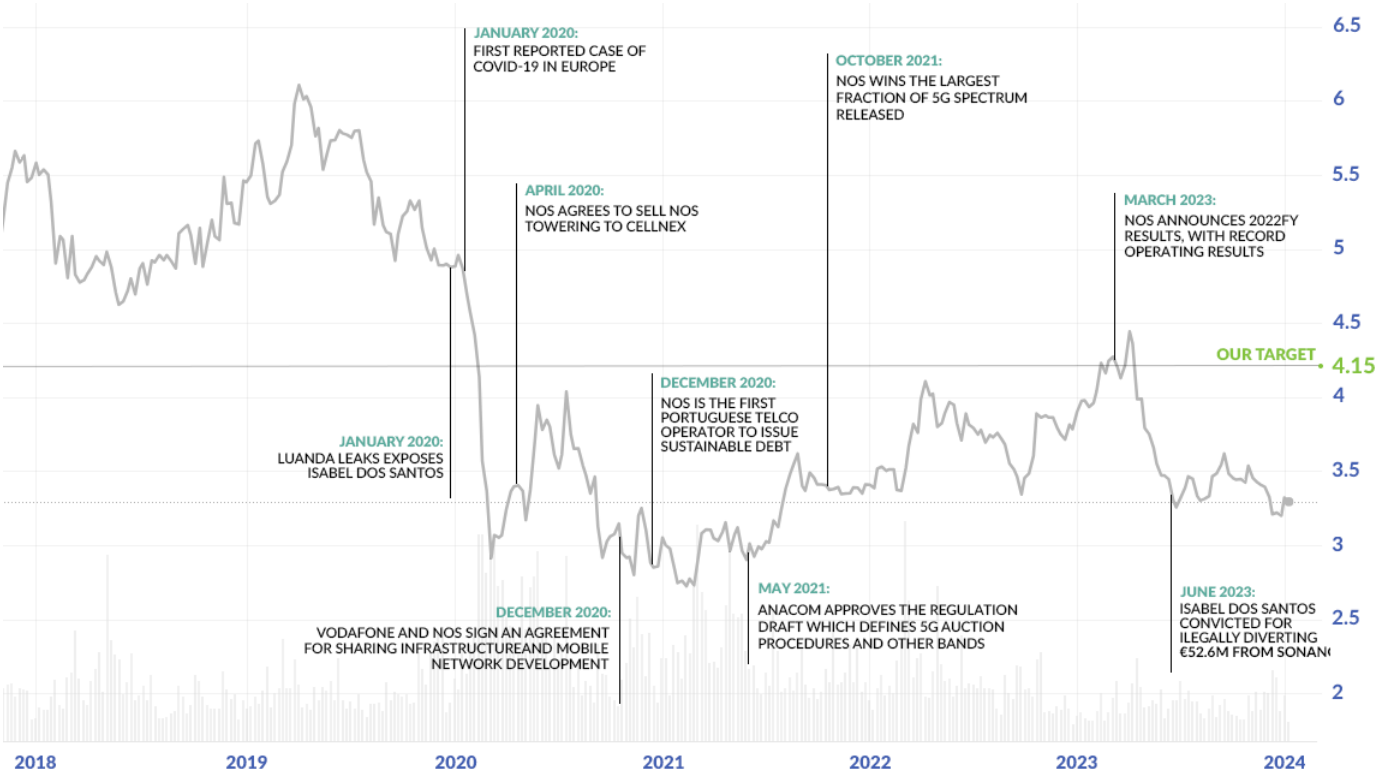
Scenarios	Bear Case	Base Case	Bull Case
WACC	5.21%	6.51%	7.8%
4/5P (% Mkt)	31.9%	36.43%	38.99%
4/5P Price	51.40 €	57.11 €	62.82 €
3P (% Mkt)	26.1%	29%	31.90%
3P Price	41.96 €	46.60%	51.28 €

Appendix 16: Sensitivity Analysis

We conducted a sensitivity analysis focusing on two critical valuation drivers to assess their impact on the FCFF price target. Our analysis emphasized these variables and evaluated their influence on the valuation outcome. We determined that a 4/5 Bundle Price in 2030 below €54.61, coupled with a WACC above 5.71%, would prompt a reassessment of our recommendation. The majority of outcomes from our analysis reinforce our buy recommendation, with target prices significantly exceeding the current trading price.

WACC	4/5P Bundle Price in 2030				
	52.11 €	54.61 €	57.11 €	59.61 €	62.11 €
5.71%	3.06 €	3.98 €	4.91 €	5.84 €	6.77 €
6.11%	2.78 €	3.63 €	4.49 €	5.35 €	6.20 €
6.51%	2.54 €	3.33 €	4.15 €	4.92 €	5.72 €
6.91%	2.33 €	3.07 €	3.81 €	4.55 €	5.29 €
7.31%	2.15 €	2.85 €	3.54 €	4.23 €	4.93 €

Appendix 17: Stock price evolution & important events



Source: Refinitiv, Team Analysis

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