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INVESTMENT FOR SUSTAINABILITY: HOW FDI DRIVES SUSTAINABLE DEVELOPMENT IN SERBIA[1]

Abstract

Objective – The paper examines how the sectoral and regional structure of foreign direct investment (FDI) in Serbia contributes to the Sustainable Development Goals (SDG 8, 9, 10, and 12).

Research method - The paper uses descriptive analysis of secondary data on net FDI for the period 2015–2024. It includes indicators of productivity, wages, employment structure, regional distribution, and environmental pressure.

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Results - FDI in Serbia is mainly directed toward low-wage, high-pollution sectors, while those with greater development potential and lower environmental impact remain underrepresented. This sectoral structure provides partial support for SDG 8 and limits progress on SDG 9 and SDG 12. Regionally, FDI is concentrated in more developed areas, reinforcing spatial disparities and failing to support SDG 10.

Originality / Value / Implications / Recommendations – The paper evaluates the alignment of Serbia's sectoral and regional FDI structure with selected SGDs - a perspective still underrepresented in national-level empirical research. The results indicate structural misalignments between current investment patterns and national sustainability priorities. The analysis emphasizes the potential of more strategically directed FDI—both sectorally and regionally—to support development that is socially inclusive, economically progressive, and environmentally responsible.

Keywords: foreign direct investment, sustainable development goals, regional disparities, Serbia

JEL classification: F21, O19, Q01

INTRODUCTION

Foreign direct investment (FDI) serves as a critical mechanism for capital inflow and a potential driver of economic growth, particularly in countries with limited domestic savings and investment capacity. In the context of the 2030 Agenda for Sustainable Development (United Nations, 2015), scholarly attention has increasingly shifted toward understanding the broader implications of FDI, considering not only its economic outcomes, but also its social and environmental dimensions. UNCTAD (2024) highlights the strategic role that FDI can play in supporting the achievement of the Sustainable Development Goals (SDGs). However, the developmental impact of FDI is neither uniform nor guaranteed; it is shaped by factors such as the structure of recipient sectors, technological sophistication, investor characteristics, and the policy and institutional context in which investments occur (e.g., Alfaro, 2003; Blomström & Kokko, 1998; Sauvant & Gabor, 2021). It is therefore essential to examine these dynamics in context-specific settings, with careful consideration of the economic, structural, and governance conditions unique to each country.

The paper starts from the following research questions: (RQ1) Does FDI contribute to the creation of quality employment and the allocation of capital toward sectors with greater development potential? (RQ2) Does the spatial distribution of FDI contribute to the reduction of regional disparities? (RQ3) Is FDI in line with the principles of environmental sustainability?

The aim of the paper is to assess the extent to which the sectoral and regional structure of FDI in Serbia contributes to the achievement of four specific Sustainable Development Goals: SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), SDG 10 (Reduced Inequalities), and SDG 12 (Responsible Consumption and Production). The purpose of the research is to offer an empirically grounded assessment of the developmental quality of FDI in Serbia, through a multidimensional analytical framework that includes indicators of productivity, employment, regional balance, and environmental pressure.

The paper first outlines the relevant literature and conceptual background, followed by the methodology and data sources. The main analysis explores the structure of FDI in relation to the Sustainable Development Goals. Key findings, limitations, and future research directions are presented in the concluding section.

LITERATURE REVIEW

The developmental effects of FDI are not automatic but depend on a variety of structural and institutional factors. Prior research emphasizes the importance of sectoral allocation (Alfaro, 2003), technological intensity and investor characteristics (Blomström & Kokko, 1998), as well as the regulatory and institutional environment of the host country (Sauvant & Gabor, 2021). Building on these foundations, recent approaches view FDI not only as a channel for expanding production but also as a factor that may, under favorable conditions, support improvements in human capital, business practices, and environmental performance in host countries. In the context of sustainable development, FDI has attracted increasing attention for its capacity to support inclusive, socially responsible, and environmentally sound growth. This broader perspective underpins the concept of "sustainable FDI," referring to investments that yield not only financial returns but also measurable contributions to the achievement of the Sustainable Development Goals (Sauvant & Gabor, 2021).

Empirical research confirms that the developmental effects of FDI differ significantly across countries and regions. Cross-country studies reveal diverse outcomes: Popa et al. (2025) find that FDI positively affects GDP per capita in small and high-income countries. In developing countries, however, FDI inflows are associated with a statistically significant negative effect on the SDG10 score, indicating limited progress toward reducing inequalities. Aderemi et al. (2023)

show that, in the long run, FDI reduces poverty in BRICS economies, thereby supporting SDG 1. Fang (2021) shows that Chinese FDI in Africa supports progress on selected SDGs in the economic and environmental domains, but has no significant effect on social-dimension goals. Izadi and Madirimov (2023) report that in lower-income Eurasian countries, FDI significantly enhances performance on the SDG index. These heterogeneous outcomes illustrate that the developmental impact of FDI is highly context-dependent, varying with the economic structure, level of development, and sectoral orientation of host countries.

Environmental implications of FDI remain the subject of ongoing debate. Two dominant theoretical perspectives, known as the "pollution haven" and "pollution halo" hypotheses, propose opposing expectations about how foreign investors interact with environmental standards. The "pollution haven" hypothesis assumes that multinational companies relocate their operations to countries with weaker environmental regulations, while the pollution halo hypothesis suggests that they transfer cleaner technologies and improved practices to the host country. Empirical findings are mixed: while Tsoy and Heshmati (2023) report no significant environmental effect of FDI globally, Kutlu Furtuna and Atis (2024) identify a U-shaped relationship between FDI and carbon emissions in the world's most carbon-intensive economies, where environmental outcomes worsen once investment crosses a certain threshold.

In the Western Balkan region, and particularly in Serbia, the academic literature has yet to establish a consistent analytical framework linking FDI to sustainable development goals. Most regional studies have addressed FDI primarily through the lens of economic growth, confirming certain macroeconomic benefits, particularly in terms of GDP expansion (Lazaj et al., 2024; Shkodra et al., 2021), and domestic investment (Sucubasi et al., 2021).

Perić and Stanisić (2020) find a very weak positive effect of FDI inflow on average wages, while Šupić (2024) highlights a policy bias toward investment volume over job quality. Nedeljković and Todorović (2024) provide a more systemic analysis, identifying institutional quality, demographic decline, and domestic scientific and technical capacity as key barriers for attracting FDI into high-impact sectors. They stress the structural misalignment between Serbia's FDI profile and its development priorities.

Environmental aspects are similarly problematic. Pavlović et al. (2021) argue that weak regulatory frameworks in the Western Balkans attract pollution-intensive investments. Lončar and Kastratović (2024) provide further

evidence from Serbia, highlighting that FDI has not significantly contributed to improving energy efficiency.

Overall, the literature shows that the developmental effects of FDI depend on context-specific factors, including sectoral focus and institutional capacity. Although regional studies address issues relevant to sustainable development, they do not consistently apply the SDG framework or assess FDI impact across multiple dimensions. This highlights a need for more integrated, SDG-oriented approaches to analyzing FDI.

METHODOLOGY

This study conducts a descriptive analysis based on secondary data to assess the alignment of foreign direct investment (FDI) with the Sustainable Development Goals (SDGs 8, 9, 10, and 12) in Serbia, in the period from 2015, when the 2030 Agenda was adopted, to 2024. The focus is on the sectoral and regional structure of FDI and their contribution to Serbia's development priorities.

Table 1 presents net FDI flows by sector, according to the data of the National Bank of Serbia for the period 2015–2024 (NBS,2025). Table 2 contains sectoral characteristics: relative productivity (SORS, 2024), wages (SORS, 2025), employment structure (LFS, 2024), and environmental pressure. The data are drawn from the Statistical Office of the Republic of Serbia, the Labour Force Survey and applicable legal frameworks. Productivity and wages are expressed as relative indices, obtained by dividing the average value for each branch of activity by the national average, while the type of employment is classified based on the share of formally employed persons, into four categories: dominantly formal (over 80% formally employed), mostly formal (60–80%), mostly informal (40–60%), and dominantly informal (less than 40%). Environmental pressure is defined based on the official classification of activities affecting the environment (Regulation on Criteria for Determining Activities that Affect the Environment and the Amounts of Fees, 2024).Table 3 presents the percentage share of regions in the number and value of FDI projects, the most represented branches of activity, and the dominant type of FDI (e.g., greenfield, brownfield, joint ventures, reinvestment, acquisition), based on the number of projects, according to data on announced and realized investments from the National Alliance for Local Economic Development (NALED) database for the period 2015–2022.

This analysis has several limitations. The time frames of the data for individual indicators are not aligned, which makes comparisons more difficult. Aggregated sectoral and regional categories were used, which may omit significant differences within sectors, between regions, and between individual enterprises, that are relevant for a deeper understanding of the distribution and effects of investment. Net FDI flows were used in the analysis, which may limit the presentation of total investment activity.

RESULT AND DISCUSSION

In the period from 2015 to 2024, the majority of net inflows of FDI in Serbia were directed towards the sectors of manufacturing (27.8%), construction (20.4%), and mining and quarrying (9.5%). These findings illustrate the sectoral allocation of FDI and provide insights into RQ1 regarding its impact on employment quality and structural transformation. As shown in Table 2, the manufacturing sector is characterized by relatively low productivity (73% of the national average), below-average wages (89%), and high environmental pressure. Construction has slightly higher productivity than average (110%) but also below-average wages (85%), with moderate environmental impact. Mining and quarrying has extremely high productivity (259%) and wages (143%) but it comes with high environmental pressure.

Table 1. Sectoral Distribution of Net FDI Inflows in Serbia (2015–2024)

Branch of Activity	Net FDI Inflows (million EUR)	Share of Net FDI Inflows
Manufacturing	9783,4	27,79%
Construction	7182,1	20,40%
Mining and Quarrying	3334,0	9,47%
Financial and insurance activities	2759,7	7,84%
Wholesale and retail trade; repair of motor vehicles and motorcycles	2555,0	7,26%
Transportation and storage	2457,4	6,98%
Real estate activities	1704,5	4,84%
Professional, scientific and technical activities	1553,4	4,41%
Information and communication	1075,5	3,06%
Electricity, gas, steam and air conditioning supply	795,7	2,26%
Agriculture, forestry and fishing	591,3	1,68%

Branch of Activity	Net FDI Inflows (million EUR)	Share of Net FDI Inflows
Administrative and support service activities	501,2	1,42%
Water supply; sewerage, waste management and remediation activities	466,8	1,33%
Not allocated	188,2	0,53%
Arts, entertainment and recreation	120,7	0,34%
Accommodation and food service activities	97,2	0,28%
Education	16,0	0,05%
Human health and social activities	12,2	0,03%
Other service activities	7,7	0,02%
FDI net inflows	35202,0	100,00%

Source: Authors' calculation based on data from the National Bank of Serbia (2024), Balance of Payments Statistics. Available at: *https://nbs.rs/sr/drugi-nivo-navigacije/statistika/platni_bilans/*

Information and communication technologies (ICT) and financial activities demonstrate high productivity levels (210% and 255% of the national average, respectively) and wages (220% and 147% of the national average), dominantly formal employment, and low environmental pressure. In contrast, manufacturing and wholesale and retail trade show below-average economic indicators (productivity at 73% and 80%, wages at 89% and 83% of the national average) and moderate to high environmental pressure. Construction is characterized by moderately formal employment, indicating relatively lower job security.

Table 2. Characteristics of Selected Sectors Based on Economic and Environmental Indicators

Branch of Activity	Relative Productivity Index (Avg. Productivity = 100)	Relative Wage Index (Avg. Wage = 100)	Type of employment	Ecological pressure
Mining and Quarrying	259	143	Dominantly formal	High
Financial and insurance activities	255	147	Dominantly formal	Low
Information and communication	210	220	Dominantly formal	Low

Branch of Activity	Relative Productivity Index (Avg. Productivity = 100)	Relative Wage Index (Avg. Wage = 100)	Type of employment	Ecological pressure
Construction	110	85	Mixed-mostly informal	Moderate
Professional, scientific and technical activities	109	125	Dominantly formal	Low
Arts, entertainment and recreation	91	84	Dominantly formal	Low
Transportation and storage	86	85	Dominantly formal	High
Wholesale and retail trade	80	83	Dominantly formal	Moderate
Manufacturing	73	89	Dominantly formal	High
Human health and social activities	63	101	Dominantly formal	Low
Education	61	92	Dominantly formal	Low

Source: Authors' elaboration based on the Decree on the Criteria for Determining Activities Affecting the Environment and the Amounts of Fees ("Official Gazette of the Republic of Serbia", No. 30/2024) and data from the Statistical Office of the Republic of Serbia.

The results show that the current sectoral structure of FDI in Serbia partially contributes to SDG 8. The dominant sectors of manufacturing and construction generate employment but with lower job quality and wages, confirming earlier findings by Perić and Stanišić (2020) and Šupić (2024) on insufficient employment quality through FDI.

In the context of SDG 9, sectors with the highest potential to contribute, such as ICT, financial, and professional services, remain underrepresented. This shows problems in rules and planning for attracting FDI to high-tech sectors, supporting the findings of Nedeljković and Todorović (2024).

For SDG 12, the situation is especially difficult due to the dominance of sectors with high environmental pressure, such as manufacturing and mining and quarrying. The environmental characteristics of sectors dominated by FDI are relevant to RQ3, which concerns ecological aspects of investment. The structure of FDI observed in this study is consistent with previous research by Pavlović et al. (2021), who identify a tendency toward environmentally harmful

investment, and Lončar and Kastratović (2024) who find that FDI in Serbia has not significantly contributed to improvements in energy efficiency.

Based on the results and previous literature, there is a clear need to move investments to areas that can better help achieve sustainable development goals, particularly those areas that can ensure decent work, the development of high-tech industry and innovation, and the reduction of environmental pressure, along with strengthening the regulatory and institutional framework that would support such a strategic orientation. As shown in Table 3, there is a clear unevenness in the regional distribution of FDI in Serbia.

Table 3. Characteristics of Foreign Direct Investments by Region in Serbia

Region (NUTS-2)	Number of projects (%)	FDI Value (%)	Dominant Branch of Activity	Dominant FDI Type
Belgrade Region	7,83%	13,93%	Manufacturing Financial and insurance activities Construction/ Real estate activities	Greenfield
Vojvodina	50,72%	72,59%	Manufacturing Agriculture, forestry and fishing Wholesale and retail trade	Greenfield
Šumadija & Western Serbia	18,26%	3,71%	Manufacturing Wholesale and retail trade	Greenfield Brownfield
Southern & Eastern Serbia	23,19%	9,77%	Manufacturing Wholesale and retail trade	Greenfield Brownfield

Source: Authors' calculation based on data from the NALED Foreign Investment Database https://naled.rs/baza-stranih-investicija

The regional distribution of FDI flows directly relates to RQ2, highlighting persistent spatial inequalities across regions. The Vojvodina region attracted the largest share of investment by value (72.59%) and by the number of projects (50.72%), while the Belgrade region had a significant but lower share of investment value (13.93%) despite a relatively small number of projects (7.83%). The regions of Šumadija and Western Serbia (3.71%) and Southern and Eastern Serbia (9.77%) received a significantly smaller share of total investment value despite a higher percentage share in the number of projects (18.26% and 23.19%, respectively).

The data indicate that, in less developed regions, FDI is primarily directed toward sectors with lower productivity, below-average wages, and higher environmental pressure, such as manufacturing and trade. In contrast, investment in the Belgrade region is also allocated to high-productivity, high-wage sectors like finance and professional services. This distribution pattern contributes to the persistence of regional disparities and hinders progress toward SDG 10.

CONCLUSION

The analysis of the sectoral and regional structure of foreign direct investment (FDI) in Serbia for the period from 2015 to 2024 shows that current investment patterns are not fully aligned with the Sustainable Development Goals. A considerable share of FDI is directed toward sectors that, although productive, are marked by low wages or high levels of pollution, while sectors with higher innovation potential and a lower environmental footprint, such as information technologies and professional services, remain underrepresented. This structure offers only partial support for Goal 8 (Decent Work and Economic Growth), while it undermines the achievement of both Goal 9 (Industry, Innovation and Infrastructure) and Goal 12 (Responsible Consumption and Production).

At the regional level, investments are largely concentrated in the more developed areas of the country, while less developed regions continue to receive only a small share in both the number and value of investments. This kind of spatial imbalance limits progress toward Goal 10 (Reduced Inequalities).

The empirical evidence highlights a clear imperative to recalibrate the strategic orientation of foreign direct investment (FDI) in Serbia so as to enhance its alignment with national development priorities. This entails fostering investment in sectors that not only promote technological innovation and competitiveness, but also advance environmental sustainability and contribute to the mitigation of regional disparities.

To align FDI with sustainable development goals, it is necessary to prioritize investments in high-technology, green, and knowledge-based sectors, as they are fundamental for achieving SDGs 9 and 12. Regional disparities (SDG 10) should be addressed through targeted incentives that direct capital toward less developed areas. Environmental standards (SDG 12) must be reinforced, particularly in sectors such as manufacturing, as well as mining and quarrying,

which present significant ecological risks. Strengthening institutional capacity is essential for the proper coordination, monitoring, and direction of FDI in accordance with national sustainability priorities.

This study is subject to certain limitations, primarily due to the use of aggregated data, which limits the ability to conduct a more detailed assessment of the effects of individual investment projects. In addition, the most recent available data on regional distribution cover the period only up to 2022, which somewhat affects the completeness of the analysis. Still, the presented findings provide a useful foundation for further improvements in investment and development policies.

Future research should make use of econometric methods to more precisely examine the effects of FDI on employment, regional development, and environmental sustainability, thus reinforcing the empirical basis for strategic policy decisions.

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