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POTENTIAL FOR SUSTAINABLE INVESTMENTS IN SERBIA: SDG INVESTMENT MAP

Potencijal održivog investiranja u Srbiji – SDG investiciona mapa

Abstract

The Serbia SDG Investor map is created using an established SDG Investor Map Methodology 2.0 – a comprehensive step-by-step UNDP methodology that combines secondary data research with desk analysis, interviews, and discussions with public and private sector stakeholders to verify findings and contribute new insights. The data are analyzed to distill Investment Opportunity Areas (IOAs) and data-backed business models. The findings on the SDG Investor Maps are uploaded to the SDG Investor Platform, allowing the investors to use extensive functionality to search for market intelligence on Serbia's SDG-aligned investment opportunities by filtering on several criteria of particular interest, including sectors, regions, SDGs as well as return profiles, market size and timeframes of investments. Serbia's proposed SDG investment portfolio consists of thirteen Investment Opportunity Areas, which came out as a result of the process of prioritization of the country's sustainable development needs, the existence of supporting country and sectoral policies, and the identification of appropriate business models for investment development. The total IOA pipeline is estimated at more than $8.3 billion in the next five years.

Keywords: *sustainable investments, sustainable development goals (SDGs), investment opportunity areas (IOAs), Serbia*

Sažetak

SDG investiciona mapa u Srbiji kreirana je primenom uspostavljene SDG investicione metodologije 2.0 – sveobuhvatne „korak po korak" UNDP metodologije. Ova sveobuhvatna metodologija kombinuje istraživanje sekundarnih podataka sa analizom izveštaja, planskih dokumenata, intervjuima i diskusijama sa relevantnim zainteresovanim stejkholderima iz javnog i privatnog sektora kako bi se proverila postojeća saznanja i doprinelo novim saznanjima. Podaci se analiziraju kako bi se izdvojila područja investicionih mogućnosti (IOA) i poslovni modeli podržani prethodno prikupljenim podacima. Identifikovana polja investicionih mogućnosti su dostupna na SDG investicionoj platformi, omogućavajući korisnicima da koriste obimne funkcionalnosti za pretragu tržišnih informacija o investicionim prilikama u Srbiji, usklađenim sa SDG. Filtriranje se može vršiti po nekoliko kriterijuma od opšteg interesa, uključujući sektore, regione, kao i profil prinosa, veličinu tržišta i vremenski okvir investicija. Predloženi održivi investicioni portfolio Srbije obuhvata trinaest područja investicionih mogućnosti, koja su proizašla iz procesa prioritizacije održivih razvojnih potreba zemlje, postojanja podržavajućih politika i strategija zemlje i sektora, kao i identifikacije odgovarajućih poslovnih modela za razvoj investicija. Ukupni procenjeni potencijal portfolija IOA iznosi više od 8,3 milijarde dolara.

Ključne reči: *održive investicije, ciljevi održivog razvoja, polja investicionih mogućnosti, Srbija*

Introduction

UN Agenda 2030 defines 17 interconnected global Sustainable Development Goals (SDGs) that address humanist significant challenges today. In Serbia, the Agenda 2030 was adopted in 2016, connected to the country's development strategies and policies, and implemented with the support of the Government, the UNDP, and about 20 agencies, funds, and programs.

The 17 SDGs mandate global, regional, and national entities, including governments and companies, to actively implement solutions for pressing global issues. Companies bear a significant responsibility and must integrate these goals into national economies for effective operationalization. Incorporating SDGs into corporate reporting is essential but complex. Establishing a multidimensional reporting system that combines financial data with assessments of social and environmental risks supports an ESG approach, offering a potential solution to address this challenge [16, pp. 96-98].

To achieve the ambitious SDG Agenda goals, there is a need for substantial global financing. However, even with a broad international commitment to the agenda, there is a substantial investment gap of around $2.5 trillion annually towards developing countries. It is necessary to sharpen investment focus more towards SDG-aligned areas.

In most developing countries, the level of available data and market intelligence about the potential SDG-aligned investments is rather low, which translates to low interest and lower than possible overall private investments.

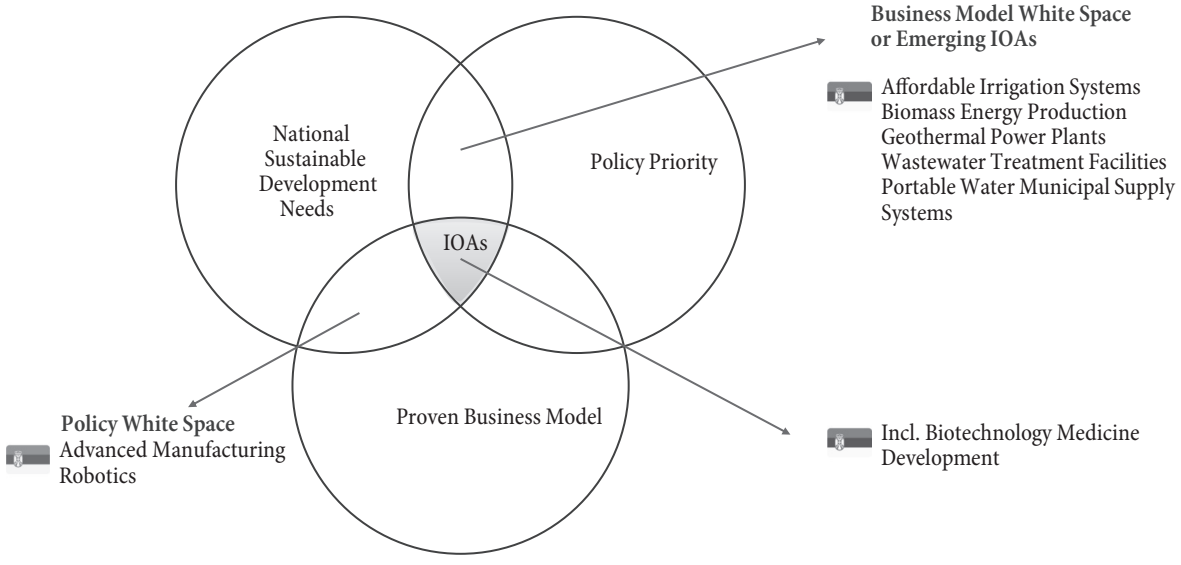
To improve this situation and narrow the financing gap, UN SDG Impact designed an SDG Investor map as a market intelligence tool with the intent to help predominantly private investors and institutions identify investment opportunities and business models in developing countries that advance the SDGs.

For investment potential to qualify as an IOA, certain methodological criteria and conditions must be met:

- The IOA should be appealing to potential private investors, both domestic and foreign, meaning that the investment should be financially attractive or profitable.
- The investment should align with at least one, or several, Sustainable Development Goals (SDGs) of the United Nations.
- The existence of strategic documents at the national and local levels has identified these areas as priorities for investment.
- The presence of proven business cases, such as case studies or business models that are already functioning in practice in Serbia.

In addition to investment opportunities that meet the criteria, there are also identified investment opportunities known as "white spaces" – potential investment fields that may currently not meet all the methodological conditions

Figure 1: Identified SDG investment opportunities through SDG investing maps, emerging IOAs & "white spaces"



Source: Authors' presentation

but deserve attention in terms of updating the Investment map in the proximate future.

According to Figure 1, Biotechnology Medicine Development, for example, meets the above-mentioned criteria and is recognized as an IOA. Advanced Manufacturing Robotics is aligned with SDGs and has proven models in Serbian practice, however, is not recognized in the policy documents and thus can be considered a white space. Geothermal Power Plants are a policy priority but lack explicit business models.

The Serbia SDG Investor Map is created to provide added value for major target groups, investors, and the country as a whole.

For investors, Investor Map:

- provides information about possible SDG-focused private-sector investments or how to align existing investments in support of local SDG priorities for investors and enterprises (both domestic and foreign);
- helps private investors (funds, financiers, corporations), who recognize that sustainable investments have higher financial payoffs in the long term, and who want to increase the SDG-related impacts of their investments to identify bankable investment opportunities and business models that advance the SDGs;
- provides country-level market intelligence, backed by actionable data, on investment opportunities where SDG needs, and market opportunities intersect.

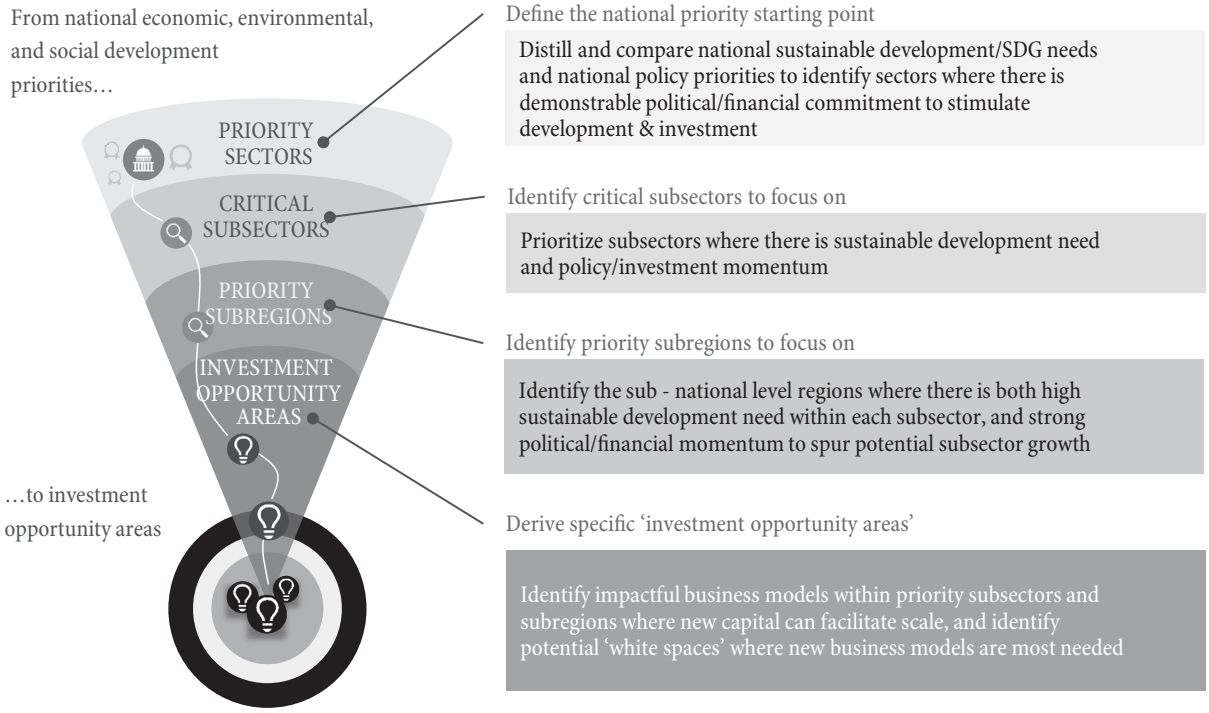
For Serbia benefits are the following:

- Achieving the SDGs requires significant investment, and the current level of investment by the government, development agencies, and other actors is not enough to meet the ambitious targets. The private sector needs to play an instrumental role in closing the SDG financing gap.
- The Map becomes the country's tool for attracting the private sector to increase their investments towards the country's SDGs as well as to focus on marginalized areas and communities.
- The investors and enterprises convenings that will be organized based on the Map findings could help to mobilize new financial resources to realize the SDGs and catalyze local investments.

SDG Investor Map methodology and process

The Serbia SDG Investor Map utilizes the SDG Investor Map Methodology 2.0, designed by UNDP experts. It involves thorough secondary data research, desk analysis, and

Figure 2: Mapping investable solutions: Addressing country-level SDG needs through SDG investor maps



Source: [4]

stakeholder interviews to explore development needs, policy priorities, and market opportunities, ensuring a comprehensive and validated approach. Data undergoes meticulous analysis using the funnel method as illustrated in Figure 2 to identify Investment Opportunity Areas (IOAs) and formulate data-supported business models. The outcomes are synthesized into an Excel template and uploaded to the SDG Investor Platform. This platform empowers investors with extensive functionality, allowing them to explore Serbia's SDG-aligned investment opportunities using filters for sectors, regions, SDGs, return profiles, market size, and investment timeframes.

UNDP SDG IM methodology

Based on the analysis of a vast database of secondary documents and sources – comprising over 170 national strategic documents accepted by the Republic of Serbia and applied in various investment areas – along with numerous interviews with representatives of the government, ministries, local self-governments, and private capital investors, both domestic and foreign, this methodology was applied. The focus was narrowed down to priority sectors, as illustrated in Figure 3, and further refined into sub-sectors. Subsequently, they were filtered geographically by regions or geographic areas within the Republic of Serbia. Ultimately, the core result of the Investor Map, consisting of thirteen Investment Opportunity Areas (IOAs) for potential investors, was finely tuned.

The defined methodology required a detailed focus on each criterion, being highly structured and constituting a validated approach that allows little room for improvisation and subjectivity. Rather, it mandates that every choice and decision be substantiated by the appropriate database, relevant strategic document, and corresponding national strategic priority or stance – backed by the argument of the pertinent stakeholder.

The task was not merely to identify Investment Opportunities, but to match these Areas with the seventeen Sustainable Development Goals based on the SDG Industry Matrix guide. When considering the Food and beverage sector in Figure 4, it is directly connected to SDG 2 Zero Hunger, SDG 3 Good Health, SDG 13 Climate Action, and is not directly associated with SDG 4 Quality Education or SDG 11 Sustainable Cities and Communities. The goal is to prove and demonstrate the linkage between each proposed Investment Opportunity Area (IOA) and a specific Sustainable Development Goal (SDG).

Each IOA is elaborated and described in an Excel format through 20 informational points, such as a detailed description of the business model, a comprehensive showcase of proven examples from Serbian investment practices operating within the specific Investment Opportunity Area, a detailed presentation of market potential, existing competition, regulatory environment, indicative returns on the potential investment, investment horizon from the

Figure 3: SASB'S Sustainable Industry Classification System® (SICS)

Consumer goods	**Food & beverage**	**Renewables & alternative energy**	**Technology & communications**
• Apparel & textiles • Consumer discretionary • Consumer goods retail	• Food [2] • Beverages • Food & beverage retail • Restaurants • Tobacco	• Alternative energy • Forestry & paper	• Technology • Internet media & services • Semiconductors • Telecommunications
Extractives & mineral processing	**Health care**	**Resource transformation**	**Transportation**
• Coal • Construction materials • Metals & mining • Oil & gas	• Biotechnology & pharmaceuticals • Health care retail • Health care providers • Medical technology	• Industrials • Chemicals	• Air transportation • Automobiles • Marine transportation • Land transportation
Financials	**Infrastructure**	**Services**	**Education [1]**
• Capital markets • Corporate & retail banking • Insurance	• Utilities • Infrastructure • Real estate • Waste management	• Media • Hospitality & recreation • Consumer services • Culture	• Formal education • Education infrastructure • Education technology

Source: [4]

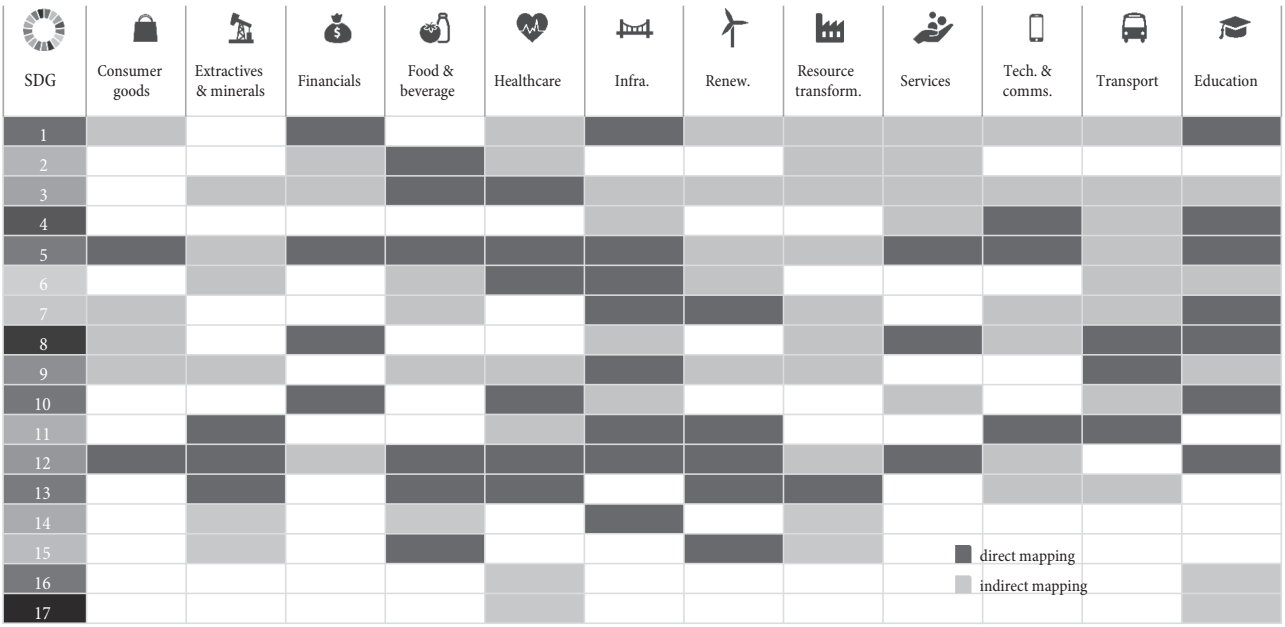
perspective of an individual investor, estimated ticket size or the average investment amount if the investor plans to enter that IOA, and a multitude of other points illustrated in Figure 5.

The data was gathered through discussions with numerous stakeholders, a substantial number of structured and semi-structured interviews, and an extensive document review.

The results of this research have been published on the SDG Investor Platform website, enabling any interested investor from around the world to access this platform and practically obtain all the necessary information regarding potential sustainable investments in Serbia [34].

To secure funding for Serbia's green transition from the EU and other organizations, the program must pinpoint sources of extraordinary growth potential. The strategy comprises impact investments in infrastructure and tradable sectors, emphasizing the adoption of climate-neutral technologies in major industrial sectors like steel, copper, cement, and agriculture. The third pillar involves restructuring the existing industrial base to align with "go green" criteria, especially in energy production and

Figure 4: SDG Industry Matrix



Source: [4]

Figure 5: Foundations of IOAs: 20 actionable data points encompassing business and impact factors

Source: Authors' presentation

land-use industries. Harmonizing industrial policies with core macroeconomic policies and implementing structural adjustments in key sectors like ICT, energy, industrial production, agriculture, and construction is crucial. Finally, a new financing platform using a multitrack approach aims to pool significant funds for these initiatives [6, pp. 23-24]. The SDG Investor Map Methodology highlights priority sectors where the potential IOAs align with the SDGs.

Sectoral prioritization

Based on the applied methodology, the selection has been narrowed down to five priority sectors. These are:

- Food and Beverage
- Renewables and Alternative Energy
- Technology and Communication
- Infrastructure
- Healthcare

Food and Beverage

The contribution of agriculture to Serbia's GDP is between 6% and 7%, traditionally [41]. Serbia possesses an incredible natural potential with 5.06 million hectares of agricultural land, constituting nearly 2/3 of the territory of the Republic of Serbia. Approximately 3.4 million hectares are cultivated in Serbia [19]. In 2022, we had a foreign trade exchange in the agricultural and food product segment close to 8 billion euros, representing a growth of about 20% compared to the year 2021. 25% of the exports, totaling 4.8 billion euros in 2022, consisted of agricultural products related to fruits and vegetables [21]. At this point, there is a quite pronounced potential that still has considerable space for further growth ahead.

Renewables and Alternative Energy

Serbia annually emits 62 million tons of CO_2, which represents that Serbia produces a higher per capita amount of CO_2 than the global average [15]. CO_2 emissions are dominated by the burning of fossil fuels for energy production, and heavy industrial production [32]. Based on the structure of electricity production in Serbia in 2022, 67% of the energy was generated from thermal power plants, 25% from hydropower, and only 3% from alternative energy sources. Within that, solar energy contributed a mere 0.03% to Serbia's energy balance this year, practically negligible. Wind energy has a slightly higher contribution with 500 megawatts of installed capacity. The ratio between the share of electricity production from fossil fuels and low-carbon sources is 70:30 [33]. All previously mentioned shows that there is quite a significant potential for private investments in renewable energy, which unequivocally aligns with SDG goals. The interesting case study overview shows that the application of the principles of the circular economy in energetics could be the foundation for new business models such as the Internet of Energy (IoE) or intelligent transmission smart grid. By applying IoT in the energy sector it could be possible to predict the required amount of electricity, as well as the amounts that can be produced. The technologies of a so-called Industry 5.0 could be applied in other areas and sectors such as smart agriculture, smart transport, and cities, quality of life and health, protection of critical infrastructure, and cybersecurity, all the way to a smart public sector [14].

Technology and Communication

Exports of the IT sector in 2022 amounted to around 2.7 billion euros, representing an impressive growth of 45% in 2022 compared to the previous year. This export resulted in a trade surplus of a remarkable 2 billion euros in 2022, with imports totaling 700 million euros [26]. Serbia's ICT sector has become a key driver of economic growth, contributing 10% to the GDP and ranking among the top four export sectors, alongside steel, automotive, and agriculture. With over 3,354 firms and 47,609 employees as of Q1 2022, the sector is marked by the presence of prominent U.S. companies. Serbian tech companies excel in software development for various industries, run call centers, and engage in diverse tech services, showcasing the sector's versatility and significant economic impact [12].

Infrastructure

The aim of the high-level policy plans and strategies of the Republic of Serbia is better accessibility of traffic infrastructural, social and communal services, and integrated infrastructure following crucial activities based

on sustainability, circular development, and mitigating the impact of climate challenges. This aim entails investment not only in road but also in rail, aviation, and port infrastructure. The previous investments in transportation infrastructure have not only reduced travel times and greenhouse gas emissions but also attracted a greater number of investors to these locations [11]. The foregoing unequivocally signals the existing potential, poised to persist into the future. Anticipating continued growth and development, this trajectory augurs well for sustained prospects.

Healthcare

It is known that the Republic of Serbia ranks among the countries with an older population globally, with an average age between 43 and 44 years, characterized by an inverted age pyramid and a predominance of chronic non-communicable diseases that absorb a significant portion of the public health budget [42], [40]. The current health expenditure by financing schemes in the Republic of Serbia is close to 6.5 billion dollars constituting approximately 10% of the GDP of the Republic of Serbia spent on healthcare [48]. The allocation of public funds to healthcare, as a percentage of the GDP, exceeds the average for South-Eastern European (SEE) countries, highlighting the potential for improvements in the healthcare system. The prevalence of significant and impoverishing out-of-pocket (OOP) payments underscores substantial shortcomings in actual health coverage [47].

Regional prioritization

The methodological approach in research and building SDG Investor Maps and IOAs, besides the sectoral dimension, envisioned a regional dimension consideration as well.

The Republic of Serbia Constitution adopted in 2006 recognizes five large statistical regions:

- Vojvodina Autonomous Province
- Belgrade Region
- Šumadija and Western Serbia
- Southern and Eastern Serbia
- Kosovo and Metohija Autonomous Province*

*Note: The Autonomous Province of Kosovo and Metohija has been administered by UNMIK since 1999 after the Kosovo War. Despite declaring independence in 2008, only part of the international community recognizes it. Due to the absence of access to necessary data, Kosovo and Metohija are not included in Serbia's SDG Investor Map.

Serbia's SDG investment portfolio

Within this framework, the portfolio of IOA in Serbia has been defined per business units, as shown in Table 1.

The potential investment volume in the 13 defined Investment Opportunity Areas (IOAs) over the next 5 years

Table 1: Serbia SDG investment portfolio

No.	Investment Opportunity Area (IOA)	Sector	Estimated Investment Potential in 5 years
IOA 1	Fresh Fruit and Vegetable Primary Production	Food & Beverage	< USD 50 million
IOA 2	Organic Agricultural Production	Food & Beverage	USD 50 million - USD 100 million
IOA 3	Decentralized Solar Energy Generation	Renewables & Alternative Energy	> USD 1 billion
IOA 4	Wind Farms	Renewables & Alternative Energy	> USD 1 billion
IOA 5	High-tech for Agriculture Production	Technology & Communications	< USD 50 million
IOA 6	Sophisticated Software Solutions	Technology & Communications	< USD 50 million
IOA 7	Waste Management Services	Infrastructure	USD 100 million - USD 1 billion
IOA 8	Port Infrastructure	Infrastructure	USD 100 million - USD 1 billion
IOA 9	Energy-Efficient Residential Housing	Infrastructure/Real Estate	USD 100 million - USD 1 billion
IOA 10	Hospitality Facilities	Infrastructure/Hospitality	USD 100 million - USD 1 billion
IOA 11	Medicine Production and Delivery	Healthcare	> USD 1 billion
IOA 12	Digital Healthcare Solutions and Specialized Medical Services	Healthcare	< USD 50 million
IOA 13	Biotechnology Development	Healthcare	USD 100 million – USD 1 billion
		Total IOA pipeline estimated	**USD 8.30 billion or more**

Source: Author

is $8.3 billion. It's crucial to recognize the multiplicative impact of these investments, considering indirect effects on related businesses in value chains. Each dollar invested in these IOAs has the potential to generate $2.4 in investments in related businesses, leading to a maximum investment volume exceeding $20 billion. In terms of employment, each employee in these IOAs indirectly supports an additional 2.8 jobs in related sectors. Additionally, every $1 contribution to the GDP of these IOAs adds $2.3 to the economy of the Republic of Serbia.

Apart from the 13 identified IOAs, there are "Emerging IOAs" aligning with Sustainable Development Goals (SDGs) but not meeting all criteria. These include Advanced Manufacturing Robotics, Affordable Irrigation Systems, Greenhouse Agricultural Production, Livestock Production and Processing, Fruit and Vegetable Processing into Juices, Biomass Energy Production, Geothermal Power Plants, Wastewater Treatment Facilities, and Water Supply Systems for Drinking Water.

IOA close-ups

IOA 1 Fresh Fruit and Vegetable Primary Production

Table 2: Key points of the IOA 1

Business Model: Build and operate the integrated fruit production facility with inputs such as land, CAPEX for production machinery, labor, and seeds and fertilizers.			**Impact Thesis**: Support sustainable farming, promote high-value markets, reduce undernourishment, and ensure food security.
Indicative Return	**Estimated Market Size**	**Ticket Size**	**Timeframe**
10-15%	< USD 50 mil.	USD 1-10 mil.	5-10 years

Source: Author

A large number of practical cases and successful business models in the fruit and vegetable sector in the Republic of Serbia have been analyzed. One notable example is the Iceberg Salat Center Company, which collaborates with McDonald's. Other successful entities include Agros doo, Atos Fructum from Mala Remeta, which, through cooperation with Južni Banat, and the cooperative with Panonian Apples, exports apples to over 20 countries worldwide. Additionally, well-known successful companies in the fruit and vegetable sector include MK Agrar, Delta Agrar, and numerous others already engaged in successful fruit and vegetable cultivation today. An innovative approach in vegetable production is vertical farming using automated containers with sensors. This method enables up to 10 production cycles annually for green vegetables like arugula and lettuce, demonstrating high efficiency and year-round viability. The estimated market size potential in the next 5 to 7 years is less than $50 million, with an estimated ticket size per hectare ranging between $10,000 and $60,000 [39]. The investment segment demonstrated a Compound Annual Growth Rate (CAGR) of 5-10% in recent years, with an estimated average return on equity (ROE) between 10-15% [3]. What has also been observed in recent years is faster growth in fruit orchards compared to vegetable cultivation in the Republic of Serbia, especially in berries such as blueberries, blackberries, raspberries, etc. [35]. There is a sense that there is room for accelerated investment growth in the vegetable segment, particularly under greenhouses and hothouses. Out of the 92,000 hectares dedicated to vegetables in Serbia, a substantial portion, 30,000 hectares, is allocated to potatoes, followed by vegetables with significantly smaller shares of the total area [20], [36]. Due to its natural potential, the Republic of Serbia has the potential to become a net exporter in the vegetable segment.

IOA 2 Organic Agricultural Production

Table 3: Key points of the IOA 2

Business Model: Produce primary and processed high-valued organic goods which entail highly fertile soil land surface, organic production technology, machinery, and workforce, all supported by long-term contracts with buyers with the fulfillment of the conditions prescribed by the Law on Organic Production of the Republic of Serbia, Codex Alimentarius and EU regulations on control and certification in organic production, processing, labeling, storage, transportation, circulation, import and export of organic products. The result is high-quality organic products of plant and animal origin for domestic use and export.			**Impact Thesis**: Ensure food security while promoting healthy soil and benefiting human and environmental well-being.
Indicative Return	**Estimated Market Size**	**Ticket Size**	**Timeframe**
5-10%	USD 50-100 mil.	USD 0.5-1 mil.	More than 10 years

Source: Author

In this IOA, the focus is on organic plant and animal agricultural production. The higher value-added content of organic products commands higher prices, offsetting increased production costs. Serbia's Law on Organic Production, in force since 2011, regulates various aspects, aligning with EU regulations for control and certification. In the Republic of Serbia, the independent, non-governmental, and non-profit civil organization "Serbia Organika" was founded in 2009. "Serbia Organika" is a member of international organizations such as IFOAM (International Federation of Organic Agriculture Movements), AVALON (Foundation for the Advancement of Sustainable Rural Development in Central and Eastern Europe), ISOFAR (International Society of Organic Agriculture Research), and the Danube Soya Association [38]. According to the FAOSTAT database, in 2009 4,900 ha of cropland area was under organic agriculture, and in 2020 it was 17,453 ha, which is 3.5 times more compared to 2009 [7]. Based on all the aforementioned, the potential for growth remains pronounced. There is immense potential, illustrated by successful examples such as the Curug organic milk farm with 2,000 cows, including 1,000 milking cows, and plant production on 2,000 hectares [8]. Another noteworthy case is the Medino company in Krnjevo, producing organic honey, with 60% of the honey exported to international markets [18]. The current market size is relatively small, approximately 40 million euros annually, but there is significant potential for at least 25% to 30% annual growth. The ticket size depends on the specific crop or type of poultry being raised; however, it is estimated to be from $0.5 to $1 million [37].

IOA 3 Decentralized Solar Energy Generation

The significant focus is on renewable energy, specifically solar and wind farms in promising locations. Challenges include securing a power grid connection and financing. The main funding source for large projects is conventional financing through banks, with an equity-debt ratio of 30:70. Selling electricity at auctions introduces pricing unpredictability. A thorough project mapped Serbia's solar potential, identifying almost 100 optimal locations for solar power plants based on energy potential and minimal spatial conflicts to minimize environmental impact. The study produced a map overlaying solar development and impact potential, estimating an installed capacity of 10 MW for each location. It is estimated that 200,000 – or 10% – of Serbian households could be powered from the 100 selected sites, saving one million tons per year in carbon emissions [2]. Simplified, if we multiply 100 potential power plants by 10 megawatts (which is approximately the capacity of the solar power plant that opened in April in Lapovo, funded by private capital from MT-Komeks), we arrive at a potential of 1 gigawatt in solar energy. This is slightly below the declared goal in the Plan of the Ministry of Mining and Energy for 2030, where around 1.4 gigawatts of solar power are projected by that time [23]. Several successful case studies or business models have already been established. One of them is the already mentioned solar power plant in Lapovo with a capacity of 9.9 megawatts, with an investment of around 9 million euros [25]. Another planned project by the MK Group in collaboration with the Italian company Fintel Energia is the agrosolar project in Kula with a capacity of 660 megawatts on 770 hectares of agricultural land [24]. Some might argue that this conflicts with SDGs since the power plant is built on high-quality agricultural land, but it involves an innovative agrosolar project that enables a win-win situation. The solar panels are installed at a certain height, and underneath, crops are planned to be cultivated, providing a higher yield in the shade compared to direct sunlight. This is a typical example of how it's possible to meet the investor's need for returns without compromising the natural environment.

Table 4: Key points of the IOA 3

Business Model: Set up and operate solar plants to generate revenue by selling electricity produced from solar panels. The inputs required include solar panels, inverters, mounting structures, electrical equipment, land, and sunlight. Target markets are utility companies, municipalities, and commercial businesses looking to reduce their carbon footprint and energy costs. The amount of power that a power plant can produce depends on its size, technology, and energy source, and can range from a few kW to a few dozen MW.			**Impact Thesis**: Support energy security, reduce greenhouse gas emissions, and make energy affordable.
Indicative Return	**Estimated Market Size**	**Ticket Size**	**Timeframe**
15-20%	> USD 1 bil.	> USD 10 mil.	more than 10 years

Source: Author

IOA 4 Wind Farms

Table 5: Key points of the IOA 4

Business Model: Construct and operate wind farms to generate revenue by selling electricity through long-term Purchase Power Agreements, covering the expenses and potentially selling renewable energy credits. Distributors are obliged to purchase all the energy produced from renewable sources. Wind power plants require supplying equipment, transportation, risk mitigation and planning know-how, location with frequent and robust wind, energy license, use, and construction permit.			**Impact Thesis**: Reduce harmful energy production emissions, increase energy security, and replace fossil fuels.
Indicative Return	**Estimated Market Size**	**Ticket Size**	**Timeframe**
5-10%	> USD 1 bil.	> USD 10 mil.	more than 10 years

Source: Author

The interconnected theme in the energy sector related to the previously mentioned is wind energy. What is distinctive about wind energy is its current generation of 3% of total Serbia's electricity generation. Presently, the capacity utilization of wind in 2021 was 31% [13]. Most wind parks are predominantly located in the South Banat administrative district, namely in Kovacica, Vrsac, Alibunar, and others. As mentioned earlier, Banat has been chosen as an ideal region for wind farm development due to its wind power strength and the absence of adverse environmental impact, given that there is no need to clear forests, migratory birds do not traverse the area, and agricultural land is utilized almost to its full extent even before the construction of wind parks [10]. A notable example is Cibuk 1 in Vladimirovci, with a capacity of 158 megawatts. It stands as the largest wind park in the Western Balkans, located just 1 km from the Deliblatska Pescara special nature reserve. Featuring 57 turbines, this project received an investment exceeding $300 million. The investor is the company Masdar from Abu Dhabi. Out of the $300 million, $215 million was provided as support by the IFC and EBRD [17]. Estimated metrics of this IOA show a similar potential as in Decentralized Solar Energy Generation.

IOA 5 Smart Agricultural Technologies

The business model can be highly diverse. It involves the IOA, which is broadly structured. Good examples from practice in our country include the BioSense Institute, which significantly focuses on the importance of analytics,

Table 6: Key points of the IOA 5

Business Model: Develop and deliver high-tech solutions to help farmers increase yields, reduce costs, and manage their operations more effectively. Such smart agricultural technologies that are used to improve the efficiency and productivity of farming operations include precision farming (using data and analytics to optimize farming operations), vertical farming (growing crops in vertically stacked layers using controlled environmental conditions, such as temperature, light, and nutrients, to optimize yields and minimize resource usage), livestock monitoring (using sensors and data analytics to monitor the health and well-being of livestock), and crop genetics (using genetic engineering to develop crops that are more resilient to pests and diseases, have improved yields, and can grow in challenging environmental conditions). The service can be marketed both in the domestic and export markets.			**Impact Thesis**: Improve crop yields and sustainability, create jobs, enhance resource efficiency, and inclusive access to technology.
Indicative Return	**Estimated Market Size**	**Ticket Size**	**Timeframe**
10-15%	< USD 50 mil.	USD 0.5-1 mil.	5-10 years

Source: Author

sensors, and nanotechnologies in smart agricultural production. This approach enhances yields, improves the quality of agricultural products, and reduces the need for human labor in certain segments. The potential extends to vertical farms, animal monitoring for health parameters, and tracking livestock performance through appropriate databases. In addition to the BioSense Institute, other practically successful examples include Delta Agrar, which employs smart agriculture techniques such as drone-based plant feeding, smart irrigation, and orchard nutrition. Another notable company is Nestle, with its Agrivi360 system and regenerative agriculture practices, representing a significant leap forward in agriculture for the company. The payback period for these investments is between 5 to 10 years with an annual return of investments from 10 to 15%.

IOA 6 Sophisticated Software Solutions

The business model is broadly defined as in the previous IOA. The defined field of investment can encompass software development, cloud computing, data analytics, business intelligence (BI), Internet of Things (IoT), the increasingly crucial segment of cybersecurity, gaming, web and mobile application development, and many other sectors. In the Republic of Serbia, numerous success stories are widely recognized, including companies such

Table 7: Key points of the IOA 6

Business Model: Develop, sell, and maintain software products and services to improve business operations, such as custom software development, cloud computing services, data analytics and business intelligence, and cybersecurity services. Customers receive delivery, implementation, training, and support. Software services developed in Serbia are mainly exported. Sophisticated software solutions can target a wide range of industries, including healthcare, finance, manufacturing, retail, education, transportation, and logistics.			**Impact Thesis**: Increase efficiency and productivity, improve decision-making, create job opportunities, and provide access to information and knowledge.
Indicative Return	**Estimated Market Size**	**Ticket Size**	**Timeframe**
>25%	< USD 50 mil.	> USD 10 mil.	less than 5 years

Source: Author

as Endava, Microsoft, Comtrade, Nordeus, Wega, Levi9, and many others. What is intriguing about this IOA is its rapid growth, with exports increasing at a rate of 40-50% annually. The expected return rate for investors, albeit with increased risk, is over 25%, and in some cases, surpassing 30% on an annual basis. The average time horizon for the development of a software solution is less than 3 to 5 years.

IOA 7 Waste Management

Table 8: Key points of the IOA 7

Business Model: Provide waste management services, such as collection, transportation, and disposal of waste, and provide new waste collection, sorting, and recycling plants and equipment through Public-Private Partnerships (PPPs). The collected waste could be reused as a substitute for raw materials or in the process of waste-to-energy solutions. The government provides regulatory oversight and contracts, while the private company is responsible for the day-to-day operations of the waste management system and provides a source of funding for capital investments. Investors must fulfill the permits prescribed by the Environmental Protection Ministry.			**Impact Thesis**: Reduce waste and illegal landfills, eliminate pollution, and soil contamination, and provide better protection of the environment and public health.
Indicative Return	**Estimated Market Size**	**Ticket Size**	**Timeframe**
5-10%	USD 100 mil. - 1 bil.	> USD 10 mil.	more than 10 years

Source: Author

Serbia currently has around 140 landfills, approximately 3,500 non-sanitary and illegal dumpsites, and 12 sanitary landfills. One notable example is the Vinca landfill, a highly successful sanitary landfill that absorbs about 350 thousand tons of municipal waste annually. When looking at a comparative perspective, Serbia generates 2.9 million tons of municipal waste per year, roughly equivalent to filling 58 of the "Beogradjanka" skyscraper with garbage from bottom to top annually. Only 30% of this waste is transported to sanitary landfills, while the remaining 70% ends up in non-sanitary, illegal dumpsites, and landfills [22]. Despite significant efforts in this sector, there is still considerable room for investment which is shown through the project "Clean Serbia". Environmental issues associated with non-sanitary landfills include fires that release toxic substances such as dioxins and furans, groundwater pollution, wind dispersion of waste, facilitated by birds, and many other problems. Around 50% of municipal waste is biodegradable, presenting a valuable source for compost or biogas. While waste management traditionally involves collection and disposal, efforts are being made to reduce waste, promote reuse, recycling, and explore energy recovery. Energy recovery from municipal waste, converted into RDF and SRF, holds significant investment potential for use in various industries. The resulting ash from incineration is generally non-toxic, making it a promising commercial product.

IOA 8 Port Infrastructure

Table 9: Key points of the IOA 8

Business Model: Finance, design, construct, and operate river port infrastructure through a Public-Private Partnership (PPP), targeting both goods and people. The government owns the port land and assets but grants a concession to a private sector entity to finance, construct, and operate the port facility for a specified period. The private sector entity finances the project, including construction costs, and operates the port facility for the concession period. In return, the private sector entity receives a share of the revenue generated by the port, such as through port fees or lease payments.			**Impact Thesis**: Improve transportation of goods and people with lower environmental impact, reduce logistical inefficiencies, and boost economic productivity.
Indicative Return	**Estimated Market Size**	**Ticket Size**	**Timeframe**
< 5%	USD 100 mil. – 1 bil.	> USD 10 mil.	more than 10 years

Source: Author

This IOA is recognized as having substantial investment potential. The Port Management Agency has played a significant role in the development of port infrastructure in the previous period. The "Zaplovi Srbijom" project, initiated by the Port Management Agency, aims to build infrastructure for passenger and nautical traffic, including

marinas and international passenger terminals, as well as the development of line traffic and canal tourism [29]. An interesting fact is that the total length of rivers in the Republic of Serbia is 66 thousand kilometers. The Danube River alone, which flows through Serbia, covers a length of 588 kilometers. This river serves as the main corridor, currently transporting 80-90% of the cargo by water, and is known as Corridor 7 (Danube Corridor). Serbia has 76 rivers with a length exceeding 50 kilometers. For example, the Velika and Zapadna Morava rivers have a combined length of 500 kilometers, indicating enormous natural potential. Currently, there are 9 ports on the Danube in Serbia, facilitating international maritime traffic [27], [28]. Much has been achieved in terms of licensing operators and investing in ports and marinas. One notable upcoming project is the Prahovo port, where Elixir Group, in collaboration with the state, plans to invest around 35 million dollars. The goal is to triple the port's capacity by 2030. Another successful example is the DP World acquisition of the Novi Sad port for 30 million euros.

IOA 9 Energy-Efficient Residential Housing

Table 10: Key points of the IOA 9

Business Model: Build energy-efficient residential housing and offer custom home design and construction services, utilizing advanced building materials and technologies such as insulated concrete forms (ICFs), geothermal heating and cooling systems, and energy-efficient windows and appliances. Constructing energy-efficient residential housing requires technology, permits, workforce, capital, know-how, land, and sustainable building materials with a high focus on insulation, windows, lighting, sourcing energy, heating, and cooling for energy efficiency. The business model can appeal to clients with environmental awareness who are looking for cost-effective housing solutions in Serbia in semi-urban areas.			**Impact Thesis**: Improve energy efficiency and limit environmental impacts of buildings.
Indicative Return	**Estimated Market Size**	**Ticket Size**	**Timeframe**
15-20%	> USD 1 bil.	> USD 10 mil.	5-10 years

Source: Author

Investment activity in the Real Estate sector in Serbia is currently in full swing, with a slight slowdown in the last few months. Interestingly, this surge in construction began around 2015, following several decades of relatively slow residential development from 1985 to 2015. Property prices increased by an average of 18% in Serbia in 2022 compared to 2021 [44]. There is a clear trend of rising property prices, now slowing due to saturated demand, higher mortgage rates, and other factors, but it still represents investment potential. Encouragingly, there is an increasing focus on the quality of construction in terms of energy efficiency. Both investors and property buyers are paying attention to insulation, materials used, heating and cooling systems, and energy sources in residential buildings. On prime locations, 70% of apartments are sold before the foundation is completed, often financed by advance payments from buyers. Cash purchases constitute 85%, while only 15% are financed through mortgages. It's worth noting that, due to rising interest rates, the production of residential loans has more than halved in the first five months of 2023. Interest is not limited to urban cores; the post-COVID-19 pandemic period has seen activation in other locations near major cities, such as Fruska Gora, Kosmaj, and projects like Solar Valley near the city of Novi Sad. The ticket size or investment package for a residential complex or condominium of around 20,000 square meters is between 15 and 20 million dollars.

IOA 10 Hospitality Facilities

Table 11: Key points of the IOA 10

Business Model: Establish and operate hospitality facilities for accommodations using local value chains and local cultures and heritage in areas such as preselected cities, spa areas, and mountains. That entails capital, land, building permits, know-how, technology, workforce, and experienced staff. If it's a built-in protected area, it needs a permit for construction. Serbia has 28 spa regions and 19 climate areas suitable for investment.			**Impact Thesis**: Promote economic growth and job creation while prioritizing diversity, local cultures and heritage, and equality.
Indicative Return	**Estimated Market Size**	**Ticket Size**	**Timeframe**
5-10%	USD 100 mil. - 1 bil.	> USD 10 mil.	more than 10 years

Source: Author

This IOA is focused on investment in hotel capacity. The investment in hotel capacity implies that certain conditions must be met in terms of sustainable tourism development. The main objectives of sustainable tourism development are that hotels in Serbia operate following green procurement principles, and are conscious and ready to improve their business operations to support green procurement, eco-labeling, responsible economy,

and sustainable development [46, p. 451]. In Serbia, particularly in Belgrade, where the number of hotels has more than doubled in the last 5 years, yet there is still a shortage of around 2,500 rooms. This is particularly relevant with upcoming events like Expo 2027 and a significant expected influx of tourists. The city has hosted major sports events, business conferences, political gatherings, and more. Despite the recent growth in hotels, there is still a deficiency in 4 and 5-star hotels. In 2022, Serbia recorded 12.2 million overnight stays, with 3.2 million in Belgrade alone, including 2.7 million stays by foreign tourists [43]. The estimated total foreign exchange income from tourism in 2022 was around 2.2 billion euros [49]. Three potential focal points for new hotel construction in Serbia are city centers, exemplified by the Hilton Hotel investment worth 70 million dollars with 240 rooms. Spa tourism is another area of interest, with 28 spa regions in Serbia showing potential for hotel development [5]. A notable example is the Vranjska Banja, where Marriott plans to build two hotels, one with 4 stars and the other with 5 stars, with a total investment of around 90 million euros. The third aspect is mountainous areas, with examples including the construction of the Ramonda Hotel on Rtanj, as well as numerous hotels on Kopaonik and Zlatibor. Vranjska Banja stands out due to its hot springs with a temperature exceeding 94 degrees Celsius and a source capacity of over 110 liters per second, representing significant potential for development [45]. The future of the hotel industry hinges on adopting sustainable business practices. The key recommendation is to learn from successful examples of sustainable hotel management, emphasizing the promotion of quality to positively impact business results, as well as the broader environment and community's economic and social factors [31, p. 447].

IOA 11 Medicine Production and Delivery

The majority of medical devices are imported into the Republic of Serbia, and there is potential to substitute this import with domestic production, whether financed by domestic or foreign capital. Interestingly, the total market potential for drugs annually in the Republic of Serbia is around 1.5 billion euros [1]. This represents a substantial market, partially dominated by domestic companies such as Hemofarm, Stada, Galenika, Zdravlje Actavis, and others. Hemofarm is an exemplary case of collaboration with the German company Stada, with an investment of up to 150 million euros over the past 15 years in production and R&D capacities. Galenika received an investment of 35 million euros, while Pharmaswiss in Zemun had a factory built in 2013 with an investment of 30 million euros, and so forth [30]. There has been a sequence of significant investments in the pharmaceutical production sector in recent years, indicating the untapped potential in this industry.

Table 12: Key points of the IOA 11

Business Model: Build and operate production plants and laboratories for medicines for non-communicable diseases (cardiovascular diseases, cancer, chronic respiratory diseases, diabetes, obesity, etc.), vitamins, and supplements. Develop complementary delivery mechanisms directly to customers, using various methods such as online ordering, mobile apps, or delivery services. Needed inputs include research and development, production facilities, and a broad knowledge base of researchers and labor. In addition, companies often rely on patents and other forms of intellectual property and must comply with strict regulatory requirements governing their products' development, testing, and marketing. In Serbia, public health insurance is mandatory and is provided by the National Health Insurance Fund. The fund covers the cost of medical services, including doctor visits, hospitalization, diagnostic tests, and medication. Private health insurance is also available in Serbia, but it is not mandatory, and the coverage varies depending on the policy. Some medications may not be covered by public health insurance in Serbia, particularly newer or more expensive drugs. In such cases, patients may need to pay for the medication out of pocket or seek alternative treatments. However, the government is working to expand the list of drugs covered by public health insurance to ensure that everyone has access to essential medication.			**Impact Thesis**: Increase accessibility of medicines and improve healthcare situations, especially for marginalized communities.
Indicative Return	**Estimated Market Size**	**Ticket Size**	**Timeframe**
> 20%	> USD 1 bil.	> USD 10 mil.	more than 10 years

Source: Author

IOA 12 Digital Healthcare Solutions and Specialized Medical Services

Although it may seem like a new field, it has actually produced numerous innovations in the recent past. This includes telemedicine, which involves monitoring the health parameters of patients remotely. An excellent example is

Table 13: Key points of the IOA 12

Business Model: Develop and deliver digital healthcare solutions, such as telemedicine, patient portals, mobile health, and electronic health records to Serbia's rural areas, the older population, young people needing remote assistance, and patients with specific conditions and requiring specialized medical services.			**Impact Thesis**: Improve healthcare service delivery overall and enhance access to healthcare solutions for underserved areas.
Indicative Return	**Estimated Market Size**	**Ticket Size**	**Timeframe**
> 25%	< USD 50 mil.	USD 0.5 - 1 mil.	less than 5 years

Source: Author

the case of HTEC, a company that has developed a device for remote monitoring of arrhythmias or heart function. In this scenario, doctors automatically receive data, allowing for rapid response and potentially saving lives in the case of a cardiac event. Another notable example is Neuroblast, a company that monitors the neurological condition of patients remotely. There are also mobile applications and expert portals for patients, such as Doctor Care Anywhere developed by Vega IT company. Devices for self-evaluation are also available, such as Photofinder, a company that can assist with self-dermoscopy, enabling individuals to perform a preliminary self-assessment of their moles. If the application indicates a risk of melanoma, it is crucial to consult a doctor for timely intervention. There is a vast number of innovations in artificial intelligence in medicine, remote surgeries, personalized medicine based on the "treat to target" principle, and many other advancements.

IOA 13 Biotechnology Development

Biotechnology medicine is recognized as an immense potential and a strategic priority for the Republic of Serbia, emphasized multiple times by both the government and the Ministry of Science, what is definitively certain in 2023 is the commencement of the construction of the Bio4 Campus, with a projected investment of 300 million euros for the initial phase. The Bio4 Campus is grounded in four pillars – biomedicine, biotechnology, bioinformatics, and biodiversity. What holds enormous potential is the application of biotechnology in agriculture, medicine, and the food industry. For instance, in medicine, there is a globally remarkable growth in cellular and gene therapies, genome sequencing, R&D for entirely innovative drugs for chronic and lifestyle diseases, regenerative medicine, and

Table 14: Key points of the IOA 13

Business Model: Build and operate production plants and laboratories in the relevant areas, such as bio-manufacturing, bioeconomy (biotechnology plus biomanufacturing), clinical trials, personalized medicines (diagnostics and prognostics), artificial intelligence in medical development and health care, and secondary data usage for research and development (R&D) and similar. Biotechnology products can be produced from the areas such as regenerative medicine, cell and gene therapy, advanced healthcare through genome sequencing, rapid and precise development and manufacturing of medicine and vaccines. The business model is based on strong Government cooperation with private sector to create a world-class regulatory environment for development of knowledge-based industries. Serbia changed dozens of laws on various topics, including e-commerce, immigration, intellectual property protection, corporate law and introducing a new law on digital assets. Serbia also introduced a wide range of very generous tax incentives, including so called IP Box, accelerated R&D deduction, lower tax and social contributions for employing repatriates and foreigners, for people employed in R&D and for employing young people, as well as tax credit for investing in a startup, which the private sector can take advantage of.			**Impact Thesis**: Support the development of life-saving drugs and therapies and medical research advancements, as well as create job opportunities and economic growth.
Indicative Return	**Estimated Market Size**	**Ticket Size**	**Timeframe**
> 25%	USD 100 mil. – 1 bil.	USD 1 - 10 mil.	5-10 years

Source: Author

personalized medicine, i.e., creating personalized drugs for each patient. The projected yield from these investments is well above 25% annually, but a crucial question arises regarding the protection of intellectual property, specifically expertise in the regulatory acceptance of drugs or therapies.

Conclusion

A typical stereotype in the business world is that sustainable investments are not bankable. This paper aimed to show that there are many investment opportunity areas in Serbia that can reconcile seemingly contradictory criteria: profitability, proven business cases, recognized by national strategic documents as economic priorities, and aligned with SDGs.

The SDG Investor Platform project emerges as a pivotal force in propelling sustainable development in the Republic of Serbia. By facilitating partnerships between private investors and projects aligned with the United Nations' Sustainable Development Goals, the platform not

only attracts crucial investment but also lays the foundation for transformative change. As Serbia strides towards a more sustainable and inclusive future, the SDG map's role in promoting environmental, social, and governance (ESG) principles becomes instrumental. Through the collaboration fostered by this initiative, Serbia is poised to achieve significant progress in addressing global challenges, contributing not only to the nation's prosperity but also to the shared well-being of the global community. A green economy can also be observed from the perspective of Porter's Diamond Model of national competitiveness. As such, a green economy creates a climate for gaining a competitive advantage, which is crucial in global economic flows. Likewise, all characteristics and attributes of the green economy confirm its potential as the carrier of long-term sustainable economic development [9, pp. 416-417].

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