

## LINKS AND SYNERGIES OF SUSTAINABLE DEVELOPMENT GOALS

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### **Abstract**

*Sustainable development has been the most claimed and debated subject of concern, for about three decades. The Sustainable Development Goals (SDGs) commitments of the Agenda 2030 flowed from a higher emergency, importance and priority of environmental, economic and social issues that have marked the entire world in the last years (financial and economic crisis, worsening effects of the global warming and climate change etc.). The objective of this research paper is a theoretical-methodological grounding and analysis of the objectives and policies required for the progress of the SDG (Sustainable Development Goals), in the transition to a greener and sustainable economy in the European Union and in Romania. The methodology is based on the analysis and highlighting of the most significant links and synergies that exist and act between the SDGs, stemming from the trinomial character of the sustainable development concept, with its (environmental, economic, social) pillars. Moreover, the inter-related and dynamic character of the SDGs is a topic of permanent concern for both the academics and the policy makers, since new international challenges or conflicts may always arise and jeopardise the prospects of sustainable development. There are some conceptual analyses based on literature review and practical examples on monitoring recent progress towards the SDGs in the European Union and in Romania.*

**Keywords:** sustainable development, Sustainable Development Goals (SDGs), link, synergy, progress

**JEL classification:** Q01, Q56, Q58

### **1. Introduction and context of the study**

Since 1992, the scientific and political concerns for the sustainable development have been always in the spotlight of national, regional and global debates. All the governments and significant organizations have sooner or later realized that there must be maintained a dynamic synergy between the natural environment and the economic, social, and technological development.

Lately, the Sustainable Development Goals (SDGs) commitments, assumed within the Agenda 2030 for Sustainable Development, have been issued due to the higher and higher emergency, importance and priority of environmental and climate as well as economic and social issues for the fulfilment of mid and long-term sustainable development objectives.

The 2030 Agenda was adopted at the United Nations Sustainable Development Summit through UN General Assembly resolution A/RES/70/1 [17]; the European Council has endorsed this Agenda in the strategic document “A Sustainable European Future: The EU Response to the 2030 Agenda for Sustainable Development” on 20 June 2017 [3].

Consequently, as a member state of the United Nations (UN) and of the European Union (EU), Romania has adopted the 2030 Agenda and its 17 Sustainable Development Goals.

The present paper, part of a more extended undergoing study, aims to contribute to a theoretical-methodological grounding and analysis of the objectives and policies required for the progress of the SDG (Sustainable Development Goals), as well as for the transition to a greener and more sustainable economy in the European Union and in Romania.

## 2. Background concepts and issues of the Sustainable Development Goals

The last about five years have offered favourable conditions for affirming sustainable development worldwide, such as Sustainable Development Goals (SDGs) and the Paris Agreement on Climate Change, signed in 2015 and the late 2016 [2].

To date, the path of development for a modern, efficient and equitable society and economy requires all the countries to adopt and further invest according to the SDGs.



**Figure no.1: The UN Sustainable Development Goals**

Source: [16].

According to (UNEP, 2015) the SDGs (Figure no.1) have been specifically formulated, based on four main principles [16]:

1. Human wellbeing is intrinsically linked to the health of natural ecosystems;
2. Global environmental challenges not only affect the development of the poorest, but also pose a threat to the long-term prosperity of development;
3. Addressing inequalities in the distributive benefits of development is critical for global sustainable development;
4. The sustainable resource management, maintenance and safeguarding of natural capital are fundamental aspects.

For the progress towards the SDGs, there should also be urgent action dedicated to "stop global warming and the loss of ecosystems and biodiversity, which are threatening our well-being, the prospects for sustainable growth, and life itself on this planet" [5].

Like any large-scale project, sustainable development involves a procedural evolution achievable by solving problems. The economy of the environment "represents a challenge for the theory of sustainable development in so far as it tries, among other things, to humanize and green the economy" [20].

However, to be able to solve the complex problems, to apply the best procedure, an important issue is to discover, analyse and take advantage of links and synergies of the SDGs, considering their trade-offs as well.

Nevertheless, in view of a closer monitoring of progresses and more efficient governmental action and decision-making it is fundamental to acknowledge these inter-connections of the SDGs. The very concept of the sustainable development, backed by the co-existence in harmony of its

three pillars (environmental, economic and social) is the ground of a nexus between the Sustainable Development Goals.

For accurate conceptual grounding and in respect of the literature review, the definition of inter-linkages within the SDGs refers to some causal and/or statistical relationships between goals, targets and indicators:

- Synergies occur if the causal or statistical relationship is positive;
- Negative causal or statistical relationships refer to trade-offs.

The inter-related, dynamic and systemic nature of the SDGs has been a purpose and a concern from the viewpoint of both the academics and the policy makers, in the attempt to implement them as smoothly and efficiently as possible.

There are quite recent studies, methods and models dedicated to finding the most significant or straightforward links or synergies and the research is never completed since new global challenges for the Sustainable Development may always arise (such as the SARS-COV2 pandemic in 2020). Also, the innovation systems enabling technologies should be taken into consideration as a driving force of modern sustainable economic development, able to transform and extend the value of growth cycles, due to their mainly positive externalities [10].

Regarding the links and synergies, one of the early and much referenced studies showed first that the SDGs are a more integrated system than the Millennium Development Goals, by employing methods of network analysis [7].

Actually, according to a comprehensive study [15], there are several different approaches that have been and are used in order to define and identify the links and synergies of the Sustainable Development Goals:

- a) The **linguistic approach** is a first and easy step to establish obvious inter-linkages, mainly synergies, between goals and targets. Le Blanc (2015) applied this approach in a matrix of inter-linkages where all targets are linked to Goals based on their key-wording.
- b) The **literature approach** refers to inter-linkages which are established in the scientific literature, mostly without direct reference to the SDGs. The best examples include the so-called co-benefits from the climate change literature: a reduction in CO<sub>2</sub> emission simultaneously mitigates climate change (SDG 13), improves air quality, prevents premature deaths from respiratory diseases (SDG 3, target 3.9), so there is a scientific synergy between these related SDGs [19].
- c) Another similar approach is **the expert judgement approach** linking targets to each other by identifying relationships among the concepts involved. For example, the improvement of quality and reduction of pollution of water (SDG 6, target 6.3) can be argued to be linked to the conservation and sustainable use of inland freshwater ecosystems (SDG 15, target 15.1). The most acknowledged study has analysed in detail only 4 SDGs (SDG 2, SDG 3, SDG 7, SDG 14) which are considered mostly synergistic with the other SDGs. Using a 7-point scale, a team of scientists evaluated the key target-level interactions between an ‘entry goal’ and all other goals, and attributed a score to these interactions based on their expert judgment and as justified through the scientific literature [13].
- d) The **quantitative approach** aims to establish inter-linkages between goals and targets by quantitative statistical analysis of the underlying indicators. It can also help to see the context-specificity of some inter-linkages. Many of these studies are from countries’ statistical offices such as the Italian one, having analysed the links among SDG indicators with a specific geographical scope [14]. Another example is described in more detail further on [12].
- e) The **modelling complex system interactions** can help to understand interdependencies among variables. Allen et al. (2016) analysed the current state of the art on modelling and their contribution to the SDGs integrated assessment by studying 80 quantitative models that have the potential to support national SDG planning and implementation [1].

Also from this viewpoint, another approach was to recognize five groups or dedicated categories of more connected and integrated SDGs [18]:

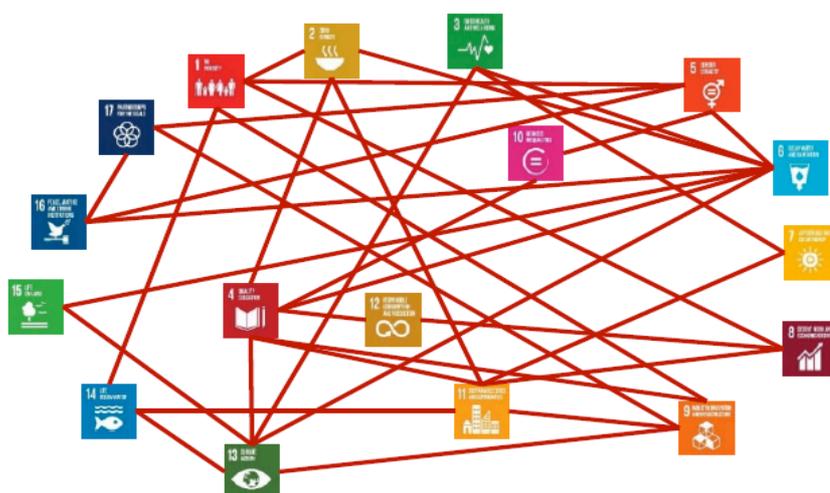
1. The SDG 1-5 group is dealing with multiple dimensions of poverty (food, income, health, education, gender);
2. The SDG 6-9 group, dealing with development infrastructure (water, energy);
3. The SDG 10-12 group is dealing with the fairness-efficiency balance;
4. The SDG 13-15 group is considered dealing with ecological infrastructure;
5. The group of SDG 16 and 17 is the one dealing with institutions.

An interesting and useful approach of identifying and quantifying the links and synergies of the SDGs is the one of analysing the metadata for every indicator of the SDGs. This statistical method, employed by the UN-IAEG SDGs defines, for each of the indicators that have metadata, the other indicators with interrelations in metadata.

These links were considered in matrices and visualized using graphs. Some synthetic graphic representations of the relations between the goals are made through the sum of the number of links indicated, without taking into account, in this first analysis, the direction of the link.

In this approach, bonds between SDGs are considered as follows [12]:

- light bonds (with 1 to 3 links);
- medium bonds (from 4 to 10 links);
- strong bonds (more than 10 links).



**Figure no.2: Statistical indicators to monitor the SDGs by type of bonds - Medium bonds**

Source: UN IAEG, 2019

In figure no.2 are represented the medium bonds existing between the SDGs as built by the statistical indicators interlinked through their metadata.

This links and synergy analysis apparently shows that the SDGs network based on UN indicators metadata is „connected and inclusive, leaving no development goal excluded. There are no isolated nodes that cannot be reached through the paths that can be developed” [12].

It was also obvious that there is one objective that has a link with all the others (a total of 16 links): this is SDG 11, considered crucial for the sustainable development of the planet.

There are also a few other SDGs which are all the same very connected and significant nodes in the network, such as SDG 4 (Quality education) with 14 links, followed by the SDG1, SDG5 and SDG6 with 13 links each.

### 3. Simultaneous and synergetic progress towards the SDGs in the EU

The Communication (COM (2016)739) and the reflection paper "Towards a sustainable Europe by 2030" define the European Commission's strategic approach towards the implementation of the 2030 Agenda [4, 5]. The current EU approach is represented by four main directions:

1. Integrating sustainable development into the European policy framework and Commission priorities;
2. Developing a vision and focus of sectorial policies for the period after 2020, in order to prepare for the long-term implementation of the SDGs;
3. Measuring progress: monitoring, reporting and reviewing progress towards the Sustainable Development Goals;
4. Sharing responsibility by involving stakeholders.

The model of the EU approach towards the SDGs is considered relevant for exploiting the synergies between the SDGs and the EC highest priorities. This is supposed to “ensure strong political ownership and avoid that implementation of the SDGs takes place in a political vacuum” [4].

As many EU policies affect more than one single target or one single Sustainable Development Goal, links and synergies can be defined based on the number of policies in common between two SDG targets. So far, research conclusions in the area have a clear policy message: the EU has already set up a system of synergetic actions which can be exploited for the achievement of the SDGs, and the „policy nodes” of synergies in place in the EU could be the levers to increase the effectiveness of policy actions and of budget allocation [15].

For instance, according to the strategic EU documents, the policies and programmes are directly delivering on various SDGs and so addressing key sustainability challenges [4]:

- The **Investment Plan for Europe** (involving SDG 8, 9, 12, 13) is intended to mobilise EUR 500 billion for additional investments in the real economy through the European Fund for Strategic Investments (EFSI) by 2020. For the second stage, EFSI 2.0, the European Commission has proposed a quantitative goal (40%) on targeted climate change projects.
- The **circular economy plan** (impacting SDG 6, 8, 9, 11, 12, 13, 14, and 15) offers a transformative agenda with significant new jobs and growth potential and stimulating sustainable consumption and production patterns. Focus on resource efficiency and minimising waste in a context of rapid global resource depletion gives the EU a competitive edge and stimulates innovation. It creates local jobs, at all skills levels and with opportunities for social integration.
- The implementation of the **EU's environmental acquis** (impact on SDGs 6, 14, 15) is vital for long-term sustainability and inseparable from the other economic and societal challenges.
- **Agriculture and the CAP** (SDG 2) plays a substantial role in the 2030 Agenda and in any sustainable future as it is intrinsically linked to issues such as jobs, food, air, climate change, water, soil and biodiversity (impact on the SDGs 8, 12, 6, 13 and 15).
- The 2015 Paris Agreement is a historically significant landmark in the global fight against climate change (SDG 13); a success for the world and a confirmation of the **EU's path to a low-carbon and climate resilient economy**. The EU has now set an ambitious economy-wide domestic target of a reduction of greenhouse gas emissions of at least 40% for 2030.
- **Sustainable finance** (SDG 8, 9, 13, 14 and 15) is high on the agenda of the G20 and in Europe, finance ministers, regulators and industry are all actively looking at what can be done. A coherent EU strategy on sustainable finance and the EU taxonomy will help an

EU financial policy reform to enable and galvanise the flow of (public and private) capital towards sustainable investments.

Although the mentioned theoretical and methodological as well as strategical approaches have highlighted synergies between the SDGs, the links may be also observed from the reports monitoring the progress towards the SDGs in the European Union.

First of all, it should be mentioned that there is an important number of so-called multi-purpose indicators within the indicators monitoring progress towards the SDGs in the EU (about one-third of the more than 100 indicators in the EU SDG set) which are used to monitor more than one Sustainable Development Goal.

This demonstrates the interconnectedness of the SDGs and highlights some overlapping areas. Moreover, other indicators of the EU SDG indicator set are not marked as ‘multi-purpose’ but are still linked to each other because they are computed on the same dataset [6].

For instance, there is an evident link between the SDG 1 ‘No poverty’ and the SDG 3 ‘Good health and well-being’, although they are correlated also with other environmentally relevant SDGs such as SDG 6 ‘Clean water and sanitation’ and especially with the economic and social significant SDGs such as SDG 8 ‘Decent work and economic growth’ and SDG 10 ‘Reduced inequalities’.

It is also considered that urbanisation (SDG 11) represents a high pressure which may increase very much the pollution generated by traffic and industry, and thus will have an important impact on the climate change (SDG 13), as well as on the quality and quantity of water resources available (SDG 6).

This type of synergetic link is committed, for example, by the indicator on the population connected to wastewater treatment, common for the progress of SDG 6 and SDG 11. The water quality (SDG 6) measured by the pollutants in rivers and groundwater is also closely linked to overall ecosystem status (SDG 15).

It may be stated that another representative and very connected SDG is, in the EU framework as well, the SDG 11 ‘Sustainable cities and communities’ considered as heart of the network of multi-purpose indicators, for many areas in the 2030 Agenda.

This is due to the fact that cities and human settlements are nowadays the main source of economic, environmental and social development. Although effective and active vectors of innovation and transition to a green economy, the urban areas and Eco-Innovation Parks (EIP) are at the same time always a factor of environmental change at multiple scales, due to land and water use, transport and waste generation [11].

There are considerable recent progresses but also challenges in some of these connected goals in the EU, as stated in the 2019 monitoring report:

- The improvements in EU citizens’ living conditions described for the two goals on poverty (SDG 1) and health (SDG 3) also led to a slightly improved situation for SDG 11 ‘Sustainable cities and communities’ compared with 2018;
- Unfavourable developments in energy consumption reported for SDG 7 ‘Affordable and clean energy’ have also resulted in a deterioration of the overall assessment of SDG 12 ‘Responsible consumption and production’;
- In respect to the SDG 13 ‘Climate action’, the EU’s greenhouse gas emissions are still able to reach the 2020 target, but the EU is no longer on-track to meet its 2020 energy efficiency target (issue reflected in the assessments for SDG 7 and SDG 12) [6].

In another research it is analysed and highlighted how the EU has made good progress especially in the SDGs represented at the top of Figure no. 3; this part is characterized by significant synergetic progress towards the goals.

In previous years (2016-2018), some significant gains in health (SDG 3), reductions in certain dimensions of poverty and social exclusion (SDG 1) and increases in the quality of life in cities and communities (SDG 11) have occurred in the European Union [6].

It was particularly observed that all these evidently and synergistically linked SDGs are placed in the top, close to each other. On the other hand, the deteriorating performance of the linked SDG 7, SDG 13 and SDG 12 places them both in a lower progress position (Figure no. 3) [9].



**Figure no. 3: Overview of the EU-28 progress towards the SDGs over the past 5 years**

Source: (Eurostat, 2019).

Unfortunately, the emergence and expansion of the SARS-COV2 pandemic at global, European and national level in the first part of 2020 has had and still has a very big impact in all economic and social areas, requiring a number of restrictive measures and deep restructuring.

Public health as well as personal and family hygiene are the highest priorities, reaffirming on a global level but also at national level the crucial importance of SDGs synergies such as SDG 1 ‘No Poverty’ and SDG 6 ‘Clean Water and Sanitation’, under the new conditions of a world health and economic crisis.

To accomplish sustainable development and to reach this way the 2030 Agenda, in line with European Union’s commitments on the SDG, Romania has adopted a Sustainable Development Strategy 2030 which is supposed to address the needs of future generations.

Consequently, to date, Romania is making progress towards achieving the United Nations’ Sustainable Development Goals (SDGs). There are a few specific SDGs where Romania’s progress is more evident, according to a recent report, in the last five years [8].

These advancing Sustainable Development Goals are mainly due to the following issues:

- SDG 17 ‘Partnership for the goals’ is on progress since all its associated indicators show improving performance;
- Good progress performances are found for SDG 1 ‘No poverty’ and SDG 13 ‘Climate action’.

However, it should be acknowledged that current levels for some of these indicators in Romania are still significantly lower than the EU average, such as in the case of these SDGs: SDG 4 ‘Quality education’, with all indicators below the EU average; SDG 1 ‘No poverty’; SDG 3 ‘Good health and well-being’.

Nevertheless, a recent analysis showed that the decline in *CO<sub>2</sub> emissions from new passenger cars* has slowed down recently in the EU (2.5%), but in Romania the decline was slightly more

(8%), converging to the current EU average level of CO<sub>2</sub> emissions from new passenger cars (120 g CO<sub>2</sub> per km) [9].

Considering the links and the synergies of the SDGs, this indicator, together with the 23.4% *share of renewable energy in gross final energy consumption* (higher than the 20% EU 2020 target) is also a factor of simultaneous progress in Romania towards the SDG 12 ‘Responsible consumption and production’ and SDG 13 ‘Climate action’.

#### 4. Conclusions

The research paper is dedicated to acknowledging and analysing the SDGs (Sustainable Development Goals) of the Agenda 2030, with objectives and policies required for their progress in the transition to a greener and more sustainable economy in the European Union and in Romania. Therefore, it was considered important to emphasize the holistic character of the SDGs as well as some of the most significant links and synergies that exist and act between the SDGs, as a recent topic of international and national research focus.

One of the reviewed studies showed that taking into consideration the range of positive and negative interactions among SDGs is essential for releasing their full potential at any scale. It is also important to ensure that progresses made in some sectors are not made at the expense of progress in other areas. The characteristics, the benefits and potential impact of these interactions between the SDGs are usually context or country-specific and depend a lot on the policy alternatives and the strategies developed to implement them.

The main conclusion of the paper is that there are many strong important links and synergies between the SDGs (and their dedicated indicators), which should be always carefully considered and analysed when assessing progress towards each SDG, also when designing the most efficient policies for a sustainable development strategy, at all levels.

The SDGs implementation cannot be approached in isolation, but it should be involved in the specific political context which integrate the SDGs priorities in a broader context of policy priorities. Therefore, the best strategic approach is based on a policy oriented perspective which defines synergies as a number of policies in common between two SDG and / or targets. This type of practical approach is developed at EU level and the paper offered some examples. Also, the outcomes are analysed as simultaneous and synergetic progress towards the SDGs in the EU and in Romania.

A further direction of research to be approached in the future is dedicated to the unfortunate impact of the SARS-COV2 pandemic on the SDGs, taking into account their systemic and inter-linked nature.

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