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EXTERNAL REPORT

MONITORING THE SDGs IN NAVARRE REGION

SPAIN

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ABSTRACT

This report is based on the list of indicators developed within the framework of the REGIONS2030 pilot project for the regional monitoring of the Sustainable Development Goals (SDGs). The report analyses the adequacy of this list of indicators for the Comunidad Foral de Navarra, a European region located in the north of Spain. Likewise, the report discusses the availability of data for Navarra, analyses the evolution of the different indicators in Navarre, assesses the trends and proposes some alternative and complementary indicators. The report ends with challenges and recommendations for the development of this list of indicators.

ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

This report contributes to the REGIONS2030 pilot project that develops a list of indicators to monitor the SDGs in European regions. The contribution is made through an analysis of this list of indicators for the case of the Comunidad Foral de Navarra. The analysis addresses availability, suitability and possible alternatives, complements and additions to this list of indicators.

POLICY CONTEXT

The monitoring and management of the SDGs at the regional level is a key factor in achieving sustainability in Europe. European regions should interpret the SDGs and their interrelationships according to their regional circumstances and levels of development, as interactions will vary from region to region. A coherent and comprehensive monitoring framework with a related set of indicators will help the design of better policies to foster sustainable development.

KEY CONCLUSIONS

The list of indicators of the REGIONS2030 pilot project is suitable for SDG monitoring in Navarre. The analysis has made it possible to identify alternative indicators and propose complementary indicators as well as to identify regional challenges in SDG monitoring.

MAIN FINDINGS

Navarre is a region where data is widely available and easily accessible, which has allowed for a complete analysis of the list of indicators. The results show a good evolution of the indicators for Navarre.

However, some SDGs are poorly covered due to the difficulty of finding some indicators at the regional level. The regionalization of newly accounted indicators is a key challenge for the future of regional monitoring of the SDGs. The overall interpretation of the list of indicators remains an open challenge..

RELATED AND FUTURE JRC WORK

This report contributes to the REGIONS2030 pilot project which is being developed by the European Commission's Joint Research Centre (JRC), ESTAT and DG REGIO, with the support of the European Parliament.

1. INTRODUCTION

The *Comunidad Foral de Navarra* – Navarre (region ES22, according to NUT2 classification of the EU) is located in northern Spain and borders four other European regions, Aragon (ES24), La Rioja (ES23) and País Vasco (ES21) in Spain and Aquitaine (FR61) in France, as can be seen in Figure 1. The area of this European region is 10,391 km2 and its population in 2022 was 664,117 inhabitants. Despite being a relatively small region, Navarre's climate is characterized by variety: from a rainy and cold continental climate in the north to a more temperate and drier Mediterranean climate in the south. This contrast between zones gives Navarre a great biodiversity and a rich landscape: To the North, the peaks and green valleys of the Pyrenees, to the South, the desert of the Bardenas, and in between, rolling hills, vineyards and crops.

According to the Eighth report on economic, social and territorial cohesion of the European Commission (European Commission, 2021), Navarre is a more developed region (GDP per head in PPS above 100% of the EU-27 average) [1]. According to the data provided by Nastat (Statistical Institute of Navarre) on the structure of the GDP in Navarre, the GVA of industry in Navarre represents 28% and the GVA of services 54.27%. The GVA corresponding to agriculture, livestock and fishing is only 2.82% of GDP.

Figure 1. Navarre in Europe

Comunidad Foral de Navarra (ES22)	
Surface	10,391 Km^2
Population (2022)	664,117
GDP per capita PPS (2020) (€)	31,000
GDP per capita PPS (2020) (% UE)	104.3
GDP structure	
- GVA agriculture, livestock and fishing	2.82 %
- GVA industry	28.00 %
- GVA construction	5.96 %
- GVA services	54.27 %
- Net taxes on products	8.95 %
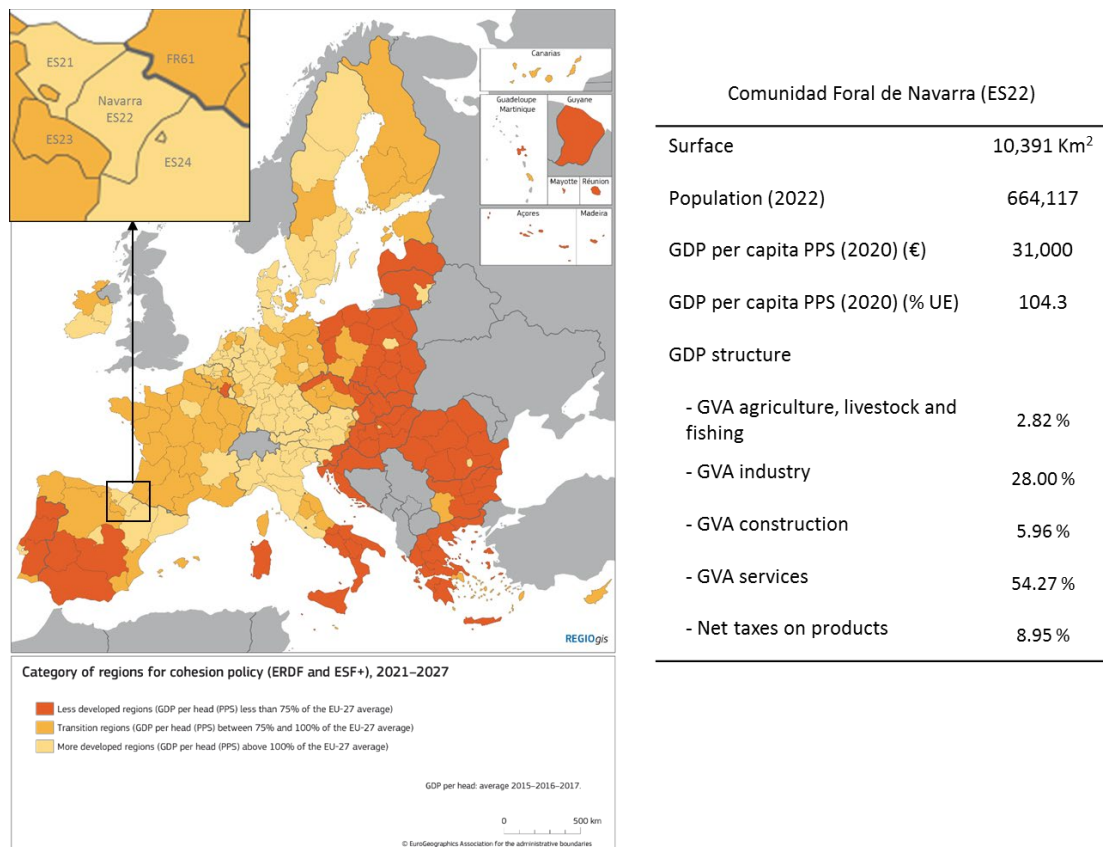
Source: European Commission (2021) and Nastat

Navarre has been working to align its policies and programs with the SDGs of the 2030 Agenda almost since its approval by the United Nations in 2015. Figure 2 summarizes chronologically the main milestones of the 2030 Agenda in Navarre.

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[1]   European regions are classified in the Eighth report on economic, social and territorial cohesion as more developed regions (GDP per head (PPS) above 100% of the EU-27 average,) transition regions (GDP per head (PPS) between 75% to 100% of the EU-27 average) and less developed regions (GDP per head (PPS) less than 75% of the EU-27 average).

Already in 2016, a resolution of the Parliament of Navarre urged the regional government to work towards this alignment of policies and plans with the 2030 Agenda. In 2017, following this resolution, the Government of Navarre approved the creation of the so-called Interdepartmental Commission, a commission in charge of preparing a report on the policies, programs and actions of the Regional Government to meet the challenges of the 2030 Agenda.

Figure 2. Milestones of the 2030 Agenda in Navarre
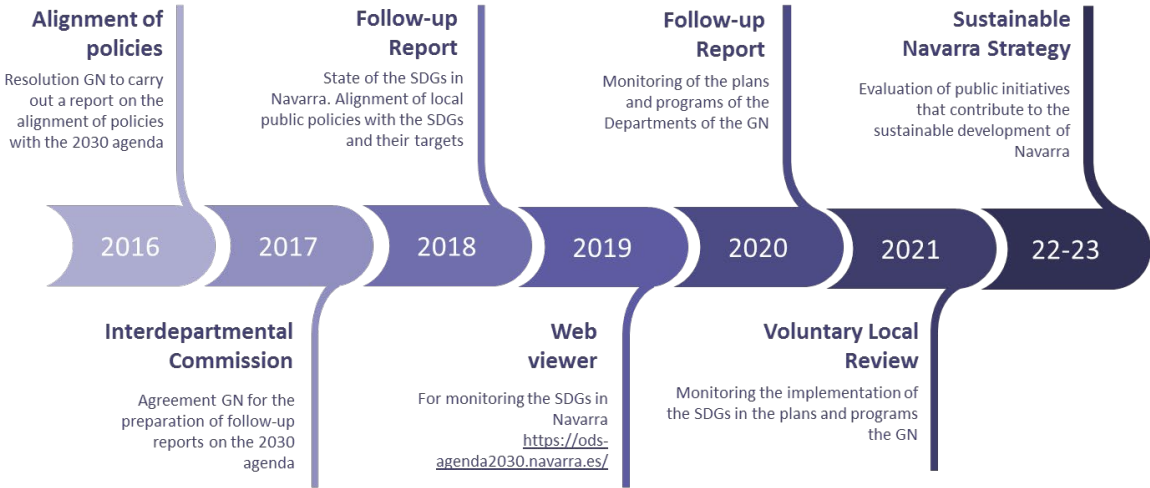
Source: Author's own elaboration

This report was published the following year and identifies domestic policies, planning instruments and legislative initiatives that are aligned with some of the targets of the different SDGs (Gobierno de Navarra, 2018). It also identifies relevant indicators to assess progress in achieving the different SDGs. These indicators are selected based on those proposed by the European Union, with the addition of some indicators specific to the region.

Almost at the same time as this report was presented, the web viewer for monitoring the SDGs in Navarre was launched. This viewer is currently operational and updated (https://ods-agenda2030.navarra.es/). The viewer contains data, graphs and maps but also the reports published by the region on the SDGs.

Following the first report conducted in 2018, Navarre has conducted two monitoring reports on progress towards the SDGs, the first in 2020 (Gobierno de Navarra, 2020) and the second in 2021 (Gobierno de Navarra, 2021a). The latter follows the form and methodology of the so-called Voluntary Local Reviews (Siragusa *et al.*, 2022; Ciambra *et al.,* 2023b).

In addition, over the last year, the region has been working on the strategy for the sustainable development of Navarre and the fulfilment of the sustainable development goals (SDG) of the 2030 Agenda, known as *Sustainable Navarre Strategy* (Gobierno de Navarra, 2023). The purpose of this strategy is to materialize a useful tool for the *evaluation of public initiatives* that contribute to the sustainable development of Navarre. The goal of this strategy is to establish procedures for the comprehensive evaluation of the effect that the different public policies of the Autonomous Community of Navarre have on sustainability, both in terms of design (ex-ante) and results (ex-post).

Therefore, Navarre is an active European region in the commitment to the SDGs and can provide relevant information for the development of the indicator framework for monitoring the achievement of the Sustainable Development Goals at the regional level of the REGIONS 2030 pilot project.

2. METHODOLOGY

The REGIONS2030 project developed by JRC aim to co-design and co-develop an indicator set to monitor the SDGs at European Regions. Following the steps described in Vega-Rapún et al. (2022), the project has identified a set of 83 indicators from both official (57 indicators, 68.7%) and experimental (26 indicators, 31.3%) sources. These indicators are distributed among the 17 SDGs to facilitate sustainability monitoring in a comprehensive manner. This distribution is not uniform among SDGs, however. The SDG with the most indicators is SDG8 (10 indicators) and the SDG with the fewest indicators is SDG10 (2 indicators), as can be seen in Figure 3.

We can also consider the distribution of the SDGs in the so-called 5Ps (People, Planet, Prosperity, Peace and Partnership). The category for people includes de goals 1, 2, 3, 4 and 5; the category for planet includes goals 6, 12, 13, 14 and 15; the category for prosperity includes goals 7, 8, 9, 10 and 11; and categories for peace and partnership include one goal each, 16 and 17, respectively. If we focus on the people, planet and prosperity categories that encompass the largest number of SDGs, the largest number of indicators in the proposal is for prosperity, followed by people and finally planet. The breakdown between official and experimental indicators is quite similar in all categories: official indicators account for more than two-thirds of the total indicators in each category. The only exception is the peace category where experimental indicators account for 75%.

Figure 3. Break down of the indicators proposed by JRC
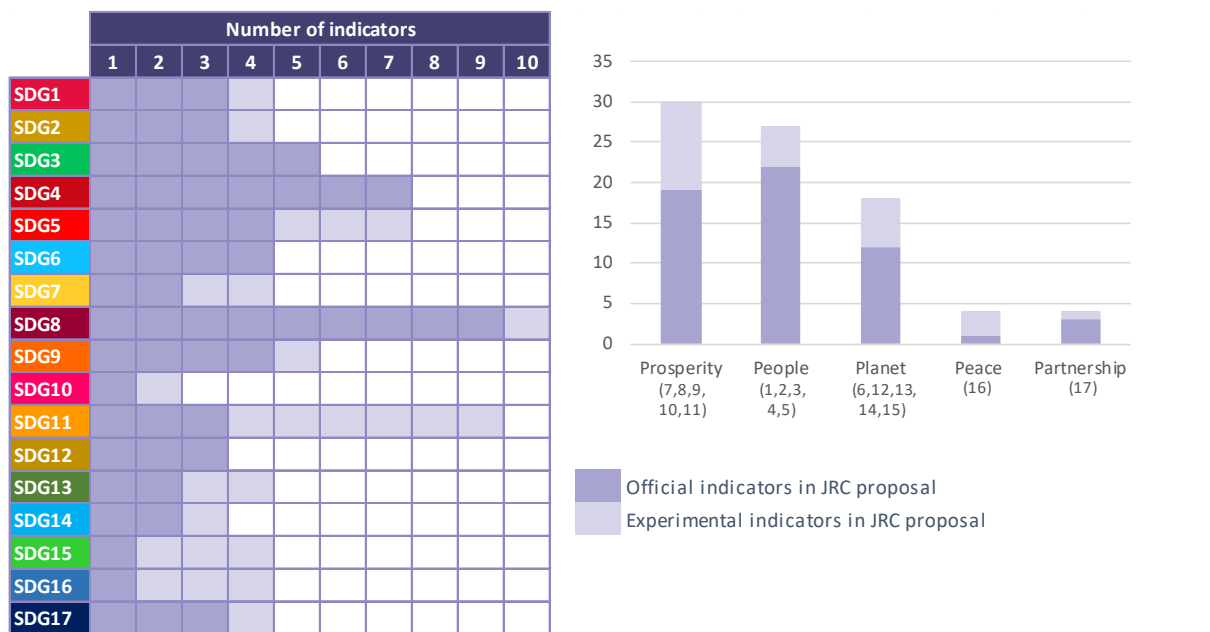
Source: Author's own elaboration

This report analyses the availability and accessibility of data on each of these indicators for Navarre. In addition, it analyses the trends of these indicators in Navarre and proposes modifications to the list of indicators, either with the use of alternative indicators to those proposed, or with the use of complementary indicators to those proposed. The roadmap to this report is summarised in Figure 4.

The first four steps of this roadmap is focused on data and metadata collection: precise definition of indicators, consultation of open data sources, downloading of data for Navarre, identification of unavailable indicators. With the information obtained in this process, meetings were held with different representatives of the region and with JRC representatives. The results of these meetings were used to carry out the first data analysis that lead to the first draft of the report.

An interesting technical meeting with JRC representatives and analysts from other European regions resulted in a comprehensive set of comments and suggestions that, together with further bilateral meetings, paved the way for the final report.

Figure 4. Roadmap to the report
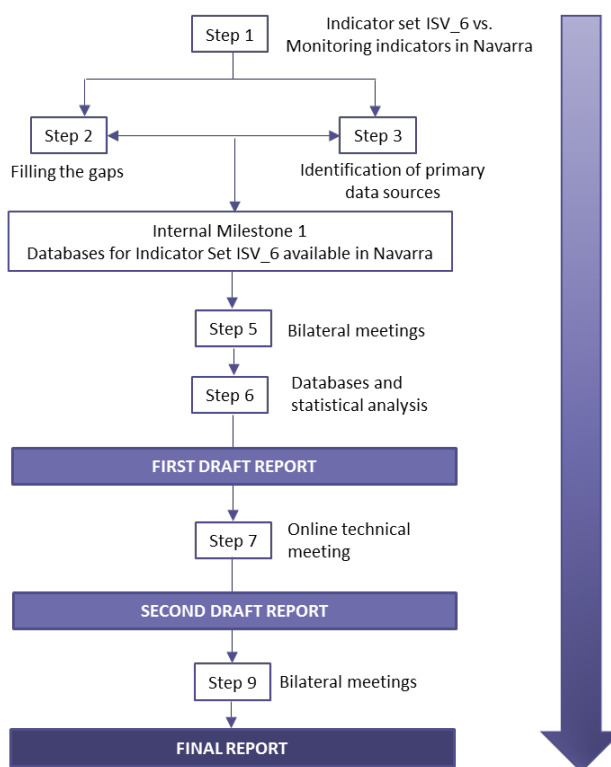
2.1 Data and metadata

In addition to the sources of information provided by Vega-Rapún et al. (2022) for each indicator, other national and regional sources of information were explored. All the sources consulted are open access. Among these databases, we can distinguish those in which data on different SDGs can be found, like the regional statistical office (Nastat) and the SDG monitoring tool in Navarre, and those in which data on a specific SDG can be found, like Nilsa (water information), Innovation Observatory (innovation and R&D), Klina (Climate change) or Social Reality observatory (poverty, demographics, health). We add these data sources to those in the JRC's proposal. Therefore, we use supra-national sources, national sources and sub-national sources. Table 1. summarizes these data sources.

Some indicators proposed in the JRC project are based on specific proposals found in some European regions. For these indicators, an equivalent indicator has been sought for Navarre. In some cases, the same indicator is available; in other cases, there are very similar indicators that can be used to assess the same target; in other cases, the search has been unsuccessful. The last option leaves the corresponding indicator in Navarre uncovered.

For other indicators, the JRC proposal is linked to supra-national database. In such cases, the information has been complemented with that of national and/or sub-national sources. When similar information was found in different sources, the main difference was the time coverage and small details in the definition of the indicator. When it is relevant for the analysis of the corresponding indicator, we mention the different sources.

We were able to identify 70 of the 83 indicators in the set proposed by JRC. It is worth mentioning that Navarre is a non-coastal region and, therefore, the three indicators proposed for SDG 14 (Conserve and sustainably use the oceans, seas and marine resources for sustainable development) are not relevant for the region. We can say that we were able to identify 70 out of 80 indicators.

Table 1. Data sources used in the analysis

Supra-national sources	National sources	Sub-national sources
European Commision: Eurostat European Commission: JRC REGIO European Commision: JRC LUISA Platform OEDC – Regional Data Base	Spanish statistical institute (INE) Ministry of Agriculture, Fisheries and Food (Mapa) Ministry of Equality Ministry for Ecological Transition (Miteco) Ministry of Labor and Social Economy(Mites) Ministry of Transport, Mobility and Urban Agenda	Navarre's Statistical institute (Nastat) ODS-Navarre Platform NILSA Innovation Observatory of Navarre Waste inventory of Navarre Roadmap for climate change in Navarre (KLINa) Energy Plan for Navarre Horizon 2030 Observatory of the Social Reality of Navarre

Source: Author's own elaboration

Figure 5 replicates the information in Figure 3 and complements it with the data available for Navarre. As can be observed in the figure, for some indicators proposed by JRC as experimental, an official source has been found in the case of Navarre. It should also be noted that, on some occasions, the classification between official and experimental indicators is unclear.

Figure 5. Break down of the indicators proposed by JRC in Navarre
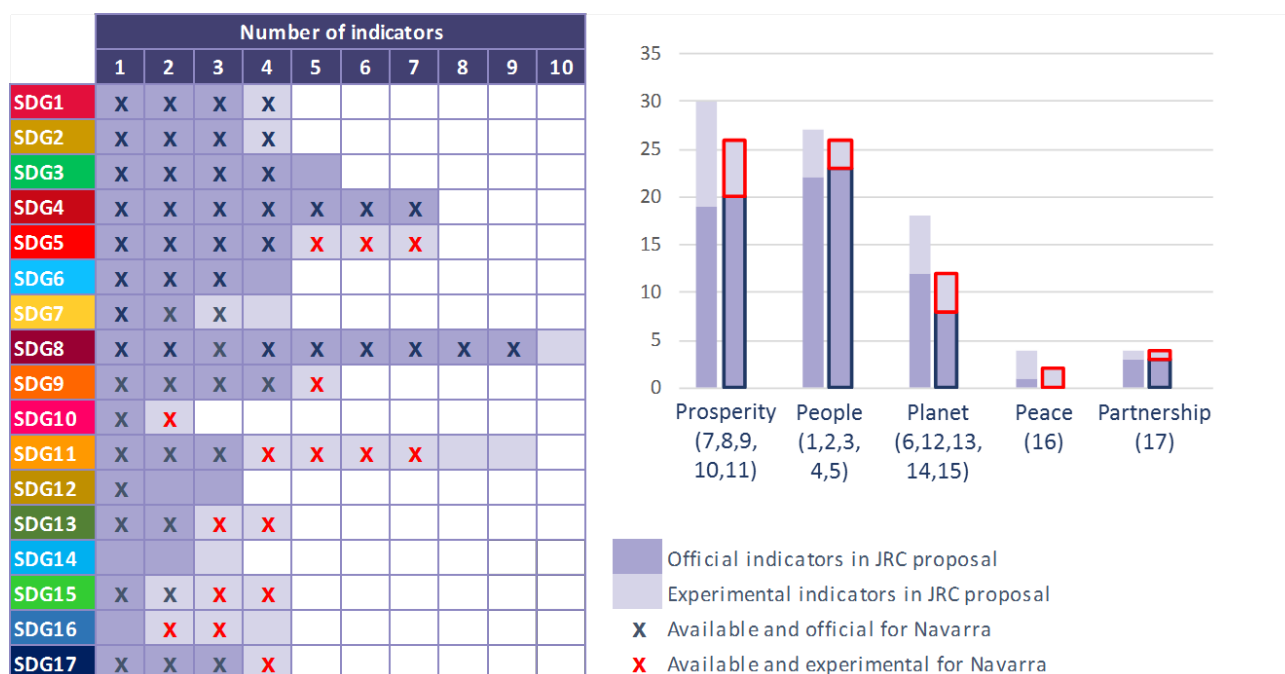
Source: Author's own elaboration

For all the indicators available for Navarre, we extracted the metadata, including the definition of the indicators, the primary source, the time coverage and frequency. We have detected similar indicators in different sources

that differ in small aspects of the definition or in the unit of measure. As all of them are open access sources, we downloaded the data for the longest time horizon available and plotted their trend over that period.

2.2 Trend analysis. Sustainability

To perform a correct trend analysis of each indicator, we must first identify whether it is a direct indicator (the more, the better) or an inverse indicator (the less, the better).

Secondly, it would be necessary to have a reference level equated to sustainability (Gilbert, 1996, Moldan *et al.*, 2012). This can be extended to accommodate double reference points, which allows to introduce for each objective values that are regarded as the limit of the acceptable (reservation) and values that are regarded as desirable (aspiration) (Ruiz *et al.*, 2011). However, establishing these reference levels can be a lengthy and demanding process that can be somewhat statistically addressed when comparing different regions (Ruiz *et al.*, 2011)., but not when considering only one region. There are reference levels that can be defined for a few proposed indicators (mainly environmental ones) but not for most of them. In any case, even for indicators whose reference levels or targets are difficult to define, the preferred direction of change or the desire trends should still be specified (Wu and Wu, 2012).

Following these ideas, for each indicator we defined the *normative trend* or desirable trend, describing the preferred direction of change. In different disciplines, sustainability has been defined as maintaining average human well-being over the very long run, or alternatively, non-declining utility through time (Pezzey, 1992). Therefore, for the trend analysis of the indicators, we consider two basic desirable trends: the desirable trend can be non-decreasing (for direct indicators) or non-increasing (for inverse indicators).

Defining this normative trend can be controversial for some indicators, as some indicators may be interconnected, with synergies and trade-offs. Failure to consider these interconnections leaves possible trade-offs between these indicators not analysed. As a result, it is not clear whether the sustainability analysis is based on a weak sustainability framework, in which the substitution of advances in one sustainability aspect to the detriment of another is allowed, or on a strong sustainability framework, where this substitution is not possible (Wu and Wu, 2012; Sala *et al.* 2015).

In this report, a trend analysis of each indicator is considered separately. We do include some reference dates that may be relevant to analyse possible trend changes, provided that the available time series allows it. First, the trend before and after 2015 is analysed, as this is the year in which the UN proposed the SDGs. This proposal could have meant a commitment by the regions to promote these SDGs. Secondly, for the data prior to 2015, the year 2008 is taken as a reference due to the financial crisis and for the years after 2015, the year 2019 is taken as a reference due to the possible reflection of the pandemic in the following year.

2.3 Presentation of results

The data are presented in two ways: the SDG at a glance and the indicators in detail.

For the SDGs at a glance, we provide the following information:

— A summary table called *availability, suitability and alternatives*. In this table we check for each indicator in the proposal: (i) whether the indicator is available (✓) or not (**X**); (ii) whether the indicator fits for purpose (✓) or not (**X**); and (iii) whether there are proposed modifications, *alternative indicators* to replace the proposed indicator and/or *complementary indicators* to supplement the proposed indicator.

— A figure called *trends in Navarre from 2010*. In this figure, we include data for each available indicator from 2010 to the latest available data. 2015 is indicated as a reference point as it is the year in which the SDGs were proposed. We also considered the effect of the pandemic on the indicator, if any.

— A summary table called *trends in Navarre from 2010*. This table assess the trends of the different indicators before and after 2015 according to the normative trends. We use the following assessment, ● Significant progress towards the desired direction; ◯ Moderate progress towards the desired direction; ◯ No progress or insignificant changes; ◯ Moderate movement away from the desired direction; ● Significant movement away from the desired direction; ● No evaluation.

For the indicators in detail, we provide the following information for each indicator available for Navarre:

— A box that contains the following information: (i) A short text with the definition of the indicator, (ii) the primary source and normative trend, (iii) a table with the official/experimental sources and links, time coverage, frequency and unit of measurement, (iv) A chart showing the evolution of data or the entire available time series.

3. JRC PROPOSED INDICATOR SET

3.1 SDG1: No poverty

For the analysis of SDG 1, Vega-Rapún *et al.* (2022) propose four indicators (see Table 2). Three indicators are related to the measurement of poverty and one to vulnerability and exposure to disasters.

Table 2. Indicators for SDG1: Availability, suitability and alternatives

SDG1 – End poverty in all its forms everywhere					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
1.1 (extreme poverty)	Material and social deprivation (Box 1)	√	√	Severe material and social deprivation	
1.2 (reduce poverty)	Persons living in households with very low work intensity (Box 2)	√	√		
	Persons at risk of poverty or social exclusion (Box 3)	√	√		
1.5 (exposure and vulnerability)	Affected people due to disasters (Box 4)	√	√		Share of build-up area exposed to river-flooding

Source: Author's own elaboration

The poverty indicators include the well-known AROPE indicator (persons at risk of poverty or social exclusion). This indicator measures the proportion of people who are in at least one of the three criteria of risk of poverty or social exclusion: at risk of relative poverty (considering the national poverty line), living in households with severe material deprivation or living in households with low work intensity (see Box 3). One of these criteria is also included as an indicator by JRC, persons living in households with very low work intensity (see Box 2). The other poverty indicator in the proposal is close to one of the other components of AROPE, material and social deprivation (MSD) instead of the AROPE's component, severe material and social deprivation (SMSD). Since MSD is an indicator that is considered to address the extreme poverty target, we propose that this indicator be

complemented by monitoring SMSD. People affected by SMSD are also in MSD but there are people affected by MSD who do not go to the extreme of entering SMSD (see Box 1).

The indicator proposed for vulnerability and exposure to disasters is an experimental one based on a case study, affected people due to disasters. However, no specific reference is provided for this indicator and there is no precise definition of what is to be measured. For Navarre, there exist official data on affected people due to disasters. The available data is *number of people killed directly attributed to disasters per 100,000 inhabitants* and it is provided by NASTAT (Instituto de Estadística de Navarra/Statistical Institute of Navarre) (see Box 4). Beyond deaths due to disasters, an interesting indicator to analyse whether regions are reducing exposure and vulnerability is the proportion of people and/or areas exposed to these events (heat waves, fires, floods). Hazard, exposure, vulnerability and risk go beyond deaths due to extreme events (Foudi *et al.*, 2015).

Thus, the four indicators included in the JRC proposal for monitoring SDG1 are available for the Navarre region. These four indicators are considered appropriate for this monitoring, always bearing in mind that the proposed poverty indicators are closely related. Figure 6 shows the evolution of these indicators from 2010 to the latest available data. It should be noted that the normative trend for these indicators is not increasing, i.e., the four indicators are inverse indicators; the lower the value, the better the situation. Table 4 summarizes the trend analysis for Navarre.

From this trend analysis, we can highlight the following ideas:

— The evolution of poverty indicators is closely linked to the evolution of the economic cycle as was to be expected. Both the financial crisis in 2008 and the pandemic in 2020 have negative effect on poverty indicators.

— It is worth mentioning that the evolution of persons living in households with very low work intensity (LWI) and the evolution of AROPE follow quite similar trends (recall that LWI is one of the components of AROPE). However, there is not such relationship with SMSD and AROPE (recall that SMSD is also a component of AROPE (see Table 3).

Table 3. Correlation between poverty indicators

	MSD	SMSD	LWI	AROPE
MSD	1			
SMSD	0.5274	1		
LWI	0.3336	0.0561	1	
AROPE	0.0653	-0.1835	0.4906	1

Source: Author's own elaboration

— Severe material deprivation is increasing faster than material and social deprivation. These means a greater part of MSD is now SMSD.

— Affected people due to disasters in Navarre is small. This indicator can be interesting and is in fact one of the proposed UN indicators for SDG monitoring. However, for regions such as Navarre, an indicator on the exposure to the risk of a disaster may be more informative. As pointed out above, we propose new indicators in this regard in the next section of this report.

— Boxes 1 to 4 show detail information of these four indicators in the case of Navarre (definition, data availability and sources). The proposal for the new exposure indicator is discussed in the section on new indicator proposals.

Figure 6. Indicators for SDG1: Trends in Navarre from 2010
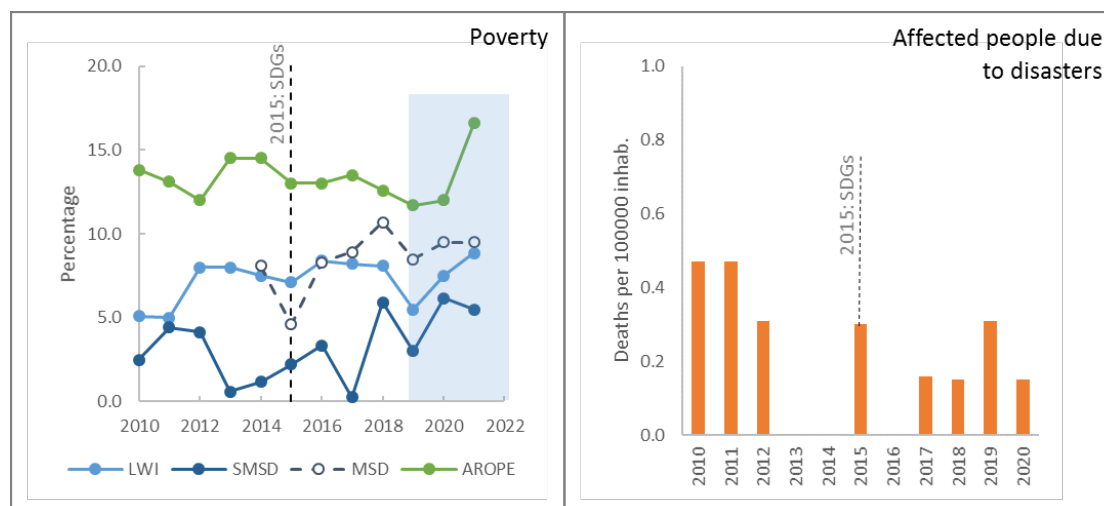
Source: Author's own elaboration

Table 4. Indicators for SDG1: Trends in Navarre from 2010

SDG1 – End poverty in all its forms everywhere					
SDG target	**JRC indicator**	**Normative trend**	**Last available year**	**Trend before 2015** [1] [2]	**Trend after 2015** [1] [2]
1.1 (extreme poverty)	Material and social deprivation (Box 1)	Non-increasing	2021	⬤ (grey)	◯ (orange outline)
1.2 (reduce poverty)	Persons living in households with very low work intensity (Box 2)	Non-increasing	2021	◯ (orange outline)	◯ (orange outline)
	Persons at risk of poverty or social exclusion (Box 3)	Non-increasing	2021	◯ (green outline)	◯ (orange outline)
1.5 (exposure and vulnerability)	Affected people due to disasters (Box 4)	Non-increasing	2021	◯ (green outline)	◯ (green outline)

(1)   Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(2)   ⬤ Significant progress towards the desired direction; ◯ Moderate progress towards the desired direction; ◯ No progress or insignificant changes; ◯ Moderate movement away from the desired direction; ⬤ Significant movement away from the desired direction; ⬤ No evaluation.

Source: Author's own elaboration

Box 1. Material and social deprivation + Severe material and social deprivation

	Material and social deprivation + Severe material and social deprivation
Definition	The material deprivation rate is an EU-SILC indicator that shows the inability to afford some items considered by most people to be desirable or even necessary to lead an adequate life. The indicator measures the percentage of the population that cannot afford at least three of the following nine items: (i) to pay their rent, mortgage or utility bills; (ii) to keep their home adequately warm; (iii) to face unexpected expenses; (iv) to eat meat or proteins regularly; (v) to go on holiday; (vi) a television set; (vii) a washing machine; (viii) a car; (ix) a telephone. The severe material deprivation rate measures the percentage of the population that cannot afford at least four of the above-mentioned items. It is one of the components of the AROPE indicator.
Type	Official
Source	EU Statistics on Income and Living Conditions (EU-SILC)/Encuesta de Condiciones de Vida (ECV). Material and social deprivation Eurostat ILC_MDSD08 Severe material and social deprivation OCECAS 1.2.2.2 Severe material and social deprivation ods-navarra 1.13
Time coverage	MSD 2014-2021; SMSD 2010-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-increasing
Data	

Box 2. Persons living in households with very low work intensity

1 NO POVERTY	**Persons living in households with very low work intensity**

Definition	Proportion of persons aged 0-59 years living in jobless households or households with low employment intensity (households in which working-age members worked less than 20% of their total working potential during the year prior to the survey year). It is one of the components of the AROPE indicator.
Type	Official
Source	EU Statistics on Income and Living Conditions (EU-SILC)/Encuesta de Condiciones de Vida (ECV). Eurostat ILC_LVHL21 OCECAS 1.2.2.3 ods-navarra 1.14
Time coverage	2004-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-increasing
Data	

Box 3. Persons at risk of poverty or social exclusion (AROPE)

1 NO POVERTY	**Persons at risk of poverty or social exclusion (AROPE)**
Definition	Proportion of people who are in at least one of the three criteria of risk of poverty or social exclusion: at risk of relative poverty (considering the national poverty line), living in households with severe material deprivation or living in households with low work intensity.
Type	Official
Source	EU Statistics on Income and Living Conditions (EU-SILC)/Encuesta de Condiciones de Vida (ECV).
	Eurostat ILC_PEPS11
	OCECAS 1.2.2.1
	ods-navarra 1.11
Time coverage	2004-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-increasing
Data	

Source: Author's own elaboration

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Box 4. Affected people due to disasters

1 NO POVERTY	**Affected people due to disasters**
Definition	Number of people killed directly attributed to disasters per 100,000 inhabitants.
Type	Official
Source	Death statistics by cause of death, INE; Population figures, INE OCECAS 1.5.1.1
Time coverage	2010-2020
Frequency	Annual
Unit	Deaths per 100000 inhabitants
Normative trend	Non-increasing
Data	
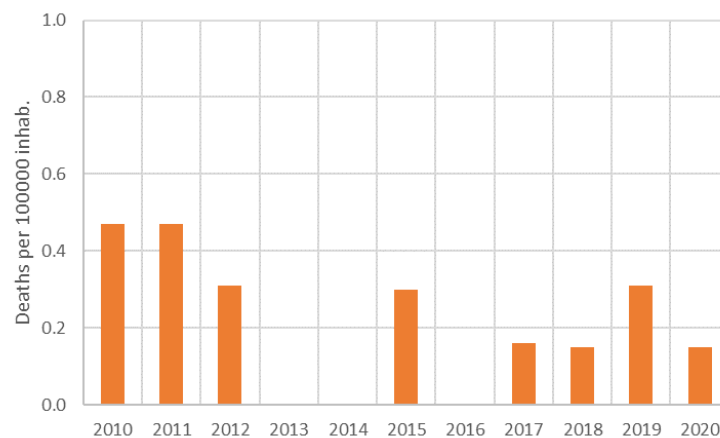
3.2 SDG2: Zero hunger

The proposal for SDG2 contains four indicators (see Table 5). One of the indicators is on nutrition while agriculture and farming cope the other three. These four indicators cover three targets: end of malnutrition, agricultural productivity and sustainable food production.

Table 5. Indicators for SDG2: Availability, suitability and alternatives

SDG2 – End hunger, achieve food security and improved nutrition and promote sustainable agriculture					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
2.2 (end malnutrition)	Overweight rate (Box 5)	√	√		
2.3 (agricultural productivity)	Gross Value Added (GVA) of agriculture, livestock and fishing (Box 6)	√	√		
	Productivity (Gross Value Added per worker) in agriculture, forestry and fishing (Box 7)	√	√		
2.4 (sustainable food production)	Organic farming: areas with different crops (Box 8)	√	√		Productivity of organic farming

Source: Author's own elaboration

The proposed indicator to address the end of malnutrition target is the overweight rate. The indicator available for Navarre includes obesity, overweight and underweight among children between 2 and 17 years old (see Box 5). It is an adequate indicator but has the limitation that it only provides information every 5 years.

To address agricultural productivity, the proposal includes two indicators, Gross Value Added (GVA) in agriculture, forestry and fishing and Gross Value Added in agriculture, forestry and fishing per worker. It is worth mentioning that both indicators should be considered in real terms (constant prices or volume indexes) to examine trend lines correctly. For the analysis of Gross Value Added (GVA) in agriculture, information is available from the regional institute of statistics (Nastat). For agriculture, they provide information on GVA in current

prices and volume indexes. With this information, we can calculate GVA in constant prices and study the trends. For the analysis of GVA in agriculture per worker, there are experimental data from the OECD. Nastat also facilitates data on job positions in agriculture, livestock, and fishing. However, both data source do not specify whether this is in annual labour units. Although the OECD indicator is in purchasing power parity and the Nastat indicator in constant prices, the evolution is similar in both cases, so both sources seem valid for measuring the corresponding target (see Box 7). This productivity indicator is a direct indicator and the normative trend is non-decreasing.

Organic farming is proposed as an indicator to address the sustainable food production target. For area dedicated to organic farming, the normative trend is difficult to define; it should be linked to productivity data to do a proper evaluation.

Figure 7. Indicators for SDG2: Trends in Navarre from 2010
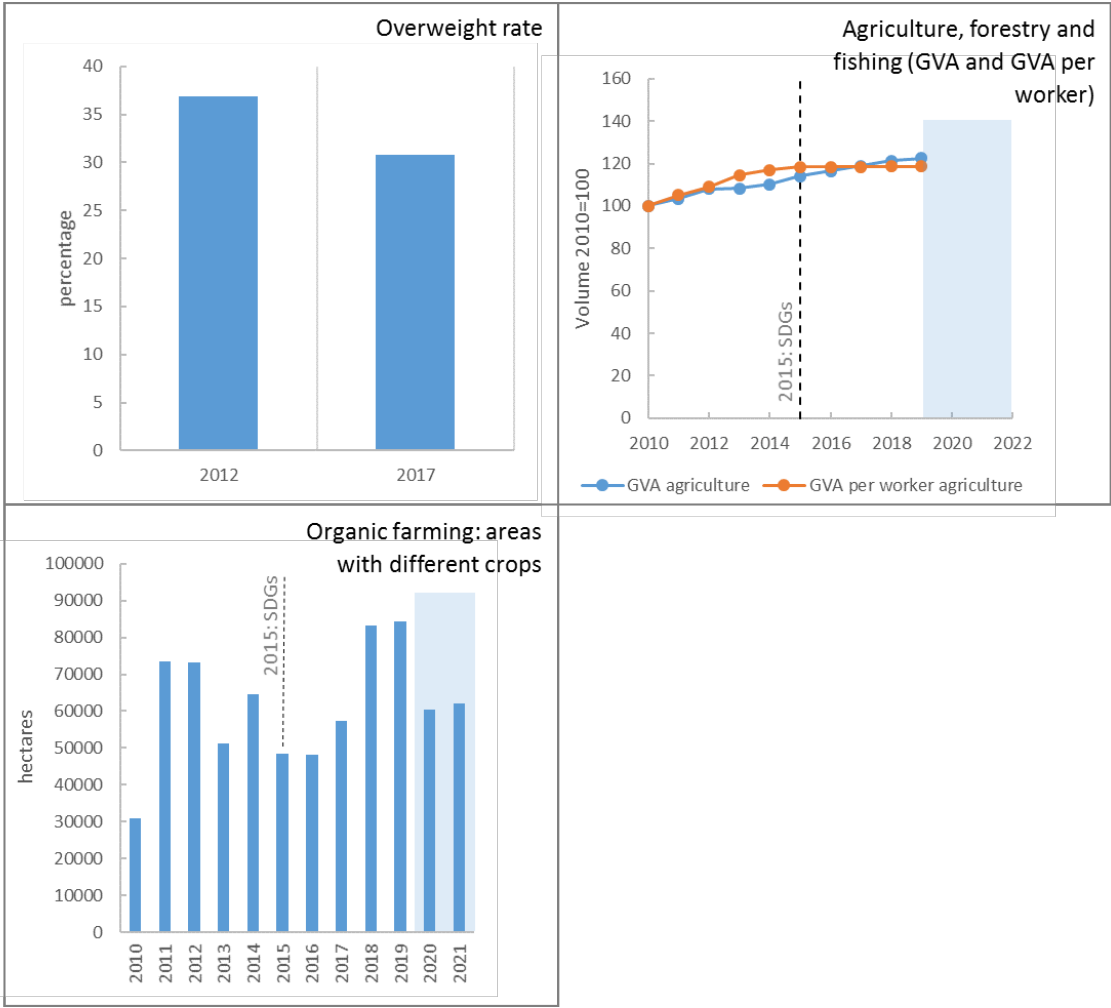
Source: Author's own elaboration

Figure 7 summarizes the evolution of these indicators from 2010 onwards. The top right graph in this figure compares the evolution of total GVA and GVA per worker of agriculture, livestock and fishing. For this purpose, we have constructed an index in which the value of these two indicators in 2010 is 100. The absolute figures can be seen in Box 6 and Box 7, respectively. The lower left graph shows the evolution of the area dedicated to organic farming in Navarre in hectares. We have not included the overweight indicator because we only have data for two years (see Box 5). Table 6 summarizes the trend analysis for Navarre.

We can highlight the following ideas:

— The overweight rate is calculated every 5 years. The last data is from 2017 and the next data is expected to be available in 2023. From 2012 to 2017, the overweight rate fell in Navarre by 6 percentage points.

This drop is in the direction expected for this indicator but as only two data are available, it is not possible to say if this is a consolidated trend.

— Gross Value Added in agriculture is following a smooth upward trend, going in the correct direction of change.

— Agricultural productivity (GVA per worker) increases faster than GVA and shows a slight decline after 2015. Given the increasing trend in GVA, the changes in agricultural productivity may be related to the number of workers in the agricultural sector.

— Overall, the presence of organic farming in Navarre is increasing. There are many trend changes that barely last two years. It is difficult to predict what will happen with this variable.

Table 6. Indicators for SDG2: Trends in Navarre from 2010

SDG2 – End hunger, achieve food security and improved nutrition and promote sustainable agriculture					
SDG target	**JRC indicator**	**Normative trend**	**Last available year**	**Trend before 2015** [1] [2]	**Trend after 2015** [1] [2]
2.2 (end malnutrition)	Overweight rate (Box 5)	Non-increasing	2017	⚪ (grey)	⚪ (grey)
2.3 (agricultural productivity)	Gross Value Added (GVA) of agriculture, livestock and fishing (Box 6)	Non-decreasing	2019	🟢	🟢
	Productivity (Gross Value Added per worker) in agriculture, forestry and fishing (Box 7)	Non-decreasing	2019	🟢	🟢 (light)
2.4 (sustainable food production)	Organic farming: areas with different crops (Box 8)	?	2021		

(1) Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(2) 🟢 Significant progress towards the desired direction; ⚪ Moderate progress towards the desired direction; ⚪ No progress or insignificant changes; ⚪ Moderate movement away from the desired direction; 🟠 Significant movement away from the desired direction; ⚪ No evaluation.

Source: Author's own elaboration

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Box 5. Overweight rate

	Overweight rate

Definition	Proportion of children between 2 and 17 years of age with obesity, overweight or underweight.
Type	Official
Source	Encuesta nacional de salud, INE y Ministerio de Sanidad OCECAS 2.2.2.1
Time coverage	2012 & 2017
Frequency	5 years
Unit	Percentage
Normative trend	Non-increasing
Data	
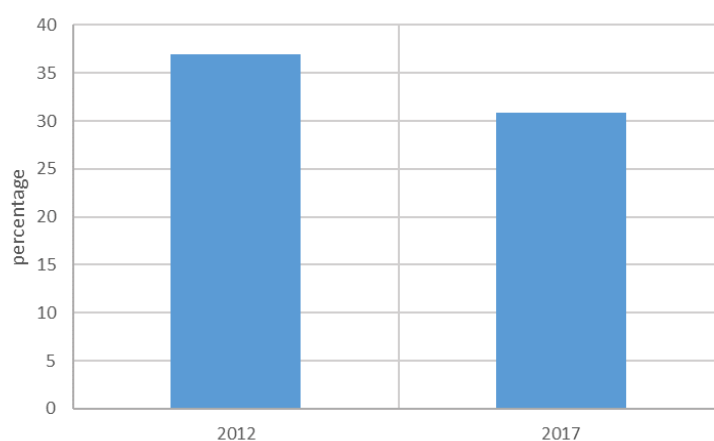
Source: Author's own elaboration

Box 6. Gross Value Added (GVA) of agriculture, livestock and fishing

	Gross Value Added (GVA) of agriculture, livestock and fishing
Definition	Gross Value Added (GVA) of agriculture, livestock, hunting and related services. Note: To study trends use volume indexes or constant prices.
Type	Official
Source	Annual Financial Statements, Nastat. Nastat Ministry of agriculture, fisheries and food
Time coverage	2005-2019
Frequency	Annual
Unit	Thounsands 2010 € (constant prices)
Normative trend	Non-decreasing
Data	
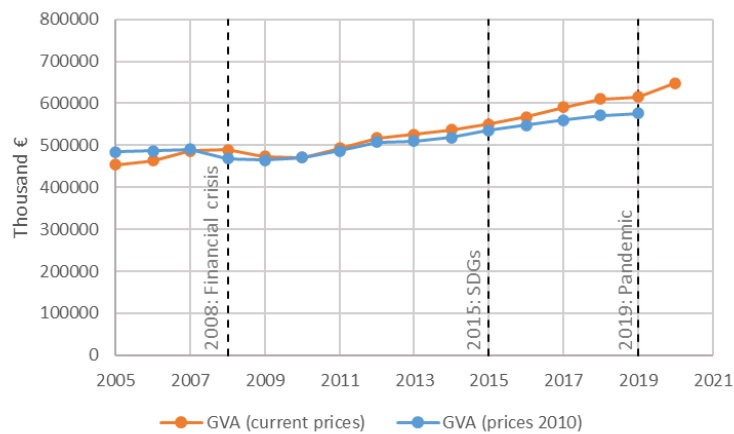
Source: Author's own elaboration

Box 7. Productivity (GVA per worker) in agriculture, forestry and fishing

2 ZERO HUNGER	**Productivity (GVA per worker) in agriculture, forestry and fishing**

Definition	Gross Value Added (GVA) per worker in agriculture, livestock, hunting and related services. Note: it is not clear whether the workers are in annual labor units.
Type	Official (Nastat); Experimental (OECD, Regional economy)
Source	Annual Financial Statements, Nastat. Nastat OECD
Time coverage	2005-2019
Frequency	Annual
Unit	2010 € (Constant prices)
Normative trend	Non-decreasing
Data	
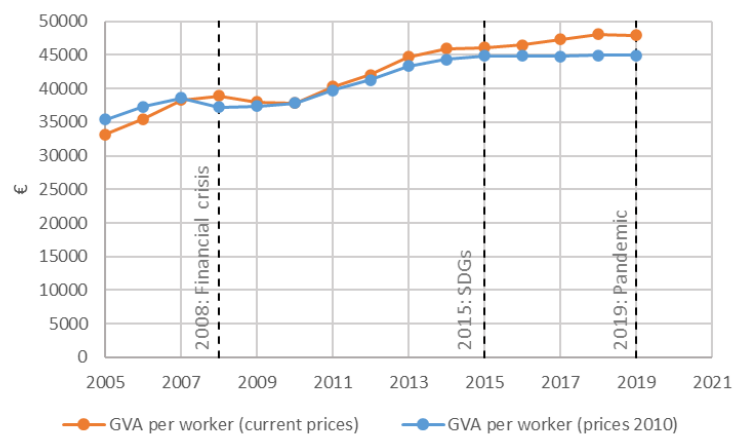
Box 8. Organic farming: areas with different crops

	Organic farming: areas with different crops
Definition	Agricultural land (crops and grassland) used for organic production.
Type	Official
Source	Nastat, Ocecas, Ministry of Agriculture, Fisheries and Food OCECAS 2.4.1.1 Ministry of agriculture, fisheries and food
Time coverage	2003-2021
Frequency	Annual
Unit	Hectares
Normative trend	
Data	

Source: Author's own elaboration

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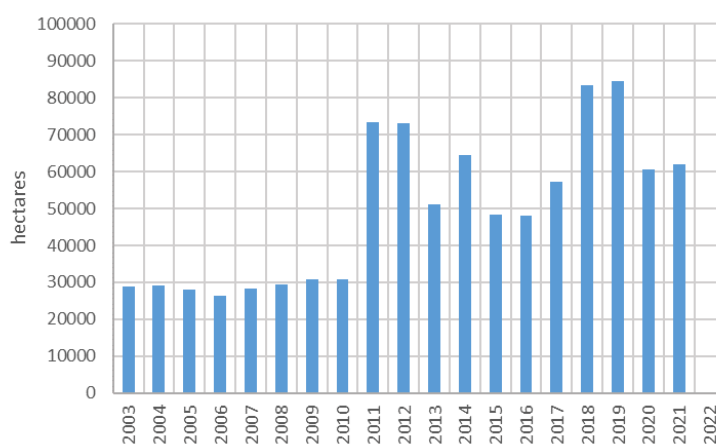
3.3 SDG3: Good health and well-being

For SDG3, JRC proposes five indicators addressing four targets (see Table 7). We consider four out of these five indicators. We discard deaths due to Covid-19. However, we consider important to take into account the effects that the pandemic had in the trends of the other health indicators.

Table 7. Indicators for SDG3: Availability, suitability and alternatives

SDG3 – Ensure healthy lives and promote well-being for all at all ages					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
3.2 (preventable death of newborns)	Infant mortality (Box 9.)	√	√		
3.3 (epidemics and diseases)	Deaths due to Covid-19	√	X	Patients cared for in mental health centres and suicide rate	
3.8 (universal health coverage)	Hospital beds (Box 10)	√	√		
3.c (health financing and recruitment)	Self reported unmet needs for medical examination (Box 11)	√	√		
	Health personnel (Box 12)	√	√		

Source: Author's own elaboration

The more relevant indicators for a region like Navarre are the ones related to universal health coverage and health financing and recruitment. The other indicator, infant mortality is already at low levels but it is worth monitoring its evolution. The figures range from 2 to 3 deaths per 1000 births.

The other three indicators are related to the resources dedicated to health. On the one hand, there is an indicator with a subjective component, since it deals with self-reported unmet needs for medical examination. On the other hand, two indicators are objective, measuring both human resources (medical personnel) and material resources (hospital beds). The two indicators are available in both absolute and relative values (per 100,000 inhabitants). To facilitate the interpretation of the indicators and to ensure their usefulness in comparative studies with other regions, both indicators are taken in relative units.

Figure 8 and Table 8 summarize the trends of these four indicator in Navarra from 2010 until the last available year. Details on data definition, source and data coverage can be found in the different boxes 9, 10, 11 and 12.

Figure 8. Indicators for SDG3: Trends in Navarre from 2010
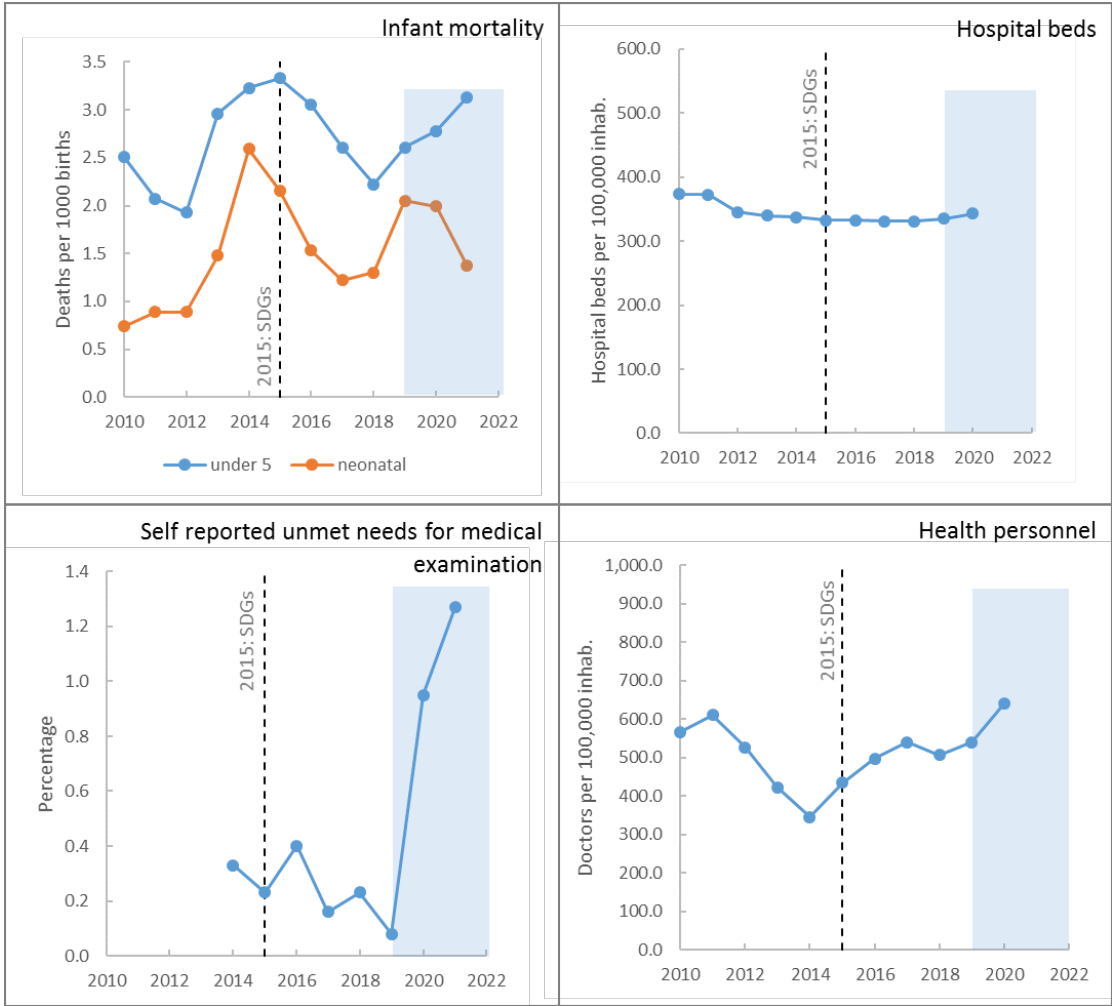
Source: Author's own elaboration

As can be observed in the different boxes, we highlight the following aspects for SDG 3 based on the proposed indicators:

— Infant mortality is low, 2–3 babies per 1000 inhabitants, for the whole time series.

— Hospital beds have remained stable over the last 7 years after several years of a clear downward trend.

— The pandemic has greatly affected the self-reported unmet needs for medical examination. The trend has changed from a decreasing one to an increasing one. However, the proportion of the population reporting unmet need for medical care is relatively low, barely 1.3%.

— The available data show the medical personnel indicator to be a very volatile indicator, which raises serious doubts about its estimation and interpretation. For example, the data show losses of half of the doctors from 2011 to 2014. In the last seven years, it follows a clearly increasing trend, reaching the highest level of the last 25 years.

Table 8. Indicators for SDG3: Trends in Navarre from 2010

SDG3 – Ensure healthy lives and promote well-being for all at all ages					
SDG target	**JRC indicator**	**Normative trend**	**Last available year**	**Trend before 2015** [1] [2]	**Trend after 2015** [1] [2]
3.2 (preventable death of newborns)	Infant mortality (Box 9.)	Non-increasing	2021	🟡	🟡
3.3 (epidemics and diseases)	Deaths due to Covid-19				
3.8 (universal health coverage)	Hospital beds (Box 10)	Non-decreasing	2020	🟠	🟢
3.c (health financing and recruitment)	Self reported unmet needs for medical examination (Box 11)	Non-increasing	2021	⚫	🟠
	Health personnel (Box 12)	Non-decreasing	2020	🟠	🟢

(1) Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(2) 🟢 Significant progress towards the desired direction; 🟢 Moderate progress towards the desired direction; 🟡 No progress or insignificant changes; 🟠 Moderate movement away from the desired direction; 🟠 Significant movement away from the desired direction; ⚫ No evaluation.

Source: Author's own elaboration

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Box 9. Infant mortality

3 GOOD HEALTH AND WELL-BEING	**Infant mortality**

Definition	Deaths of children under 5 years per 1,000 births.
Type	Official
Source	Estadística de defunciones INE
	Under-five mortality rate OCECAS 3.2.1.1
	Neonatal mortality rate OCECAS 3.2.2.1
Time coverage	2010-2021
Frequency	Annual
Unit	Per 1000 births
Normative trend	Non-increasing
Data	

Box 10. Hospital beds

3 GOOD HEALTH AND WELL-BEING	**Hospital beds**

Definition	Total hospital beds are all hospital beds which are regularly maintained and staffed and immediately available for the care of admitted patients. Total hospital beds are broken down as follows: Curative care (acute care) beds; Rehabilitative care beds; Long-term care beds (excluding psychiatric care beds); Other hospital beds.
Type	Official
Source	Eurostat_HLTH_RS_BDSRG
Time coverage	1993-2020
Frequency	Annual
Unit	Beds per 100000 inhab.
Normative trend	Non-decreasing
Data	

Box 11. Self-reported unmet needs for medical examination

	Self-reported unmet needs for medical examination
Definition	Proportion of the population aged 16 years and older reporting unmet need for medical care due to one of the following reasons: 'financial reasons', 'waiting list', and 'too far to travel'. Needs refer to a person's own assessment of whether he or she needed a medical examination or treatment (excluding dental care), but did not have it or did not seek it
Type	Official
Source	Income and Living Conditions Survey ods-navarra 3.41
Time coverage	2014-2021
Frequency	Annual
Unit	Pecentage
Normative trend	Non-increasing
Data	

Box 12. Health personnel

3 GOOD HEALTH AND WELL-BEING	**Health personnel**

Definition	Human resources available for providing health care services in the country, irrespective of the sector of employment (i.e. whether they are independent, employed by a hospital or any other health care provider). 'Manpower' categories focus on health care professionals (physicians, dentists, nursing and caring professionals, pharmacists, physiotherapists).
Type	Official
Source	Eurostat_HLTH_RS_PRSRG
Time coverage	1996-2020 (Medical doctors) 2003-2015 (Nurses)
Frequency	Annual
Unit	Personnel per 100000 inhab
Normative trend	Non-decreasing
Data	

3.4 SDG 4: Quality education

The proposal of JRC includes seven indicators for education, all of them from Eurostat. Therefore, all of them are available and easily accessible for Navarre, as can be seen in Table 9. The indicators cover different educational levels, from compulsory education (primary and secondary education) to non-compulsory education (both post-secondary and pre-primary education).

Table 9. Indicators for SDG4: Availability, suitability and alternatives

| SDG4 – Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
4.1 (primary and secondary education)	Participation rates in selected education level (Box 13)	√	√		
4.2 (access to early childhood education)	Pupils enrolled in early childhood education (Box 14)	√	√		
4.3 (vocational and tertiary education)	Students enrolled in tertiary education (Box 15)	√	√		New students in STEM degrees
	Participation in education (Box 16)	√	√		
	Distribution of pupils and students enrolled in general and vocational programmes (Box 17)	√	√		
4.5 (gender and other disparities in education)	Women 30-34 years old with higher education level (Box 18)	√	√		

4.6 (youth and adult literacy)	Early leavers from education and training (Box 19)	√	√		

Figure 9 summarizes the main data for these indicators available for the Autonomous Community of Navarre since 2010. Likewise, a box is presented for each indicator including the definition, sources and, if data are available, the period of analysis is extended for years prior to 2010. Finally, Table 10 provides an assessment of the trends observed.

Figure 9. Indicators for SDG4: Trends in Navarre from 2010
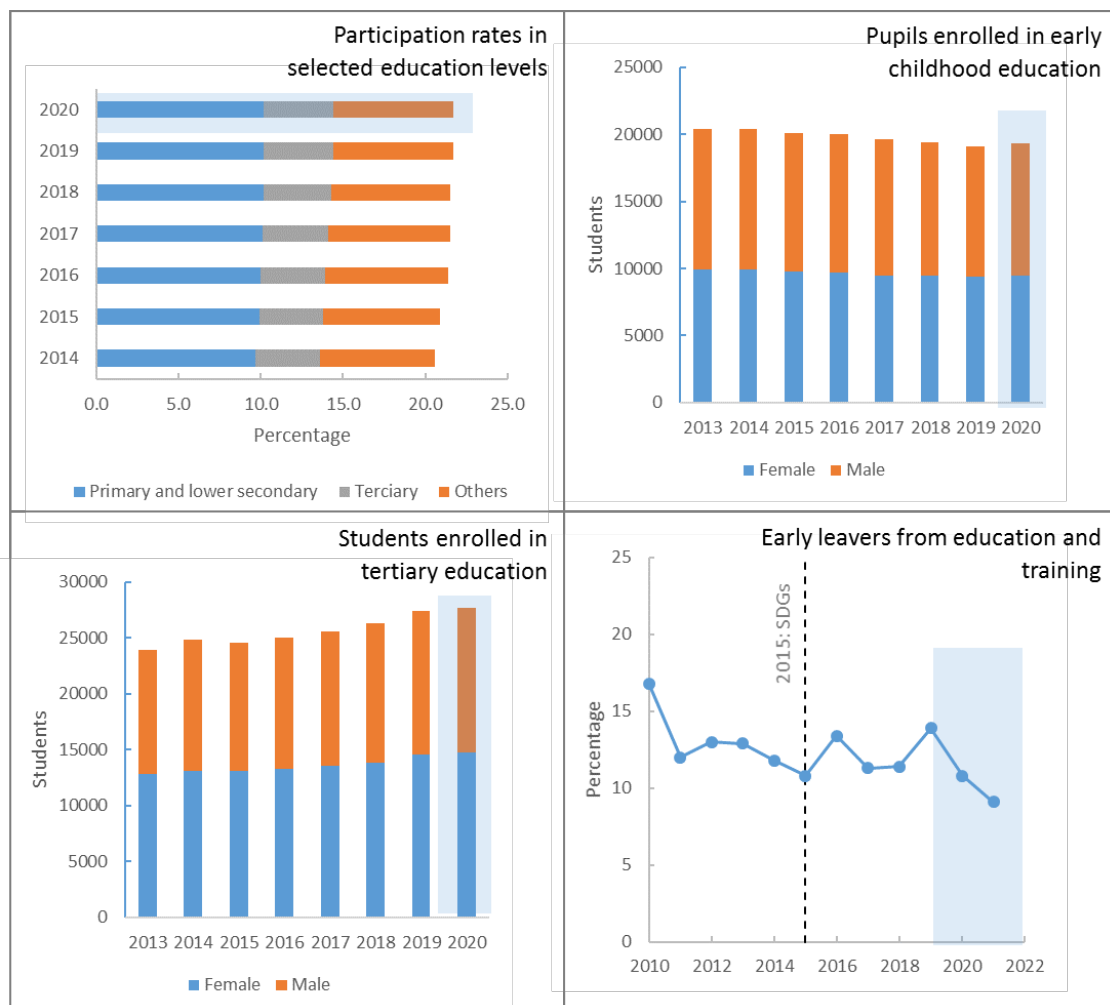
As expected, primary and secondary school students represent the largest proportion of the population. Of note is the slightly increasing trend in the proportions of students over population in all categories. The slight increase in the proportion of tertiary education students over the population is also reflected in the increase in tertiary education students. For this indicator we highlight two factors: (i) for the entire period for which there is data, the number of women in tertiary education exceeds that of men, (ii) the growth in the number of students in

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the period is higher for men (16.0%) than for women (15.3%). Despite these data, the percentage of participation in education of the 20-24 age range over their own age group decreases slightly.

There is also an indicator on pre-primary education that is also non-compulsory (pupils enrolled in early childhood education). Providing this type of education would facilitate family reconciliation tasks (which would affect mostly women). However, data are offered in number of students and not in relative terms. The percentage with respect to the number of children in that age group would indicate the degree of coverage in family reconciliation. Therefore, the desirable trend is not clear for pupils enrolled in early childhood education. Similarly, it is not easy to define a desirable trend for distribution of pupils and students enrolled in general and vocational programmes.

The indicator on early leavers from education is particularly interesting. The normative trend for this indicator would be non-increasing. From 2010 to 2019, this indicator shows small increases and decreases without showing a clear trend. After the year 2019 with the arrival of the pandemic, this indicator has decreased reaching in 2021 levels never reached in the previous 11 years. The trend in early leavers from education and training is clearly related to economic conditions, decreasing (i.e., improving) when the economic cycle is adverse and increasing (i.e., worsening) when the economic cycle is good. We can say that it is a countercyclical indicator.

Finally, there is a slight increase in the proportion of students enrolled in vocational training programs, but still not even half of all students. Expanding vocational training is still a challenge.

Table 10. Indicators for SDG4: Trends in Navarre from 2010

SDG4 – Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all					
SDG target	**JRC indicator**	**Normative trend**	**Last available year**	**Trend before 2015** [1] [2]	**Trend after 2015** [1] [2]
4.1 (primary and secondary education)	Participation rates in selected education level (Box 13)	Non-decreasing	2020	⬤ (grey)	◯ (light green)
4.2 (access to early childhood education)	Pupils enrolled in early childhood education (Box 14)	?	2020		
4.3 (vocational and tertiary education)	Students enrolled in tertiary education (Box 15)	Non-decreasing	2020	⬤ (grey)	⬤ (green)
	Participation in education (Box 16)	Non-decreasing	2020	⬤ (grey)	◯ (orange)
	Distribution of pupils and students enrolled in general and vocational programmes (Box 17)	?	2020		

4.5 (gender and other disparities in education)	Women 30-34 years old with higher education level (Box 18)	Non-decreasing	2021	🟡	🟢
4.6 (youth and adult literacy)	Early leavers from education and training (Box 19)	Non-increasing	2021	🟢	🟢

(1) Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(2) 🟢 Significant progress towards the desired direction; 🟢 Moderate progress towards the desired direction; 🟡 No progress or insignificant changes; 🟠 Moderate movement away from the desired direction; 🔴 Significant movement away from the desired direction; ⚪ No evaluation.

Box 13. Participation rates in selected education levels

	Participation rates in selected education levels
Definition	Participation rates by educational level as percentage of total population.
Type	Official
Source	Education administrative data, Eurostat Eurostat EDUC_UOE_ENRA15
Time coverage	2013-2020
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	
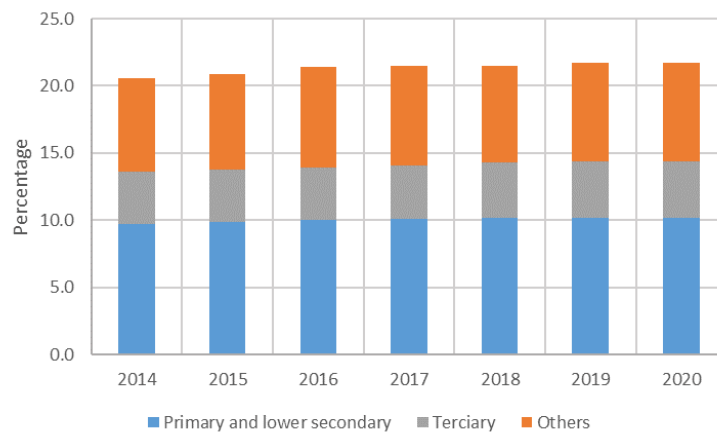
Box 14. Pupils enrolled in early childhood education

4 QUALITY EDUCATION	**Pupils enrolled in early childhood education**

Definition	Pupils enrolled in early childhood education. Pre-primary education. Non-compulsory education.
Type	Official
Source	Education administrative data, Eurostat Eurostat EDUC_UOE_ENRP03
Time coverage	2013-2020
Frequency	Annual
Unit	Number
Normative trend	
Data	
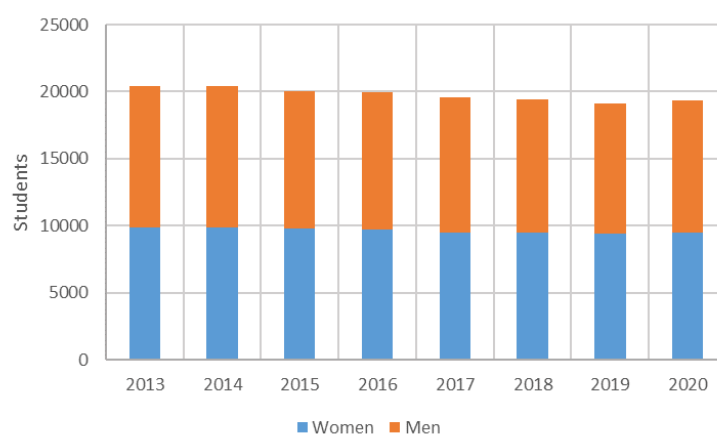
Box 15. Students enrolled in tertiary education

4 QUALITY EDUCATION	**Students enrolled in tertiary education**
Definition	Number of students enrolled in tertiary education
Type	Official
Source	Education administrative data, Eurostat
	Eurostat EDUC_UOE_ENRT06
Time coverage	2013-2020
Frequency	Annual
Unit	Number
Normative trend	Non-decreasing
Data	
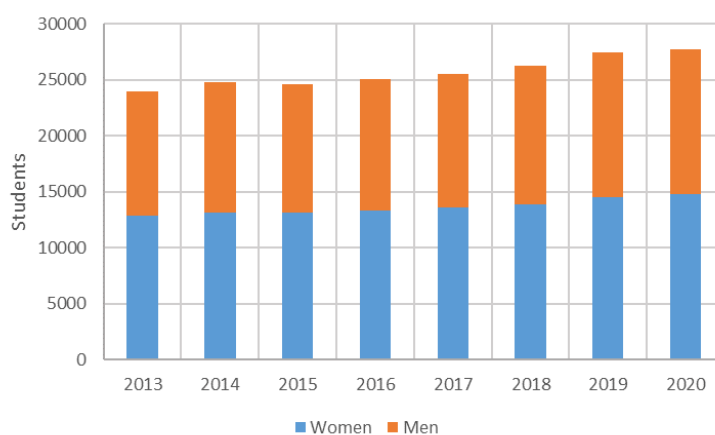
Box 16. Participation in education

4 QUALITY EDUCATION	**Participation in education**

Definition	Participation rates by age group (from 20 to 24 years) as percentage of corresponding age population. Non-compulsory education
Type	Official
Source	Education administrative data, Eurostat Eurostat EDUC_UOE_ENRA14
Time coverage	2013-2020
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	
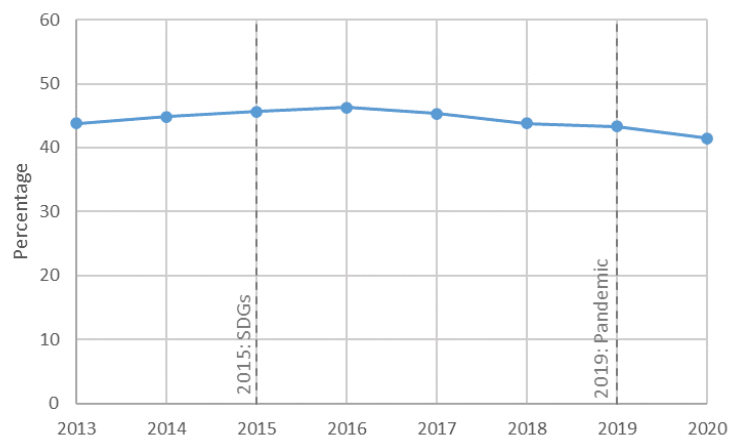
Source: Author's own elaboration

Box 17. Distribution of pupils and students enrolled in general and vocational programmes

	Distribution of pupils and students enrolled in general and vocational programmes
Definition	Percentage of pupils and students enrolled in general and vocational programmes. Different levels of education
Type	Official
Source	Education administrative data, Eurostat Eurostat EDUC_UOE_ENRA13
Time coverage	2013-2020
Frequency	Annual
Unit	Percentage
Normative trend	
Data	
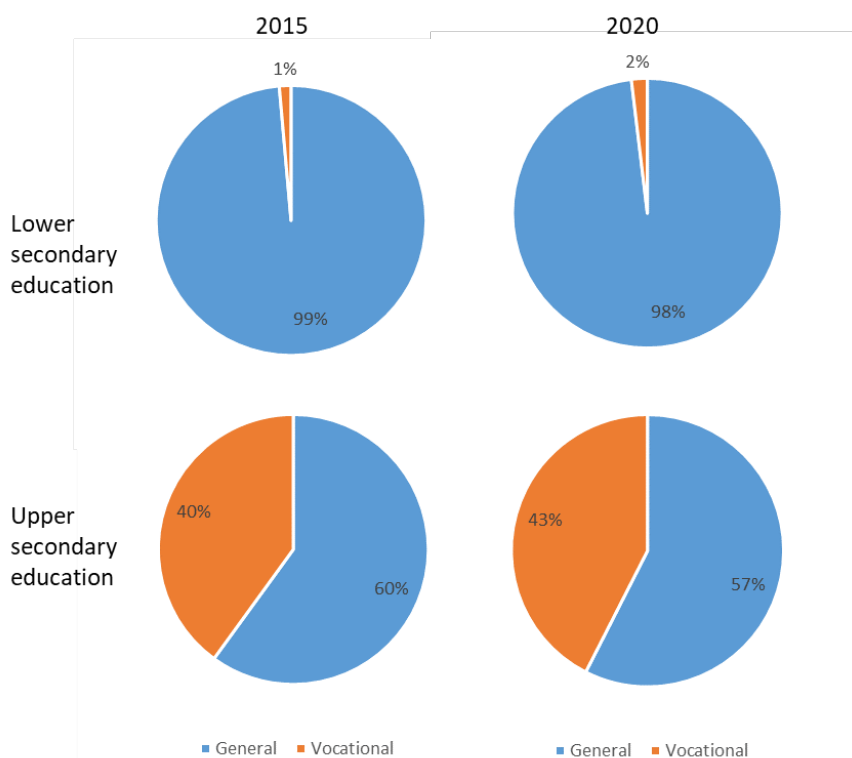
Box 18. Women 30-34 years old with higher education level

	Women 30-34 years old with higher education level
Definition	Women with tertiary education attainment level. Tertiary education covers ISCED 2011 levels 5, 6, 7 and 8 (short-cycle tertiary education, bachelor's or equivalent level, master's or equivalent level, doctoral or equivalent level, online code ED5-8 'tertiary education').
Type	Official
Source	Labor Force Survey, Eurostat Eurostat EDAT_LFSE_04
Time coverage	2000-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	

Box 19. Early leavers from education and training

	Early leavers from education and training
Definition	Percentage of the population aged 18 to 24 who has completed at most lower secondary education and is not involved in further education or training; the indicator 'early leavers from education and training' is expressed as a percentage of the people aged 18 to 24 with such criteria out of the total population aged 18 to 24.
Type	Official
Source	Labor Force Survey, Eurostat Eurostat EDAT_LFSE_16
Time coverage	2000-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-increasing
Data	

3.5 SDG5: Gender equality

The JRC proposal includes seven indicators, four official indicators and three experimental indicators. All of them are available for Navarre. The official ones come from national sources (two of them) and sub-national sources (one of them). The experimental ones come from supra-national sources, two from OECD and one from the European Commission. Given the definition of some indicators, there are some difficulties in identifying the normative trend for some of them.

Table 11. Indicators for SDG5: Availability, suitability and alternatives

SDG5 – Achieve gender equality and empower all women and girls					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
5.1 (gender discrimina-tion)	Female achievement/ disadvantage index (Box 20)	√	√		
5.2 (gender violence)	Fatal victims of gender-based violence at the hands of their partners or ex-partners (Box 21)	√	√		
	Victims of violence against women (Box 22)	√	√		
5.4 (unpaid work)	Inactive population rate due to caregiving responsibilities (Box 23)	√	√		
	Gender gap in part-time employment incidence (Box 24)	√	√		
5.5 (women participation and leadership)	Female research and development personnel (Box 25)	√	√		
	Women in parliament and government (Box 26)	√	√		

Source: Author's own elaboration

Figure 10. Indicators for SDG5: Trends in Navarre from 2010
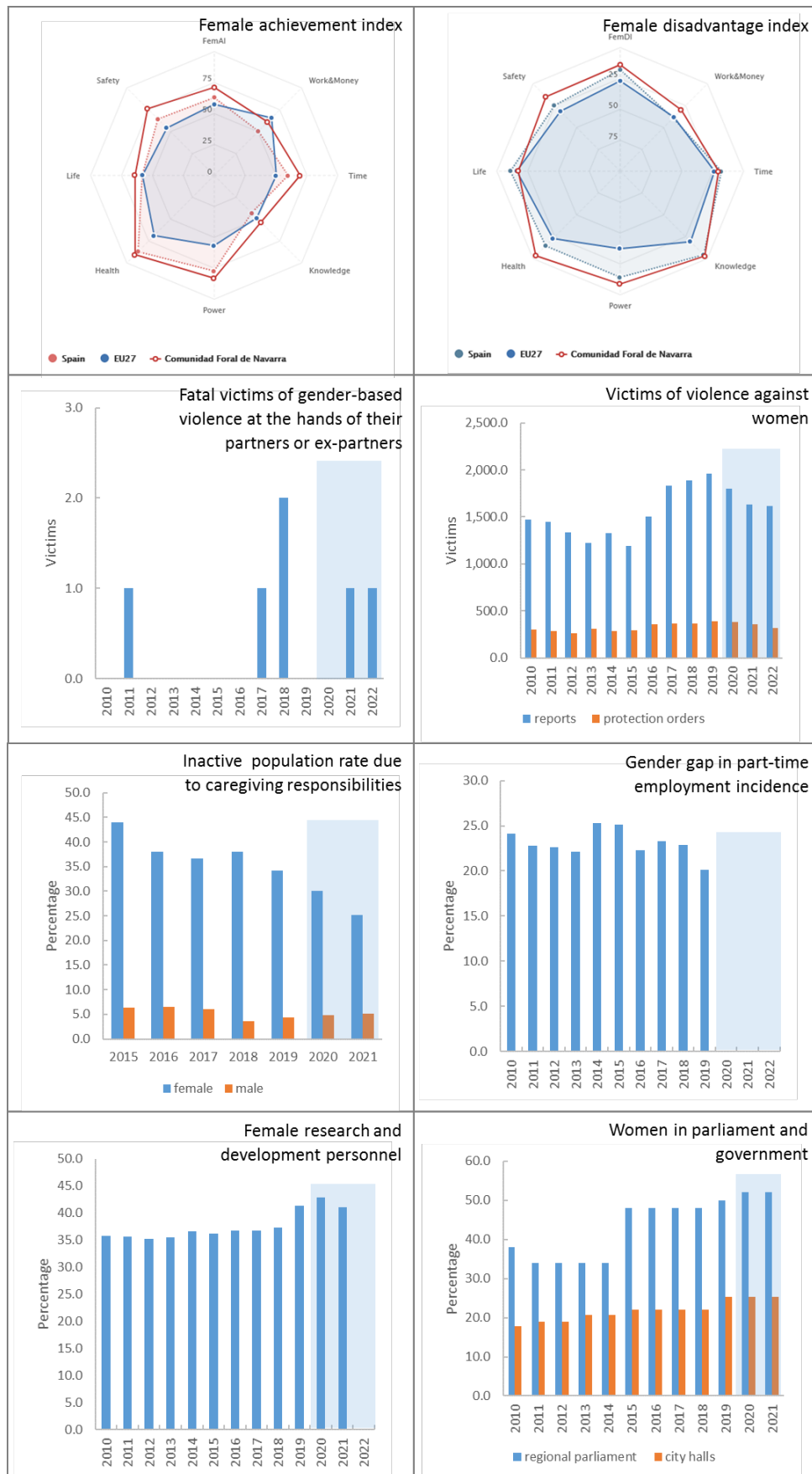
Source: Author's own elaboration

For the monitoring of ***gender discrimination***, the indicator female achievement index (FemAI) takes a value of 71.14 in Navarre. This index is calculated for 234 regions and Navarre ranks 26th when we order these regions from highest to lowest index. In other words, it is in the first quartile of the best-placed regions in FemAI. The indicator female disadvantage index (FemDI) takes a value of 13.90. If we order the 234 regions for which this index is calculated from the lowest to the highest index, that is, from the region with the least disadvantages to the region with the most disadvantages for women, Navarre is in position 5, in the top 10 regions with the least disadvantages for women.

Regarding ***gender violence***, both fatal victims and victims are good indicator to monitor the target. On the one hand, we observe that in most of the years from 2010 to 2015, there are not fatal victims in Navarre. This is in fact the desirable goal, zero casualties. On the other hand, it is difficult to interpret the data on reports on gender violence. This could mean that more people dare to speak out (a good thing) or that there is an increase in gender violence (a bad thing).

As for the ***unpaid work*** target, there is a strong gap between women and men in inactive population rate due to caregiving responsibilities. However, it should be noted that this difference has decreased in the years for which data is available (2015-2021). This reduction is mainly due to the drop in the rate for women as the indicator value for men hardly changes. The trend in the gender gap in part-time employment incidence is improving (declining) from 2015. However, there are no data beyond 2019 and it is not possible to assess the effect of the pandemic on this gap. In addition, this improvement is not sufficient to achieve the lowest gap observed in 2004.

If we analyse the indicators proposed for the target ***women participation and leadership***, the participation of women in the regional parliament clearly increases in the last two elections and it now represents half percent of the representatives. The presence of women as mayors is increasing but at a much slower pace. Women are participating more in politics but they do not reach the main position. Women in Navarre lag behind men in research personnel. The share of R&D female in R&D total personnel was 41% in 2021 according to the data provided by Observatorio de Innovación de Navarra/Innovation Observatory of Navarre.

In view of all these indicators, we can say that Navarre is in a good situation with respect to the SDG of Gender Equality. There are still issues to be improved, but Navarre is on the right track. Table 12 reflects this idea.

Table 12. Indicators for SDG5: Trends in Navarre from 2010

SDG5 – Achieve gender equality and empower all women and girls					
SDG target	JRC indicator	Normative trend	Last available year	Trend before 2015 [1] [2]	Trend after 2015 [1] [2]
5.1 (gender discrimina-tion)	Female achievement/ disadvantage index (Box 20)		2021		
5.2 (gender violence)	Fatal victims of gender-based violence at the hands of their partners or ex-partners (Box 21)	Decreasing	2022	🟢	🟢
	Victims of violence against women (Box 22)	?	2022		
5.4 (unpaid work)	Inactive population rate due to caregiving responsibilities	Non-increasing	2021	⚪	🟢

	(Box 23)				
	Gender gap in part-time employment incidence (Box 24)	Non-increasing	2019	🟠 (light)	🟢
5.5 (women participation and leadership)	Female research and development personnel (Box 25)	Non-decreasing	2021	🟡	🟢 (light)
	Women in parliament and government (Box 26)	Non-decreasing	2021	🟢 (light)	🟢

(1) Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(2) 🟢 Significant progress towards the desired direction; ⚪ Moderate progress towards the desired direction; 🟡 No progress or insignificant changes; 🟠 Moderate movement away from the desired direction; 🟠 Significant movement away from the desired direction; ⚫ No evaluation.

Source: Author's own elaboration

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Box 20. Female achievement/disadvantage index

5 GENDER EQUALITY	**Female achievement/disadvantage index**

Definition	The Female Disadvantage Index (FemDI) measures the difference between the performance of men and women in a region. The best score is 0 (no disadvantage) and the worst is 100 (largest disadvantage). FemDI is built out of 30 indicators of 7 domains: Work and Money, Knowledge, Time, Power, Health, Safety and Trust, and Quality of Life. Inverse indicator. The Female Achievement Index (FemAI) measures the level of female achievement relative to the region with the highest female achievements. It varies between 0 (lowest achievements) and 100 (highest achievements). FemAI is built out of 33 indicators of 7 domains: Work and Money, Knowledge, Time, Power, Health, Safety and Trust, and Quality of Life. Direct indicator
Type	Experimental
Source	Regio Regio FemDI Regio FemAI
Time coverage	2021
Frequency	---
Unit	Index [0,100]
Normative trend	FemDI Non-increasing FemAI Non-decreasing
Data	
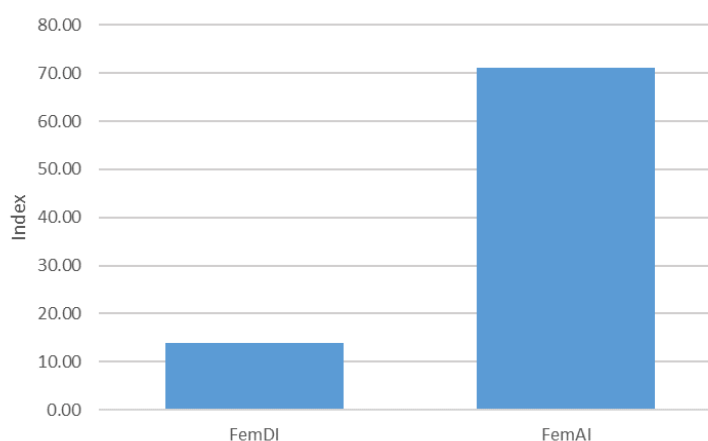
Source: Author's own elaboration

Box 21. Fatal victims of gender-based violence at the hands of their partners or ex-partners

	Fatal victims of gender-based violence at the hands of their partners or ex-partners
Definition	Women fatal victims of gender-based violence
Type	Official
Source	Ministry of equality. Government Delegation against Gender Violence / Ministerio de Igualdad. Delegación del Gobierno contra la Violencia de Género Ministry of equality
Time coverage	2003-2022
Frequency	Annual
Unit	Number
Normative trend	Non-increasing
Data	

Source: Author's own elaboration

Box 22. Victims of violence against women

	Victims of violence against women

Definition	Number of reports of gender violence.
	Number of protection orders for gender violence
Type	Official
Source	Ministry of equality. Government Delegation against Gender Violence / Ministerio de Igualdad. Delegación del Gobierno contra la Violencia de Género
	Ministry of equality
Time coverage	2009-2022
Frequency	Annual
Unit	Number
Normative trend	
Data	
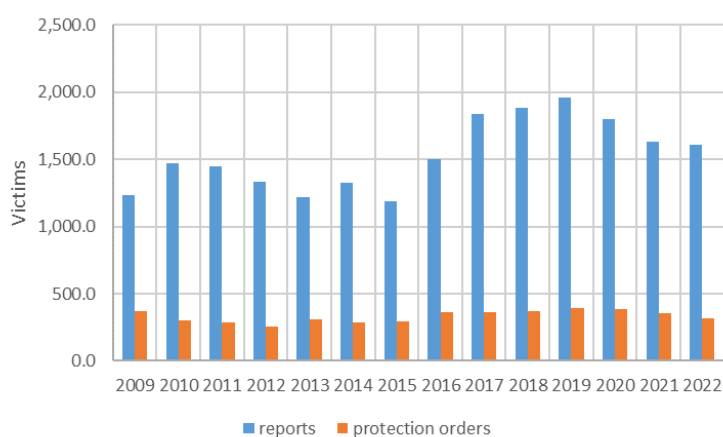
Box 23. Inactive population rate due to caregiving responsibilities

5 GENDER EQUALITY ⚥	**Inactive population rate due to caregiving responsibilities**

Definition	Percentage of persons not actively seeking work, thus neither employed nor unemployed and considered to be out of the labour force due to "Inactivity due to caregiving responsibilities" which refers to the reasons of "caring for children or disabled adults" and "other family or personal responsibilities".
Type	Official
Source	Labour Force Survey ods-navarra 5.44
Time coverage	2015-2021
Frequency	Annual
Unit	Percentage
Normative trend	
Data	
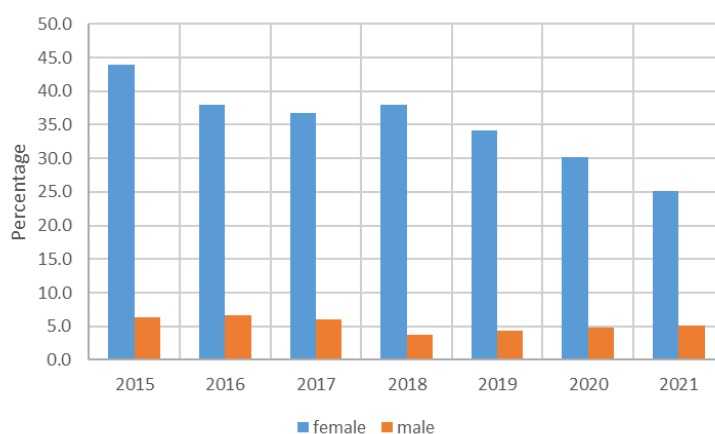
Box 24. Gender gap in part-time employment incidence

	Gender gap in part-time employment incidence
Definition	Men's and women's part-time employment rates, defined as part-time employment as a percentage of total employment. The gender gap is calculated as the percentage point difference between the male and the female rate.
Type	Experimental
Source	OECD Regional Data
Time coverage	2001-2019
Frequency	Annual
Unit	Percentage
Normative trend	Non-increasing
Data	

Box 25. Female research and development personnel

5 GENDER EQUALITY ⚧	**Female research and development personnel**

Definition	Share of R&D female in R&D total personnel.
Type	Experimental data (OECD); Official data (Innovation Observatory of Navarre)
Source	OECD, R&D Personnel by sector Innovation Observatory of Navarre
Time coverage	2002-2018 (OECD) 2013-2021 (Observatory)
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	
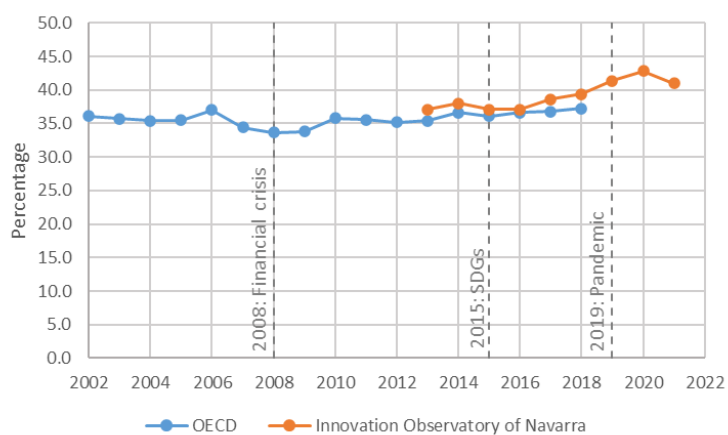
Box 26. Women in parliament and government

	Women in parliament and government
Definition	Proportion of seats held by women in regional parliaments. Number of seats occupied by women with respect to the total number of seats in the autonomous parliaments Proportion of mayor's offices held by women in local government. Number of mayor's offices held by women out of the total number of mayor's offices in local governments
Type	Official
Source	OCECAS 5.5.1.0 OCECAS 5.5.1.4
Time coverage	2010-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	
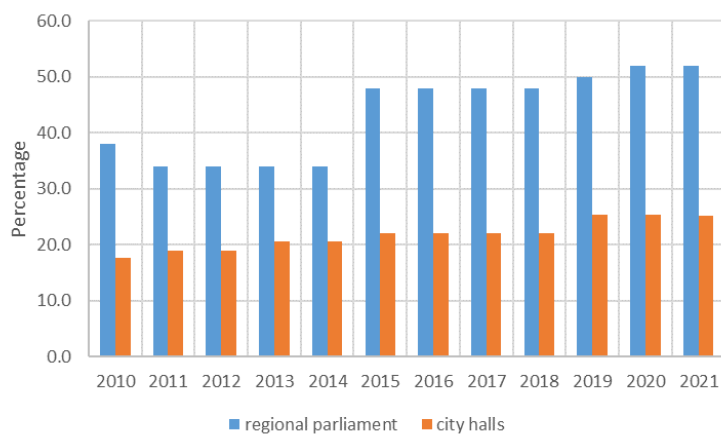
3.6 SDG6: Clean water and sanitation

The JRC proposal contains four indicators for SDG6 (see Table 13). The main source of data provided in the JRC proposal is Nilsa, a public organization from Navarre. Three indicators relate to water quality while another relates to universal access to water. Figure 11 summarizes the trends for the available indicators

Table 13. Indicators for SDG6: Availability, suitability and alternatives

SDG6 – Ensure availability and sustainable management of water and sanitation for all					
SDG target	JRC indicator	Availability	Fit for purpose	Alternative indicator	Complementary indicator
6.1 (universal access to water)	Population served by safely managed drinking water supply services (Box 27)	√	√		
6.3 (water quality)	Water bodies that exceed a standardized quality rating (Box 28)	√	√		
	Groundwater that exceed a standardized quality rating (Box 28)				
	Population connected to wastewater with at least secondary treatment	x	√		

Source: Author's own elaboration

Considering the target ***universal access to water***, there is one indicator that fits this purpose, population served by safely managed drinking water supply services. This indicator is measured as a percentage of total population. This percentage has slightly decrease in Navarre after the pandemic but remains at high levels.

Regarding ***water quality***, the indicator proposed shows that well above 90% of the waters bodies exceed a standardized quality rating. Water quality in Navarre is good according to the data and the water bodies that comply with water regulations are increasing.

There is a shortcoming in the proposal of indicators for this SDG. **Water scarcity** is a problem that may be relevant in the near future due to changes in rainfall patterns related to climate change. It could be interesting to complete the analysis with water stress indicators or wastewater recovery indicators. Water stress can be caused by a volumetric shortage, insufficient water quality, droughts, or insufficient accessibility. The proposal already includes accessibility and quality. A measure of volumetric shortage is missing.

In general, we can say that Navarre shows good figures both in terms of accessibility and water quality. It remains to analyse the availability of freshwater.

Figure 11. Indicators for SDG6: Trends in Navarre from 2010
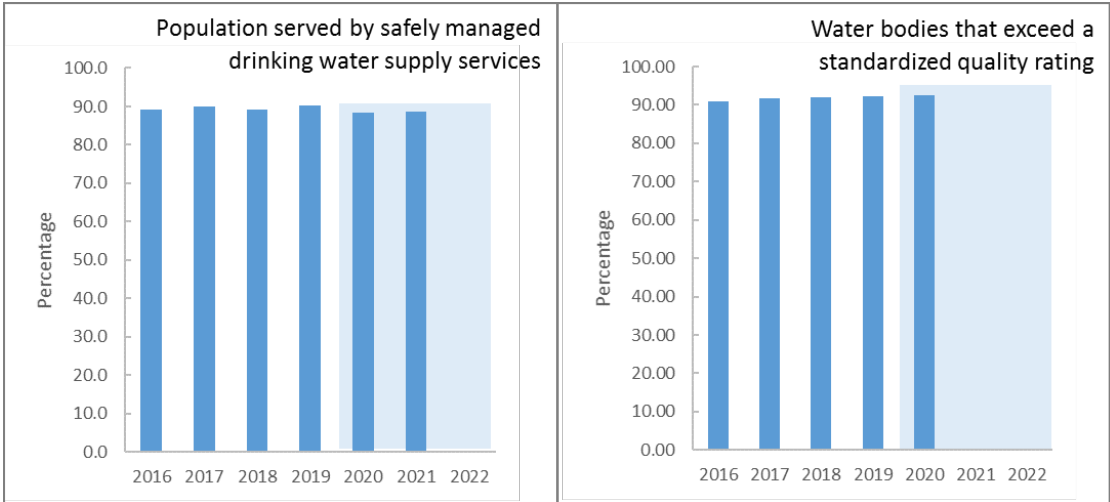
Source: Author's own elaboration

Table 14. Indicators for SDG6: Trends in Navarre from 2010

SDG6 – Ensure availability and sustainable management of water and sanitation for all					
SDG target	**JRC indicator**	**Normative trend**	**Last available year**	**Trend before 2015** [1][2]	**Trend after 2015** [1][2]
6.1 (universal access to water)	Population served by safely managed drinking water supply services (Box 27)	Non-decreasing	2021	⬤	◯
6.3 (water quality)	Water bodies that exceed a standardized quality rating (Box 28)	Non-increasing	2020	⬤	◯
	Groundwater that exceed a standardized quality rating (Box 28)				
	Population connected to wastewater with at least secondary treatment				

(1)   Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

● Significant progress towards the desired direction; ○ Moderate progress towards the desired direction; ○ No progress or insignificant changes; ○ Moderate movement away from the desired direction; ● Significant movement away from the desired direction; ● No evaluation.

Box 27. Population served by safely managed drinking water supply services
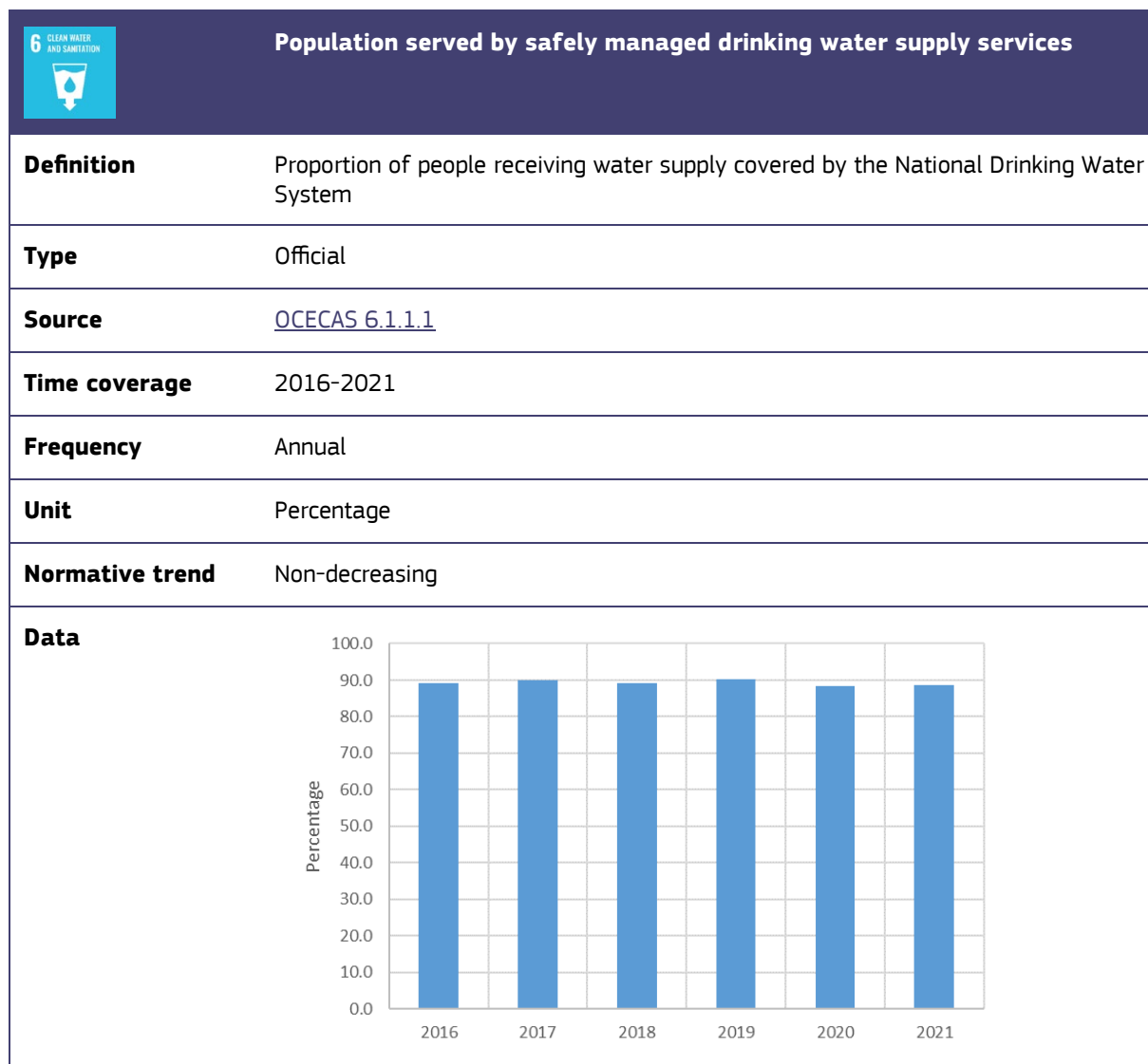
6 CLEAN WATER AND SANITATION	**Population served by safely managed drinking water supply services**
Definition	Proportion of people receiving water supply covered by the National Drinking Water System
Type	Official
Source	OCECAS 6.1.1.1
Time coverage	2016-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	

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Box 28. Water bodies that exceed a standardized quality rating

6 CLEAN WATER AND SANITATION	**Water bodies that exceed a standardized quality rating**

Definition	Percentage of samples comply with drinking water potability standards. Compliance with drinking water regulations. It does not specify whether it comes from water bodies or groundwater.
Type	Official
Source	Nilsa
Time coverage	2016-2020
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	

3.7 SDG7: Affordable and clean energy

Four indicators are proposed by JRC for SDG7. The availability for Navarre can be seen in Table 15. Two indicators relate to electricity production and the JRC classifies them as experimental, the source being the OECD. For Navarre, there are official data on electricity production, both on the sources used to produce electricity and the amount of electricity produced. The information can be consulted on Navarre's energy transition platform.

Table 15. Indicators for SDG7: Availability, suitability and alternatives

SDG7 – Ensure access to affordable, reliable, sustainable, and modern energy for all					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
7.1 (access to energy)	People affected by energy poverty (Box 29)	√	√		
7.2 (share of renewable energy)	Electricity production that comes from nuclear power	---	X		
	Electricity production that comes from renewable sources (Box 30)	√	√		
7.3 (energy efficiency)	Energy intensity (Box 31)	√	√		

Source: Author's own elaboration

Figure 12 shows the evolution of these indicators from 2010 onwards, provided that data are available for this time period. Details on the indicators can be found in the different boxes. We highlight the following aspects.

Access to energy and more specifically energy poverty is an issue that has become particularly relevant in recent years. Energy poverty is not an easy issue to measure (see Box 29) but the Ministry of Ecological Transition offers figures based on the Household Budget Survey and the Living Conditions Survey. There are four indicators that help to analyse fuel poverty. In general, the evolution of these indicators shows an increase in the proportion of people affected by energy poverty in Navarre, a trend that was slightly reversed in 2021.

Regarding the ***share of renewable energy***, Navarre's commitment to renewable energy is clear and it already represents half of its electricity production. Although electricity production in Navarre from renewable energies currently represents 50% of production, this percentage has decreased in recent years. It would be interesting to compare this data with absolute values of energy production.

Likewise, Navarre does not produce electricity with nuclear power and we discard this indicator for Navarre. Moreover, nuclear power is not renewable; therefore, it is not a good indicator for the target share of renewable resources.

As for the monitoring of **energy efficiency**, the proposed indicator is energy intensity. It is worth mentioning that energy intensity (Energy/GDP) is usually considered as the inverse of energy efficiency (GDP/energy). Therefore, a decrease in energy intensity implies an increase in energy efficiency. In Navarre, energy intensity is slowly decreasing. In a region like Navarre, where industry has a significant weight on GDP, reducing energy intensity is a challenge. In addition, energy efficiency is one of the main driver of GHG emissions, together with carbon intensity in the energy mix, economic growth and population. This relationship is studied using the extended IPAT identity in Annex 2.

Table 16 assess the evolution of the different indicators from 2010 onwards.

Figure 12. Indicators for SDG7: Trends in Navarre from 2010
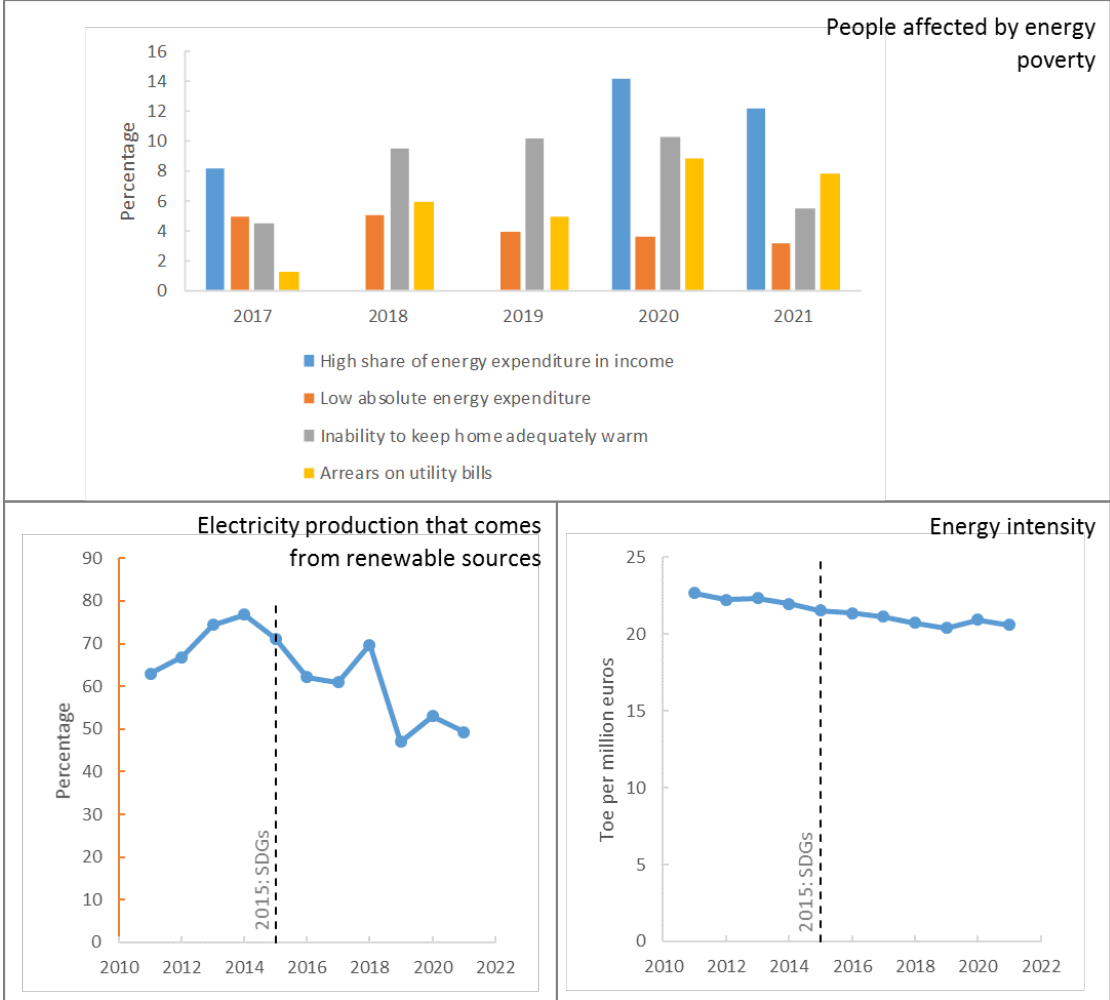
Source: Author's own elaboration

Table 16. Indicators for SDG7: Trends in Navarre from 2010

SDG7 – Ensure access to affordable, reliable, sustainable, and modern energy for all					
SDG target	**JRC indicator**	**Normative trend**	**Last available year**	**Trend before 2015** [1] [2]	**Trend after 2015** [1] [2]
7.1 (access to energy)	People affected by energy poverty (Box 29)	Non-increasing	2021	⚪ (grey)	⭕ (light orange)
7.2 (share of renewable energy)	Electricity production that comes from renewable sources (Box 30)	Non-decreasing	2021	🟢 (green)	🟠 (orange)
7.3 (energy efficiency)	Energy intensity (Box 31)	Non-increasing	2021	⚪ (light green)	⚪ (light green)

(1)   Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(2)   🟢 Significant progress towards the desired direction; ⚪ Moderate progress towards the desired direction; ⚪ No progress or insignificant changes; ⭕ Moderate movement away from the desired direction; 🟠 Significant movement away from the desired direction; ⚪ No evaluation.

Source: Author's own elaboration

Box 29. People affected by energy poverty

7 AFFORDABLE AND CLEAN ENERGY ☀	**People affected by energy poverty**

Definition	High share of energy expenditure in income: Proportion of households whose share of energy expenditure in income is more than twice the national median.
	Low absolute energy expenditure: Share of households whose absolute energy expenditure is below half the national median.
	Inability to keep home adequately warm: Share of population not able to keep their home adequately warm based on the question "Can your household afford to keep its home adequately warm?"
	Arrears on utility bills: Share of population with arrears on utility bills, based on the question "In the last twelve months, has the households been in arrear, i.e., has been unable to pay on time due to financial difficulties for utility bills (heating, electricity, gas, water, etc.) for main dwelling?"
Type	Official
Source	Ministry of Ecological Transition / Ministerio para la Transición Ecológica (Miteco). Energy Poverty Advisory Hub (EPAH)
	Miteco
Time coverage	2017-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-increasing
Data	
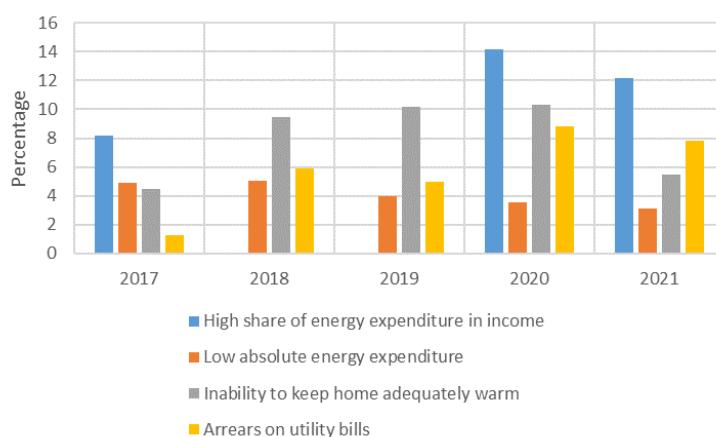
Box 30. Electricity production that comes from renewable sources

7 AFFORDABLE AND CLEAN ENERGY	**Electricity production that comes from renewable sources**

Definition	Share of electric power generation from renewable energy sources.
Type	Official
Source	OCECAS 7.2.1.0
Time coverage	2011-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	
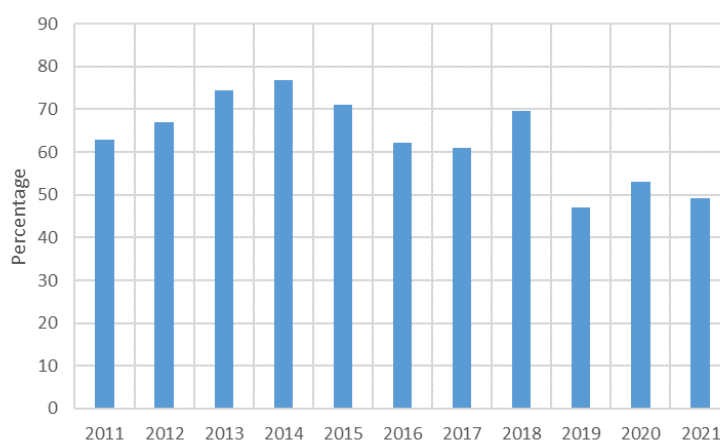
	Energy intensity
Definition	Electricity consumption per unit of real GDP.
Type	Official
Source	OCECAS 7.3.1.0
Time coverage	2011-2021
Frequency	Annual
Unit	Tons of oil equivalent (toe) per million euros
Normative trend	Non-increasing
Data	
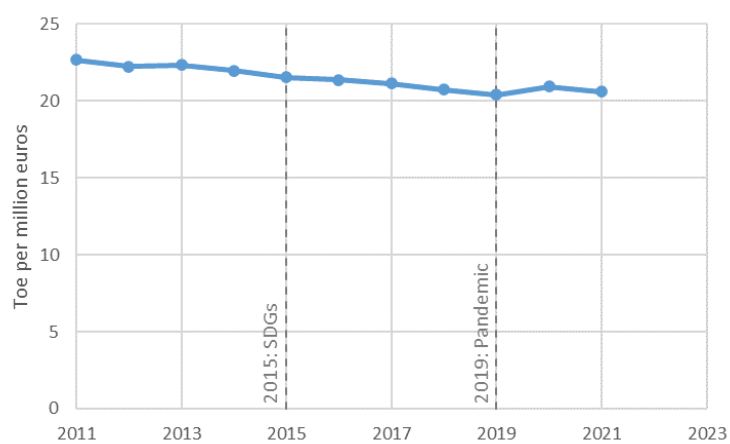
3.8 SDG8: Decent work and economic growth
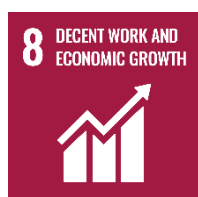
 SDG 8 has the largest number of indicators in the JRC proposal, ten indicators. (see Table 17). They are mainly well-known macro magnitudes. Nine out of ten indicators are available for Navarre. Figure 13 shows the trajectory of the main indicators for SDG8 from 2010 to the latest available data. Longer time series, if available, can be seen in the boxes explaining each indicator. As expected, the trend of the economic indicators show the effects of the economic crisis in 2008 and the pandemic in 2020.

Table 17. Indicators for SDG8: Availability, suitability and alternatives

SDG8 – Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
8.1 (economic growth)	GDP at current market prices (Box 32)	✓	✗	GDP at constant prices or volume	
8.2 (economic productivity)	GVA at basic prices (Box 32)	✓	✗	GVA per worker at constant prices or volume	
8.3 (job creation)	Firm creation	✗	✓		
8.5 (productive employment)	Economic activity (Box 33)	✓	✓		
	Employment (Box 33)	✓	✓		
	Unemployment (Box 34)	✓	✓		
	Long-term unemployment (12 months and more) (Box 34)	✓	✓		
	Compensation of employees (Box 35)	✓	✓	Compensation of employee at constant prices	Compensation of employees as a percentage of GDP
8.6 (youth not in employment, education or training)	Young people neither in employment nor in education and training	✓	✓		

	(Box 36)				
8.8 (labour rights)	Occupational accidents (Box 37)	√	√		

Figure 13. Indicators for SDG8: Trends in Navarre from 2010
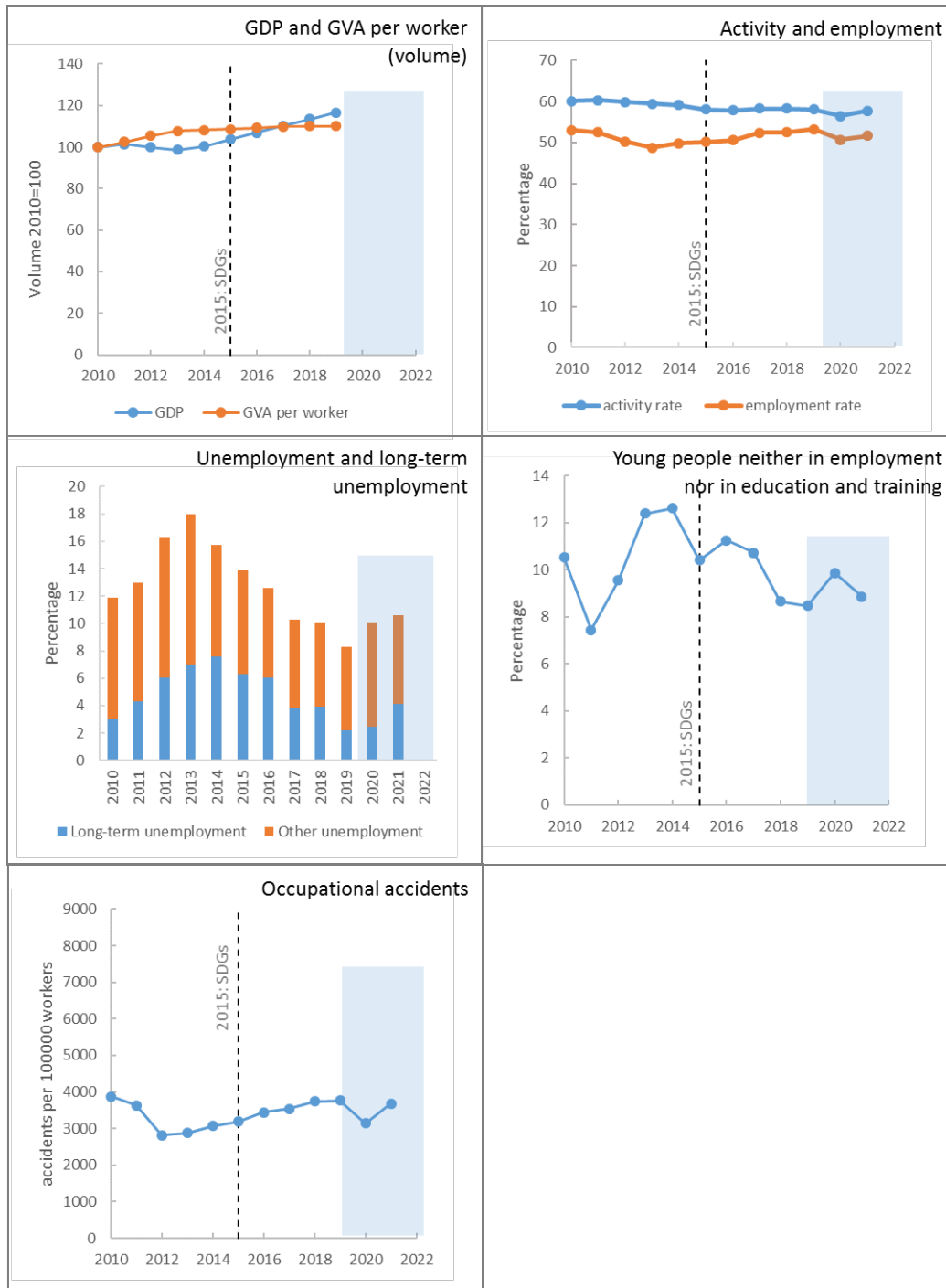
The first two targets in this SDG are **economic growth** and **economic productivity**. For the first target, the indicator proposed is GDP at current prices and for the second GVA at basic prices. Both macro magnitudes differ basically in taxes. This means that both indicators have equal trends (see Box 32).

GDP is a good indicator for measuring economic growth. However, for it to truly reflect economic growth it must be shown at constant prices or volumes. Similarly, in order to address economic productivity, it would be more informative to consider GVA at constant prices. Moreover, this indicator should be complemented by GVA per worker. Recall that this proposal is closer to the one proposed by the JRC to monitor agricultural productivity in SDG2. In fact, data show a similar trend in these two variables at the aggregate level (see Figure 13) and for agriculture (see Figure 7).

Regarding **productive employment**, five different but closely related indicators are proposed. The indicators monitor the main variables of the labour market, activity, employment and unemployment and corresponding rates are well-known indicators. The activity rate is the labour market indicator with fewer changes. Employment and specially unemployment show more changes in the trends along the years These are complemented by the compensation of employees. For this indicator, it will be more interesting and informative to use it as a percentage of GDP (compensation of employees vs gross capital formation) or per worker. However, in absolute numbers follows a similar trend to those of GDP and GVA and does not add new information (see Box 35).

As for **youth not in employment, education or training**, it has been decreasing since 2014 and stands at around 9% for the last four years for which data is available.

The last target considered in the proposal is **labour rights**. The indicator chosen is occupational accidents. In the case of Navarre, a clearly decreasing trend can be observed from 1998 to 2012 (see Box 37). From then on, the trend changes and the relative rate of occupational accidents increases slightly.

Table 18 assess the evolution of the different indicators from 2010 onwards.

Table 18. Indicators for SDG8: Trends in Navarre from 2010

SDG8 – Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all					
SDG target	**JRC indicator**	**Normative trend**	**Last available year**	**Trend before 2015** [1] [2]	**Trend after 2015** [1] [2]
8.1 (economic growth)	GDP at current market prices (Box 32)	Non-decreasing	2021	🟡	🟢
8.2 (economic productivity)	GVA at basic prices (Box 32)	Non-decreasing	2021	🟡	🟢
8.5 (productive employment)	Economic activity (Box 33)	Non-decreasing	2021	🟠	🟠
	Employment (Box 33)	Non-decreasing	2021	🟠	🟢
	Unemployment (Box 34)	Non-increasing	2021	🟠	🟢

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	Long-term unemployment (12 months and more) (Box 34)	Non-increasing	2021	🟠 Moderate movement away	🟢 Moderate progress
	Compensation of employees (Box 35)	Non-decreasing	2021	🟡 No progress	🟢 Moderate progress
8.6 (youth not in employment, education or training)	Young people neither in employment nor in education and training (Box 36)	Non-increasing	2021	🟠 Moderate movement away	🟢 Moderate progress
8.8 (labour rights)	Occupational accidents (Box 37)	Non-decreasing	2021	🟢 Moderate progress	🟠 Moderate movement away

(1) Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(2) 🟢 Significant progress towards the desired direction; ⚪🟢 Moderate progress towards the desired direction; 🟡 No progress or insignificant changes; 🟠 Moderate movement away from the desired direction; 🟠 Significant movement away from the desired direction; ⚫ No evaluation.
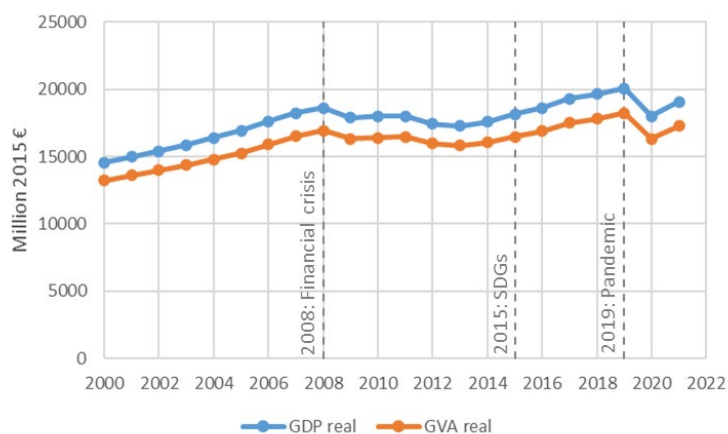
Source: Author's own elaboration

Box 32. Gross domestic product and gross value added

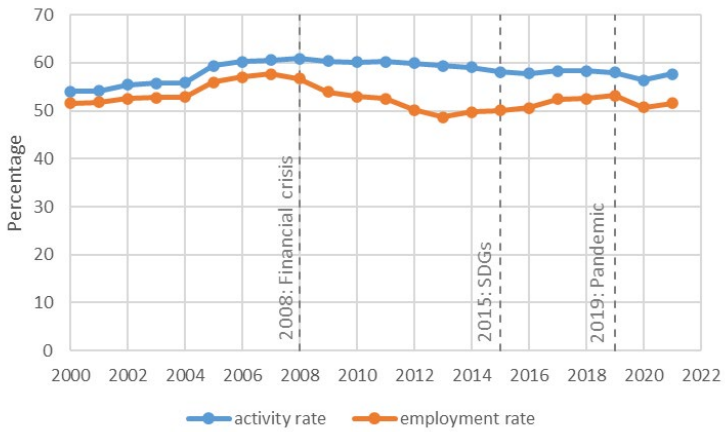|	Gross domestic product and gross value added
8 DECENT WORK AND ECONOMIC GROWTH	

Definition	Gross domestic product: GDP is equal to the sum of the gross value added of all resident institutional units engaged in production, plus any taxes on products and minus any subsidies on products.
	Gross value added: GVA is equal to the sum of the gross value added of all resident institutional units engaged in production.
Type	Official
Source	Eurostat, Regional economic accounts
	NAMA_10R_2GDP
	NAMA_10R_3GVA
	NAMA_10R_2GVAGR
	Nastat
Time coverage	2000-2021
Frequency	Annual
Unit	Constant prices
Normative trend	Non-decreasing
Data	

Box 33. Activity and Employment

	Activity and Employment
Definition	Economic activity: The activity rate is the percentage of active persons in relation to the comparable total population.
	Employment: The employment rate is the percentage of employed persons in relation to the comparable total population.
Type	Official
Source	Labour Force Survey (LFS)
	Economic Activity LFST_R_LFP2ACTRT
	Employment LFST_R_LFE2EMPRT
	Nastat
Time coverage	1999-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	

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Box 34. Unemployment and long-term unemployment

8 DECENT WORK AND ECONOMIC GROWTH	**Unemployment and long-term unemployment**

Definition	Unemployment: The unemployment rate is the number of people unemployed as a percentage of the active population. Long-term unemployment: Long-term unemployment refers to the number of people who are out of work and have been actively seeking employment for at least a year. Long-term unemployment as a percentage of unemployment.
Type	Official
Source	Labour Force Survey (LFS) Unemployment LFST_R_LFUR2GAC Long-term unemploymentLFST_R_LFU2LTU Nastat
Time coverage	1999-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-increasing
Data	

Box 35. Compensation of employees

	Compensation of employees
Definition	The compensation of employees consists of all remuneration, in cash and in kind, which employees receive from their employers in return for work done during the relevant accounting period. The payments cover: gross (pre-tax) wages and salaries; employers' actual social contributions; imputed social contributions.
Type	Official
Source	Regional economic accounts Eurostat NAMA_10R_2COE
Time coverage	2000-2021
Frequency	Annual
Unit	Million euros
Normative trend	Non-decreasing
Data	

Box 36. Young people neither in employment nor in education and training

8 DECENT WORK AND ECONOMIC GROWTH	**Young people neither in employment nor in education and training**

Definition	Share of 15-24 year-olds not in employment, education or training (formal or non-formal) in the last four weeks out of all 15-24 year-olds
Type	Official
Source	Labour Force Survey Ocecas 8.6.1.1
Time coverage	2000-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-increasing
Data	

Box 37. Occupational accidents

8 DECENT WORK AND ECONOMIC GROWTH	**Occupational accidents**

Definition	Work accidents that have resulted in sick leave (for at least 1 day, not counting the day of the accident) or the death of the injured worker. Work accidents can occur either during the working day or during the trip between the worker's home and the place of work or vice versa (in itinerary).
Type	Official
Source	Ministry of Labour and Social Economy / Ministerio de Trabajo y Economía Social (Mites) Mites
Time coverage	1988-2021
Frequency	Annual
Unit	Accidents per 100000 workers
Normative trend	Non-increasing
Data	
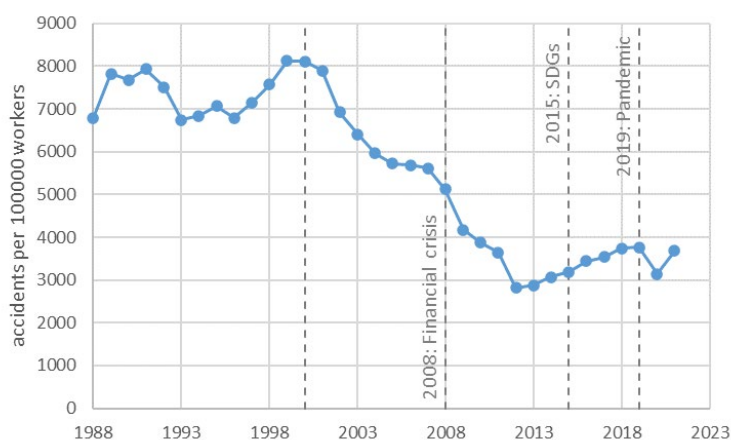
3.9 SDG9: Industry, innovation, and infrastructure

Five indicators are included in the JRC proposal for SDG9, focusing mainly on R&D and innovation (see Table 19). In the analysis of these indicators, a local source has been helpful, namely the Observatory of innovation (Observatorio de Innovación). The Innovation Observatory of Navarre permanently analyses the reality of R&D&I in Navarre, monitors the implementation of the Science, Technology and Innovation Plan 2021-2025 and measures the impact of public policies that develop the Regional Law on Science and Technology. It includes a complete set of indicators about investment, people and results, among others. In the JRC proposal, these three aspects of R&D are considered: investment (Gross Domestic Expenditure on R&D), people (R&D personnel and researchers) and results (Patent applications to the EPO).

Table 19. Indicators for SDG9: Availability, suitability and alternatives

SDG9 – Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
9.2 (sustainable industrialization)	GVA of the industry with respect to the GVA of the total sectors (current price) (Box 38)	√	√		
9.5 (promote innovation)	Gross Domestic Expenditure on R&D (Box 39)	√	√		Gross Domestic Expenditure on R&D as a percentage of GDP
	R&D personnel and researchers (Box 40)	√	√		
	Employment in high-technology manufacturing as a percentage of total manufacturing employment (Box 41)	√	√		
	Patent applications to the EPO (Box 42)	√	√		

Source: Author's own elaboration

Figure 14. Indicators for SDG9: Trends in Navarre from 2010

GVA of the industry with respect to the GVA of the total sectors

Gross Domestic Expenditure on R&D

R&D personnel and researchers

Employment in high-technology manufacturing as a percentage of total manufacturing employment

Patent applications to the EPO

Source: Author's own elaboration

Figure 14 summarizes the trends of these indicators in Navarre from 2010 onwards. One of the targets addressed is **sustainable industrialization**. The indicator used for that purpose is GVA of the industry with respect to the GVA of the total sectors (current price). The trend of the indicator shows that the relevance of industrialization on the GVA in Navarre is quite stable along time. There was a small negative effect in the financial crisis (see a larger time series in Box 38) and in the pandemic but in general it is quite stable.

Regarding the target **promote investigation**, we consider four different indicators. Investment in R&D relates with the economic conditions and historically decreases with a negative economic cycle, as it happened in the 2008 financial crisis. Achieving a non-decreasing trend in the percentage Gross Domestic Expenditure on R&D

decoupled form GDP evolution remains a challenge for big and small economies. These effects are also notice in R&D personnel and R&D results

Table 20. Indicators for SDG9

SDG target	JRC indicator	Normative trend	Last available year	Trend before 2015 [(1) (2)]	Trend after 2015 [(1) (2)]
9.2 (sustainable industrialization)	GVA of the industry with respect to the GVA of the total sectors (current price) (Box 38)	Non-decreasing	2021	🟡	🟡
9.5 (promote innovation)	Gross Domestic Expenditure on R&D (Box 39)	Non-decreasing	2021	🟠	🟢
	R&D personnel and researchers (Box 40)	Non-decreasing	2021	🟠	🟢
	Employment in high-technology manufacturing as a percentage of total manufacturing employment (Box 41)	Non-decreasing	2019	🟢	🟢
	Patent applications to the EPO (Box 42)	Non-decreasing	2021	🟠	🟡

(1) Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(2) 🟢 Significant progress towards the desired direction; ⚪ Moderate progress towards the desired direction; 🟡 No progress or insignificant changes; ⚪ Moderate movement away from the desired direction; 🟠 Significant movement away from the desired direction; ⚫ No evaluation.

Source: Author's own elaboration

Box 38. GVA of the industry with respect to the GVA of the total sectors

	GVA of the industry with respect to the GVA of the total sectors
Definition	Gross value added (GVA) of the industry (B-E NACE activities) with respect to the GVA of the total sectors.
Type	Official
Source	Regional economic accounts Eurostat NAMA_10R_3GVA INE Nastat
Time coverage	2000-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	

Box 39. Gross Domestic Expenditure on R&D

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	**GVA of the industry with respect to the GVA of the total sectors**
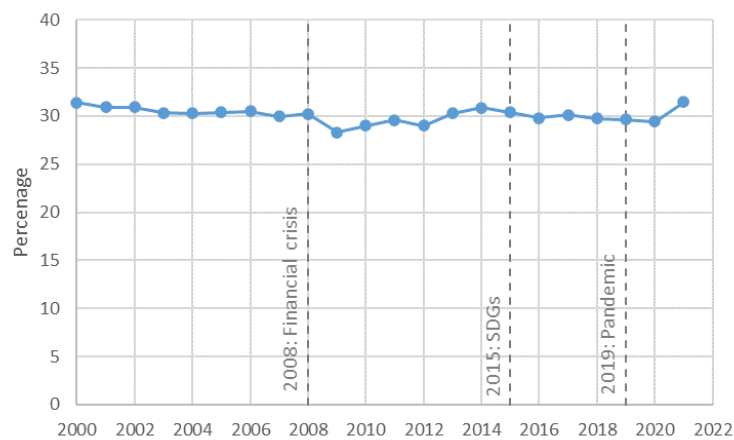
Definition	Gross domestic expenditure on R&D (GERD) includes expenditure on research and development by business enterprises, higher education institutions, as well as government and private non-profit organizations.
Type	Official
Source	Eurostat, Research and development Eurostat RD_E_GERDREG OCECAS 9.5.1.1 Innovation Observatory
Time coverage	1987-2021
Frequency	Annual
Unit	Percentage of GDP and Million €
Normative trend	Non-decreasing
Data	
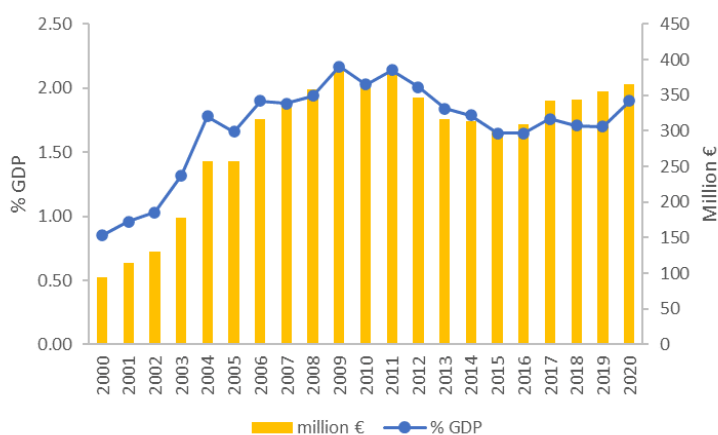
Box 40. R&D personnel and researchers

	R&D personnel and researchers
Definition	Research and development (R&D) personnel consists of all individuals employed directly in the field of research and development (R&D), including persons providing direct services, such as managers, administrators, and clerical staff.
	A R&D researcher can be employed in the public or the private sector – including academia – to create new knowledge, products, processes and methods, as well as to manage the projects concerned.
Type	Official
Source	Eurostat, Research and development
	Eurostat RD_P_PERSREG
	OCECAS 9.5.2.1
	Innovation Observatory
Time coverage	1988-2020
Frequency	Annual
Unit	Head Count and Full Time Employment (FTE)
Normative trend	Non-decreasing
Data	
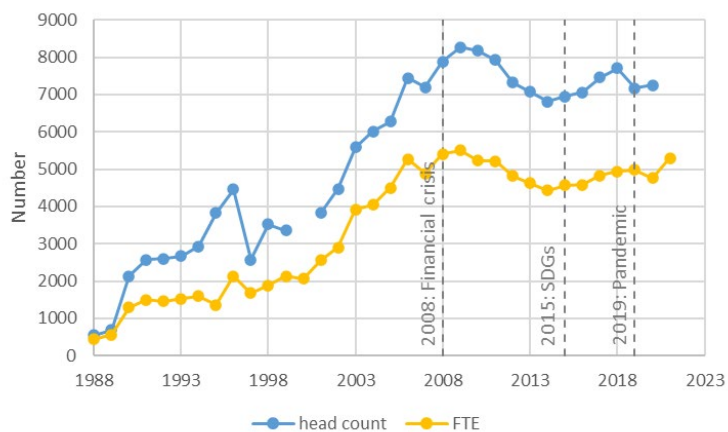
Box 41. Employment in high-technology manufacturing as a percentage of total manufacturing employment

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	**Employment in high-technology manufacturing as a percentage of total manufacturing employment**

Definition	Share of employment in high-technology manufacturing (in percentage of total employment).
Type	Experimental
Source	OECD, Knowledge and high technology industries OECD
Time coverage	2008-2019
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	

Box 42. Patent applications to the EPO

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	**Patent applications to the EPO**
Definition	A patent application, the application for a patent, needs to be for an invention, i.e. a new solution to a technical problem, which satisfies the criteria of: novelty (the solution must be novel); inventiveness (it must involve a non-obvious inventive step); industrial applicability (it must be capable of industrial use).
Type	Official
Source	Eurostat PAT_EP_RTOT Innovation Observatory
Time coverage	1979-2021
Frequency	Annual
Unit	Number
Normative trend	Non-decreasing
Data	

3.10 SDG10: Reduced inequalities

SDG 10 is the SDG with the lowest number of indicators in the JRC proposal, two indicators. They measure inequality in the labour market and inequality in income distribution (see Table 21).

Table 21. Indicators for SDG10: Availability, suitability and alternatives

SDG10 – Reduce inequality within and among countries					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
10.2 (inclusion irrespective of status)	Unemployment of people with disabilities (Box 43)	√	√		Unemployment of people without disabilities
10.4 (greater equality)	Gini index of disposable income (after taxes and transfers) (Box 44)	√	√		Gini index of disposable income (before taxes and transfers)

Source: Author's own elaboration

The first proposal is unemployment of people with disabilities. This indicator address the target ***inclusion irrespective of status***. The indicator does not measure inequality in the labour market unless compared with unemployment of people without disabilities. We include this data in the analysis of this indicator. We highlight that unemployment of people with disabilities is decreasing over time but there is still a gap with the unemployment of people without disabilities of more than 2 percentage points.

Regarding ***greater equality***, there is only one data for the Gini index of disposable income (after taxes and transfers) but if we compare this data with the Gini index of income before taxes and transfers we observe the redistributive effect of taxes and transfers (smaller Gini index after taxes and transfers than before taxes and transfers).

Figure 15 shows the data available for these indicators in Navarre.

Source: Author's own elaboration

Table 22. Indicators for SDG10: Trends in Navarre from 2010

SDG10 – Reduce inequality within and among countries					
SDG target	**JRC indicator**	**Normative trend**	**Last available year**	**Trend before 2015** [1] [2]	**Trend after 2015** [1] [2]
10.2 (inclusion irrespective of status)	Unemployment of people with disabilities (Box 43)	Non-increasing	2021	⬤	⬤
10.4 (greater equality)	Gini index of disposable income (after taxes and transfers) (Box 44)	Non-increasing	2021	⬤	◯

(1)   Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(2)   🟢 Significant progress towards the desired direction; ◯ Moderate progress towards the desired direction; ◯ No progress or insignificant changes; ◯ Moderate movement away from the desired direction; 🟠 Significant movement away from the desired direction; ⬤ No evaluation.

Source: Author's own elaboration

Box 43. Unemployment of people with disabilities

![SDG 10 Reduced Inequalities icon]	**Unemployment of people with disabilities**

Definition	Ratio of unemployed persons to economically active persons in the population between 16 and 64 years of age with a degree of disability equal to or greater than 33%.
Type	Official
Source	Disabilities OCECAS 8.5.2.1 Non-disabilities OCECAS 8.5.2.4 Aggregate OCECAS 8.5.2.5
Time coverage	2014-2020
Frequency	Annual
Unit	Percentage
Normative trend	Non-increasing
Data	

	Gini index of disposable income (after taxes and transfers)
Definition	The Gini coefficient measures the extent to which the distribution of income within a country deviates from a perfectly equal distribution. A coefficient of 0 expresses perfect equality where everyone has the same income, while a coefficient of 1 expresses full inequality where only one person has all the income.
Type	Experimental
Source	OECD OECD Regional statistics
Time coverage	2013
Frequency	---
Unit	Index
Normative trend	Non-increasing
Data	

Source: Author's own elaboration

3.11 SDG11: Sustainable cities and communities

Regarding the JRC proposal for SDG 11, sustainable cities and communities, seven of the nine proposed indicators are available and accessible for the case of Navarre (see Table 23). The two indicators not found for Navarre, transport performance and land use, lack indications within the proposal that go beyond linking them with target 11.2, access to transport systems and 11.3 sustainable urbanization. The new Active Mobility Master Plan for Navarre 2022-2033 and its follow-up proposal (Gobierno de Navarra, 2021c) could be useful for this SDG.

Table 23. Indicators for SDG11: Availability, suitability and alternatives

SDG11 - Make cities and human settlements inclusive, safe, resilient and sustainable					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
11.1 (access to housing)	Households expenses dedicated to housing costs (Box 45)	√	√		
11.2 (access to transport systems)	Transport performance	X			
	Daily accessibility (Box 46)	√			
	Stock of vehicles (passenger cars) (Box 47)	√	√		Stock of vehicles by type of motor energy (passenger cars)
	Victims in road accidents (Box 48)	√	√		
11.3 (sustainable urbanization)	Difference between built-up area growth rate and population growth rate (Box 49)	√	√		
	Land use	X			
11.6 (environmental impact)	PM2.5 Emissions (Box 50)	√	√		
	Household and commercial waste generation per inhabitant	√	√	Sorted and mixed household and commercial	Recycling rate

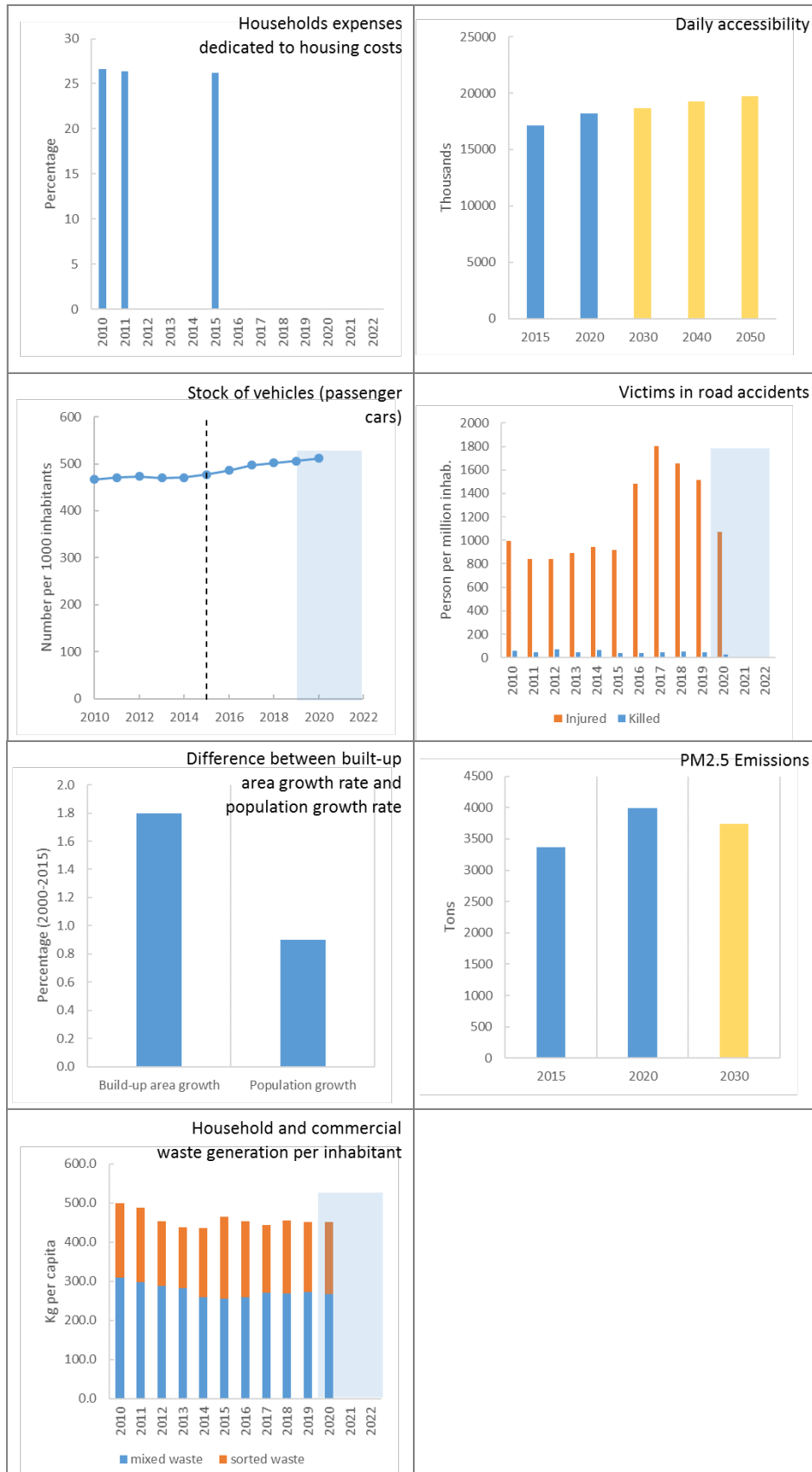|				waste generation per inhabitant	
(Box 51)					

The target **_access to housing_** is address by the indicator households expenses dedicated to housing costs. It is a good estimator as it a proxy for the cost of housing. The problem is that this is an experimental indicator calculated by the OECD and the latest available data is from 2015 so it is not possible to perform an analysis of its recent evolution.

Regarding **access to transport systems**, one of the indicators is the stock of vehicles. The number of vehicles per inhabitant has grown continuously in Navarre. To assess this trend, it would be necessary to know the type of vehicle (combustion engine, hybrid, electric. Transport data are difficult to interpret from the point of view of sustainability. Another interesting indicator is victims of road traffic. After a sharp increase in 2016 and 2017, the number of victims is declining and during the pandemic returned to 2015 levels.

As for **_sustainable urbanization_**, population growth from 2000 to 2015 was lower than built-up area growth. The interpretation of this data needs more information: are we abandoning old houses to move to new constructions, are fewer and fewer people living in the same house, what is the average size of the dwelling?

Finally, for **_environmental impact_** we have two indicator that are particularly relevant in cities, PM2.5 emission and household and commercial waste generation. On the one hand, PM2.5 emissions are an indicator of air pollution. We have a prediction for the future with a small decrease from 2020 to 2030. However, it will be interesting to know how these emissions will affect the concentration of emissions. On the other hand, household and commercial waste generation per inhabitant follows a desirable downward trend. However, It should be noted that the percentage of separated waste is lower than the percentage of mixed waste. Moreover, It is also interesting to show this data with the recycling rate. Sustainability is decreasing waste generation but also recycling the waste we generate (see new proposals).

Figure 16. Indicators for SDG11: Trends in Navarre from 2010

Households expenses dedicated to housing costs

Daily accessibility

Stock of vehicles (passenger cars)

Victims in road accidents

Difference between built-up area growth rate and population growth rate

PM2.5 Emissions

Household and commercial waste generation per inhabitant

Source: Author's own elaboration

Table 24. Indicators for SDG11: Trends in Navarra from 2010

SDG11 – Make cities and human settlements inclusive, safe, resilient and sustainable					
SDG target	**JRC indicator**	**Normative trend**	**Last available year**	**Trend before 2015** [1] [2]	**Trend after 2015** [1] [2]
11.1 (access to housing)	Households expenses dedicated to housing costs (Box 45)	Non-increasing	2015	⚪ (grey)	⚪ (grey)
11.2 (access to transport systems)	Daily accessibility (Box 46)	?	2050		
	Stock of vehicles (passenger cars) (Box 47)	?	2020		
	Victims in road accidents (Box 48)	Non-increasing	2020	⚪ (yellow)	⚪ (orange)
11.3 (sustainable urbanization)	Difference between built-up area growth rate and population growth rate (Box 49)		2000-15		
11.6 (environmental impact)	PM2.5 Emissions (Box 50)	Non-increasing	2030		⚪ (green)
	Household and commercial waste generation per inhabitant (Box 51)	Non-increasing		⚪ (green)	⚪ (green)

(1)   Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(2)   🟢 Significant progress towards the desired direction; ⚪ Moderate progress towards the desired direction; ⚪ No progress or insignificant changes; ⚪ Moderate movement away from the desired direction; 🟠 Significant movement away from the desired direction; ⚪ No evaluation.

Box 45. Households expenses dedicated to housing costs

11 SUSTAINABLE CITIES AND COMMUNITIES	**Households expenses dedicated to housing costs**

Definition	Share of housing costs (water, electricity, gas and other fuels) in percentage of household disposable income.
Type	Experimental
Source	OECD OECD Regional statistics
Time coverage	2006-2015
Frequency	Annual
Unit	Percentage
Normative trend	Non-increasing
Data	
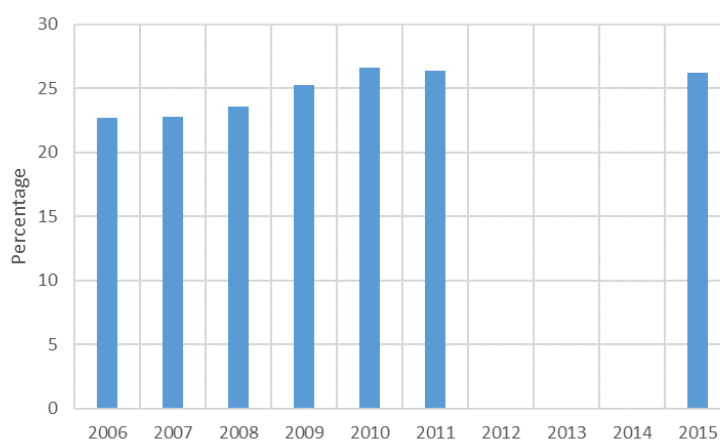
Box 46. Daily accessibility

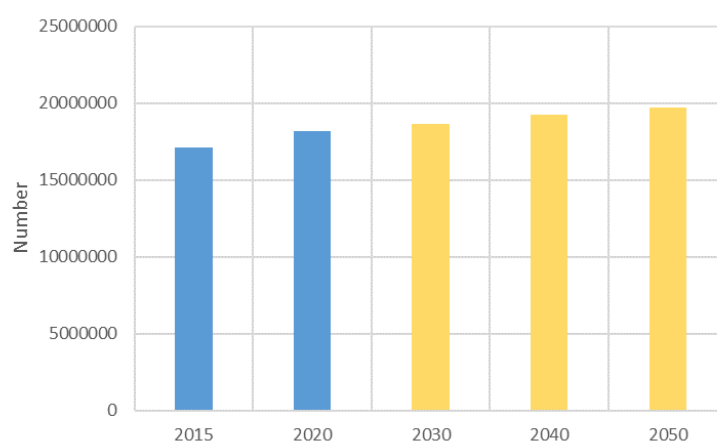|	
Daily accessibility	
Definition	Daily accessibility indicates the amount of people that live within four hours of driving from the location at hand.
Type	Experimental
Source	JRC, LUISA Modelling Platform LUISA Platform
Time coverage	2015-2050
Frequency	Decade (predictions)
Unit	Number
Normative trend	
Data	

Source: Author's own elaboration

Box 47. Stock of vehicles (passenger cars)

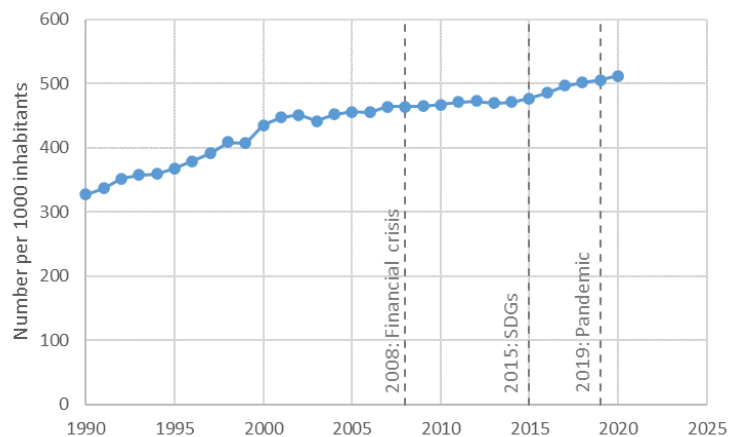|	
11 SUSTAINABLE CITIES AND COMMUNITIES	**Stock of vehicles (passenger cars)**

Definition	A passenger car is a road motor vehicle, other than a moped or a motor cycle, intended for the carriage of passengers and designed to seat no more than nine persons (including the driver).
Type	Official
Source	Eurostat, Railway transport infrastructure Eurostat TRAN_R_VEHST Spanish transport and logistics observatory OTLE
Time coverage	1990-2020
Frequency	Annual
Unit	Cars per 1000 inhabitants
Normative trend	
Data	

Box 48. Victims in road accidents

Victims in road accidents	

Definition	Injury accident is any accident involving at least one road vehicle in motion on a public road or private road to which the public has right of access, resulting in at least one injured or killed person. Person killed is any person killed immediately or dying within 30 days because of an injury accident, excluding suicides. Person injured is any person who as result of an injury accident was not killed immediately or not dying within 30 days, but sustained an injury, normally needing medical treatment, excluding attempted suicides.
Type	Official
Source	Eurostat, Regional transport statistics Eurostat TRAN_R_ACCI
Time coverage	1990-2020
Frequency	Annual
Unit	Persons per million inhabitants
Normative trend	Non-increasing
Data	
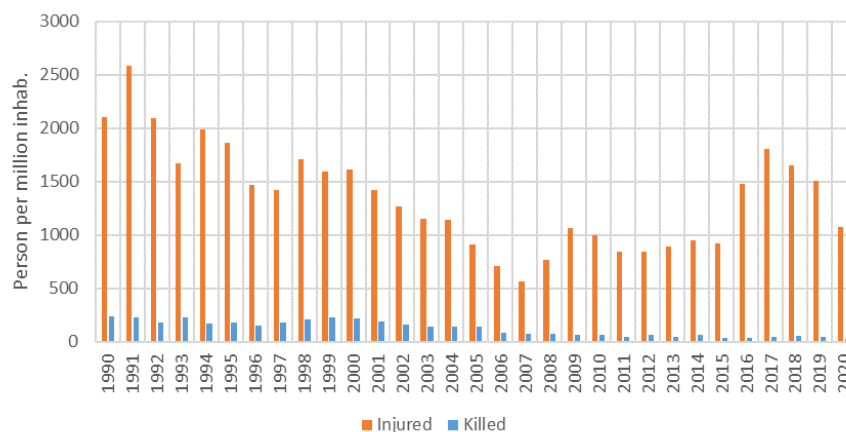
Source: Author's own elaboration

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**Box 49. Difference between built-up area growth rate and population growth rate**

11 SUSTAINABLE CITIES AND COMMUNITIES	**Difference between built-up area growth rate and population growth rate**

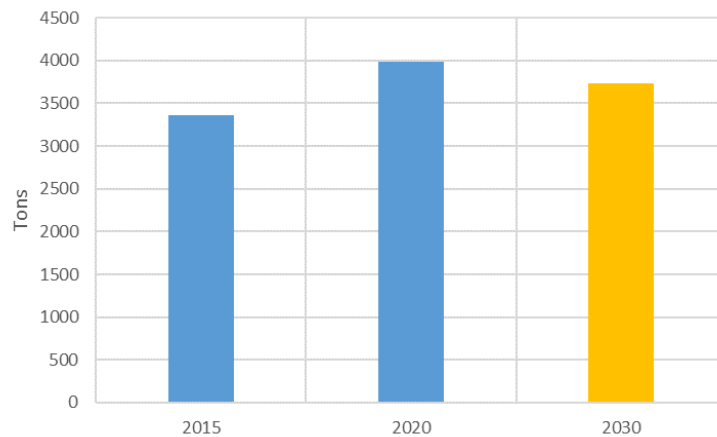|	
Definition	Difference between built-up area growth rate and population growth rate, 2000-2015
Type	Experimental
Source	OECD
Time coverage	2000-15
Frequency	---
Unit	Percentage
Normative trend	
Data	
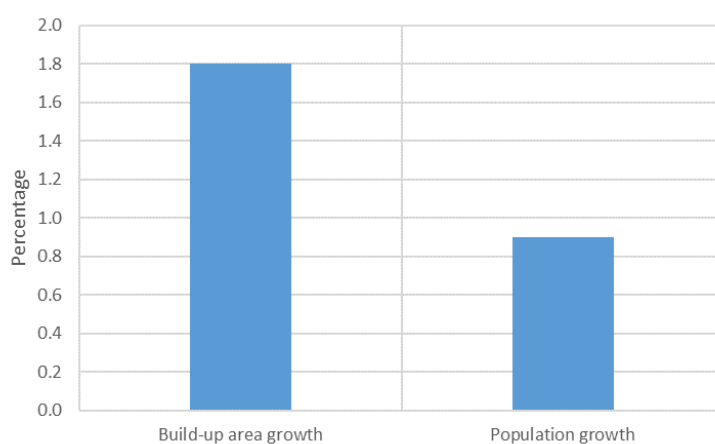
Box 50. PM2.5 emissions
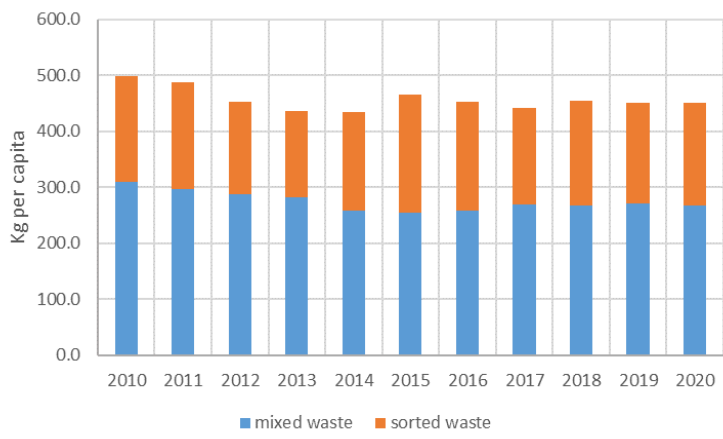
	PM2.5 emissions
Definition	The indicator shows the spatial distribution of PM2.5 (sub-25μm particulate matter) emissions over Europe. The total emissions for each country/region are derived from the GAINS model.
Type	Experimental
Source	JRC, LUISA Modelling Platform LUISA Platform
Time coverage	2015-2030
Frequency	Decade (predictions)
Unit	Tons
Normative trend	Non-increasing
Data	

Box 51. Household and commercial waste generation per inhabitant

	Household and commercial waste generation per inhabitant
Definition	Domestic waste generated by households, commerce and services, from urban collection.
Type	Official
Source	Nastat, INE (Statistics on waste collection and treatment). Nastat INE
Time coverage	2010-2020
Frequency	Annual
Unit	Kg per capita
Normative trend	Non-increasing
Data	

3.12 SDG12: Responsible consumption and production

Obtaining indicators for SDG14 has been one of the most complicated tasks of this project. Only 1 of the 3 proposed indicators is available in Navarre (see Table 25). But perhaps most discouraging is to discover that the estimation of the other two indicators is currently a difficult task to address. Carbon footprint and food waste are good indicators but difficult to estimate at the local/regional level

Table 25. Indicators for SDG12: Availability, suitability and alternatives

SDG12 – Ensure sustainable consumption and production patterns					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
12.2 (management of natural resources)	Carbon footprint	✗	√		
12.3 (reduce food waste)	Food waste	✗	√		
12.4 (chemical management)	Hazardous Waste (Box 52)	√	√		

Source: Author's own elaboration

Regarding target ***chemical management***, for which an indicator is available, it should be noted that the so-called waste inventory is available for Navarre, which provides information on the management and generation of different hazardous waste. This waste generation is related to the economic activity, especially industry.

With this scarce availability of indicators for SDG12, we can simply highlight the need to look for indicators for SDG12 at the regional level.

Figure 17. Indicators for SDG12: Trends in Navarre from 2010
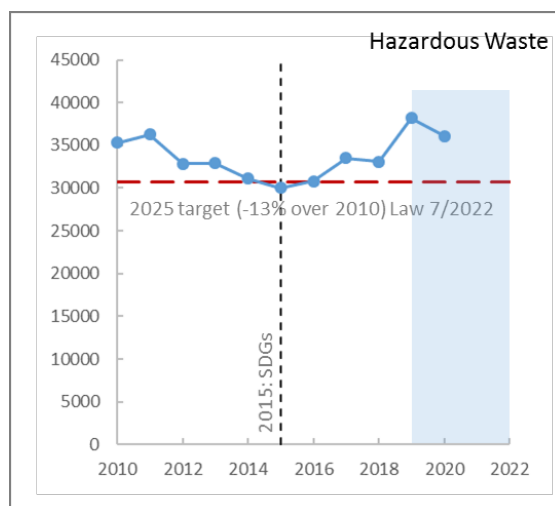
Source: Author's own elaboration

Table 26. Indicators for SDG12: Trends in Navarre from 2010

SDG12 – Ensure sustainable consumption and production patterns					
SDG target	**JRC indicator**	**Normative trend**	**Last available year**	**Trend before 2015** [1] [2]	**Trend after 2015** [1] [2]
12.4 (chemical management)	Hazardous Waste (Box 52)	Non-increasing	2020	🟢	🟠

(1) Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(2) 🟢 Significant progress towards the desired direction; ⚪ Moderate progress towards the desired direction; ⚪ No progress or insignificant changes; ⚪ Moderate movement away from the desired direction; 🟠 Significant movement away from the desired direction; ⚪ No evaluation.

Source: Author's own elaboration

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Box 52. Hazardous Waste

Hazardous Waste	

Definition	Hazardous waste from companies in Navarre. They are calculated by adding the amount produced and managed in Navarre minus the transfers between managers in Navarre and plus the amount produced in Navarre and managed outside Navarre.
Type	Official
Source	Waste inventory, Government of Navarre
Time coverage	2010-2020
Frequency	Annual
Unit	Tons
Normative trend	Non-increasing
Data	

3.13 SDG13: Climate action

For the analysis of SDG13 JRC proposes four indicators. The four indicators are available for Navarre (see Table 27).

Three indicators cover different emissions: greenhouse gas (GHG) emissions, CO_2 emissions forecast (main GHG in Navarre) and PM10 emissions forecast.[2] These indicators are related to climate change mitigation. It should be noted that there are targets for GHG emissions set by the European Union: 2030 target, -45% over 2005, and 2050 target, -80% over 2005. A fourth indicator is cooling and heating degree days that is an indicator related to adaptation to climate change as it monitors climate variability.

For the monitoring of climate change in Navarre we recommend KLINa – Roadmap for Climate Change in Navarre.

Table 27. Indicators for SDG12: Availability, suitability and alternatives

SDG13 – Take urgent action to combat climate change and its impacts					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
13.2 (climate change measures into policy)	PM10 Emissions (Box 53)	√			
	CO2 Emissions (Box 54)	√	√		
	Greenhouse Gas Emissions (Box 55)	√	√		
	Cooling and heating degree days (Box 56)	√	√		

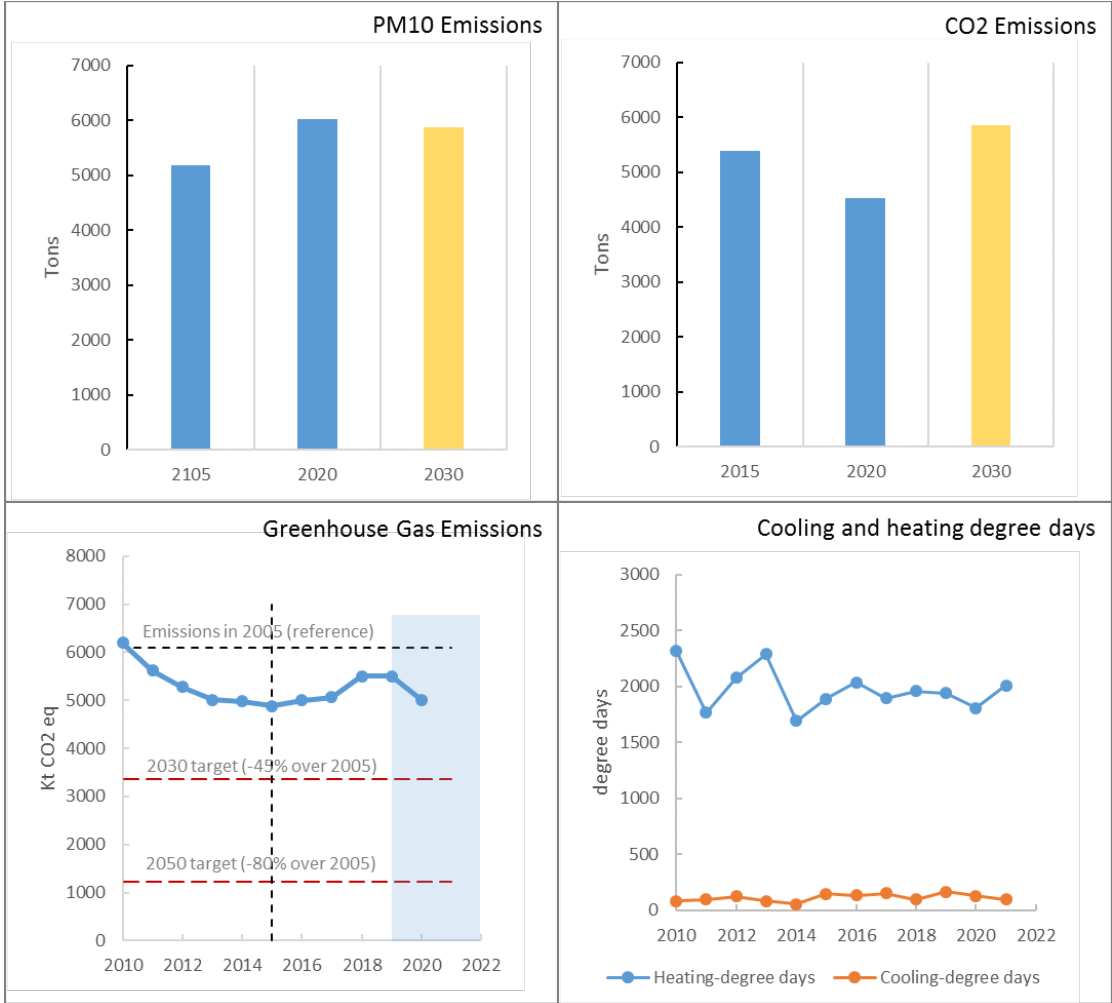Source: Author's own elaboration

From the information extracted for the proposed indicators in the case of Navarre, the following is highlighted:

— The forecast of CO2 emissions is increasing from 2020 to 2030, the prediction of PM10 emissions is slightly decreasing from 2020 to 2030 but exceeding 2015 levels. These are not optimistic predictions with respect to mitigation.

— Although GHG emissions follow a decreasing trend, with some rebound, in the time series analysed, they are still far from the EU reduction targets. CO2 emission forecasts predict an uncertain future for this indicator.

— It can be seen how the pandemic affected GHG emissions. These emissions decreased in 2020, possibly due to the halt in economic activity. Therefore, this decrease should be taken with caution while awaiting new data.

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[2] Some studies state elementary carbon would be the second or third most important pollutant in terms of global warming. Elementary carbon is a fraction of particulate matter (PM) and originates mainly from incomplete burning processes. PM is one of the most important constituents of air pollution.

— In a region like Navarre, located in northern Spain, there are substantially more heating degree-days (HDDs) than cooling degree days (CDDs). Although the evolution of HDD shows a decreasing trend, the CHH follow an increasing trend. This could imply changes in energy consumption patterns.

— As seen in previous indicators (see SDG8 and SDG9), Navarre is a region where the weight of industry in GDP is high and remains constant over time. This high industrialization is likely to slow down the energy transition. However, important efforts are being made in the region to improve energy intensity and carbon intensity in the energy mix, through the Energy Plan of Navarre (Gobierno de Navarra, 2017a) and the climate change roadmap (Gobierno de Navarra, 2017b), among others. For a more detail analysis, see an extended IPAT analysis in Annex 2. Climate neutrality is a challenge for regions and cities (Ciambra *et al.*, 2023).

Figure 18. Indicators for SDG13: Trends in Navarre from 2010

Source: Author's own elaboration

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
Table 28. Indicators for SDG13: Trends in Navarre from 2010

SDG13 – Take urgent action to combat climate change and its impacts					
SDG target	**JRC indicator**	**Normative trend**	**Last available year**	**Trend before 2015** [1] [2]	**Trend after 2015** [1] [2]
13.2 (climate change measures into policy)	PM10 Emissions (Box 53)	Non-increasing	2030		◯
	CO2 Emissions (Box 54)	Non-increasing	2030		●
	Greenhouse Gas Emissions (Box 55)	Non-increasing	2020	●	●
	Cooling and heating degree days (Box 56)		2021		●

(1) Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(2) ● Significant progress towards the desired direction; ◯ Moderate progress towards the desired direction; ◯ No progress or insignificant changes; ◯ Moderate movement away from the desired direction; ● Significant movement away from the desired direction; ● No evaluation.

Source: Author's own elaboration

Box 53. PM10 Emissions

13 CLIMATE ACTION 👁	**PM10 Emissions**

Definition	The indicator shows the spatial distribution of PM10 (sub-10μm particulate matter) emissions over Europe. The total emissions for each country are derived from the GAINS model.
Type	Experimental
Source	JRC, LUISA Modelling Platform LUISA Modelling Platform
Time coverage	2015-2030
Frequency	Decade (predictions)
Unit	Tons
Normative trend	Non-increasing
Data	

Box 54. CO2 Emissions

	CO2 Emissions
Definition	The indicator shows the spatial distribution of CO2 (Carbon dioxide) emissions over Europe. The total emissions for each country are derived from the GAINS model.
Type	Experimental
Source	JRC, LUISA Modelling Platform LUISA Modelling Platform
Time coverage	2015-2030
Frequency	Decade (predictions)
Unit	Tons
Normative trend	Non-increasing
Data	

Box 55. Greenhouse Gas Emissions

	Greenhouse Gas Emissions
Definition	Total emissions are the sum of direct emissions together with emissions from electricity generation and consumption, depending on whether the territory has a deficit or surplus.
Type	Official
Source	KLINA, Roadmap for climate change in Navarre KLINA OCECAS
Time coverage	2007-2020
Frequency	Annual
Unit	kt CO2 eq
Normative trend	Non-increasing
Data	
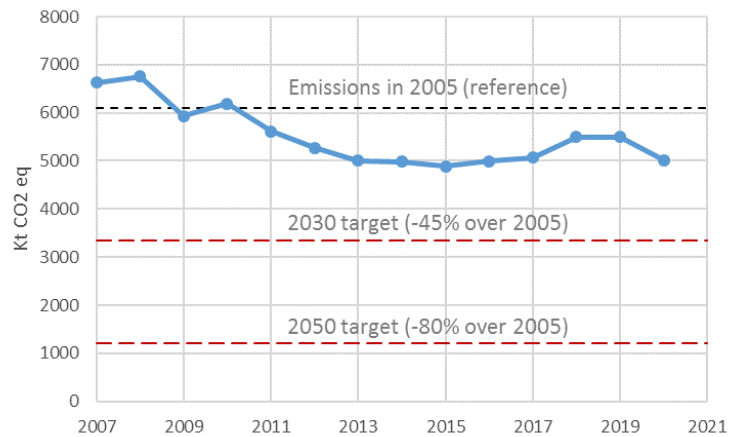
Box 56. Cooling and heating degree days

13 CLIMATE ACTION 👁	**Cooling and heating degree days**

Definition	Heating degree day (HDD) index is a weather-based technical index designed to describe the need for the heating energy requirements of buildings. Cooling degree day (CDD) index is a weather-based technical index designed to describe the need for the cooling (air-conditioning) requirements of buildings..
Type	Officiall
Source	Eurostat, Energy statistics Eurostat NRG_CHDDR2_A
Time coverage	2007-2020
Frequency	Annual
Unit	Number
Normative trend	
Data	
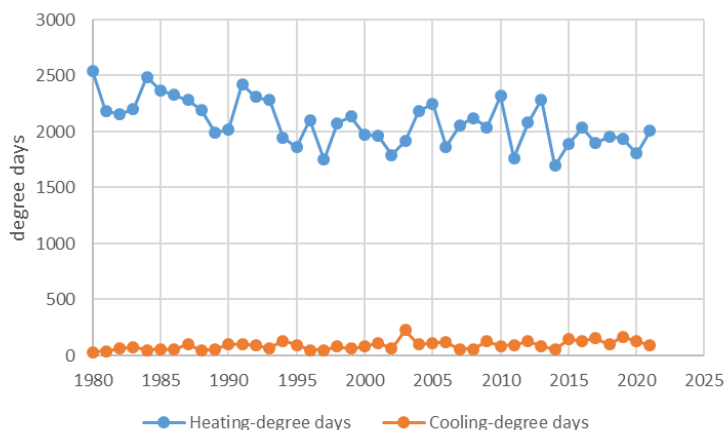
3.14 SDG14: Life below water

Navarre is a non-coastal region, so the indicators proposed for SDG14 are not considered in this analysis. However, it should not be forgotten that this objective also has implications for non-coastal regions because of their upstream responsibility for issues such as waste production and management and water quality.

3.15 SDG15: Life on land

The four indicators proposed by JRC for SDG15 are available for Navarre. In the proposal, three of them are experimental and only one is considered official. For one of them, official data has been obtained for Navarre. Only one data entry is available.

Table 29. Indicators for SDG15: Availability, suitability and alternatives

SDG15 – Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
15.1 (restoration of ecosystems)	Land Abandonment (Box 57)	√	√		
	Forest area over total surface area (Box 57)	√	√		
15.5 (degradation of habitats)	Terrestrial protected areas as a percentage of total area (Box 58)	√	√		
	Estimated soil erosion (Box 59)	√	√		

Source: Author's own elaboration

Figure 19. Indicators for SDG15: Trends in Navarre from 2010
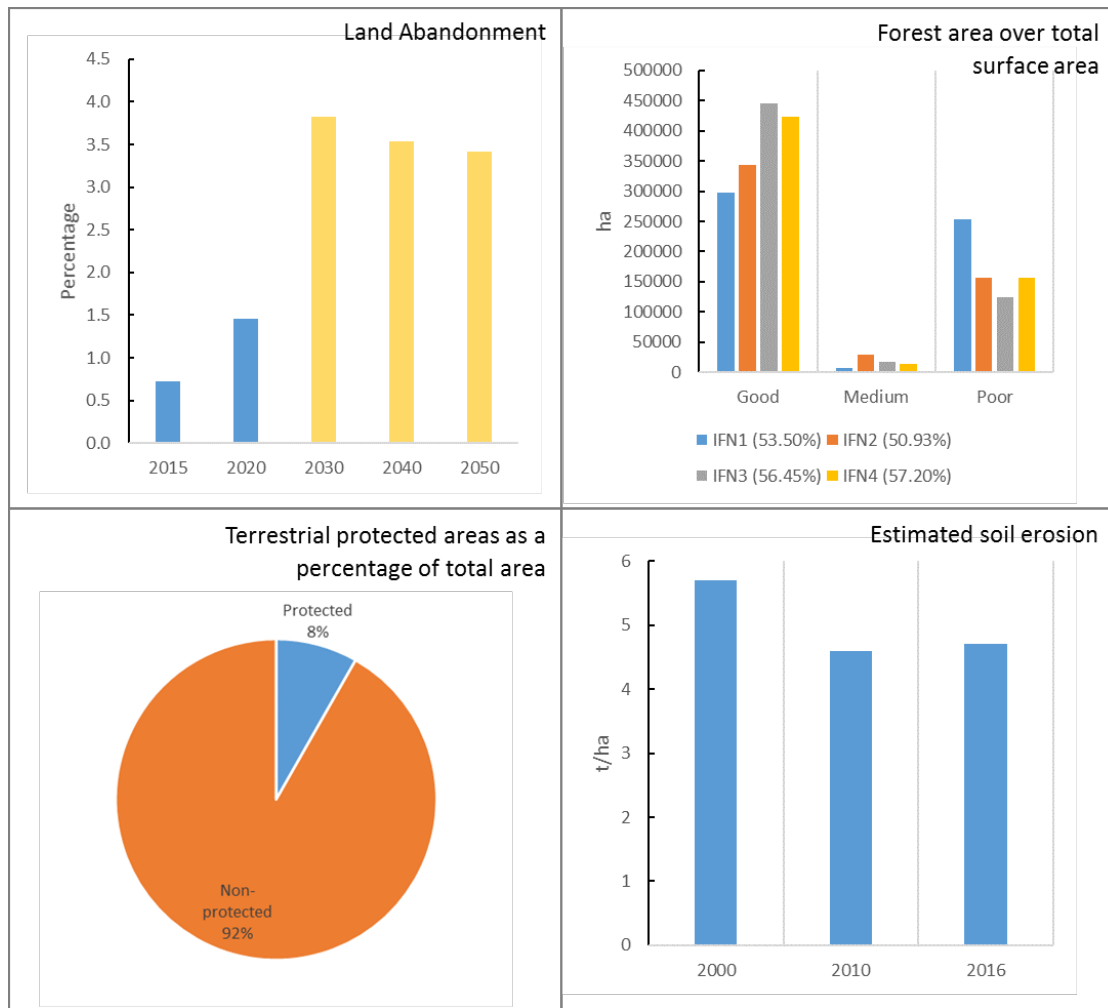
Source: Author's own elaboration

We highlight the following points:

— Land abandonment predictions are not encouraging. A notable increase from 2020 to 2030 recovers slightly in 2040 and 2050.

— The forest inventories of Spain show a good evolution of forest cover in Navarre. The percentage of forest area has increased according to the data of the last inventories and the quality of forest cover has also improved.

— The percentage of protected areas is 8% in Navarre in 2021. It is important to maintain the protected areas and carry out a new management of them. Protected areas in Navarre are distributed throughout the territory and encompass different types of ecosystems ranging from mountains and hills to rivers and wetlands, but also bare desert-like terrain.

Table 30. Indicators for SDG15: Trends in Navarre from 2010

SDG15 – Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss					
SDG target	**JRC indicator**	**Normative trend**	**Last available year**	**Trend before 2015** [1] [2]	**Trend after 2015** [1] [2]
15.1 (restoration of ecosystems)	Land Abandonment (Box 57)	Non-increasing	2050	⚫ (grey)	🔘 (orange outline)
	Forest area over total surface area (Box 57)	Non-decreasing	2017	🟢 (green)	🟢 (light green)
15.5 (degradation of habitats)	Terrestrial protected areas as a percentage of total area (Box 58)	Non-decreasing	2021	⚫ (grey)	⚫ (grey)
	Estimated soil erosion (Box 59)	Non-increasing	2016	🟢 (light green)	🔘 (orange outline)

(1) Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(2) 🟢 Significant progress towards the desired direction; ⚪ Moderate progress towards the desired direction; ⚪ No progress or insignificant changes; 🔘 Moderate movement away from the desired direction; 🟠 Significant movement away from the desired direction; ⚫ No evaluation.

Source: Author's own elaboration

Box 57. Land Abandonment

15 LIFE ON LAND	**Land Abandonment**
Definition	Share of abandoned agricultural land into total agricultural land.
Type	Experimental
Source	JRC, LUISA Modelling Platform LUISA Platform
Time coverage	2015-2050
Frequency	Decade (predictions)
Unit	Percentage
Normative trend	Non-increasing
Data	
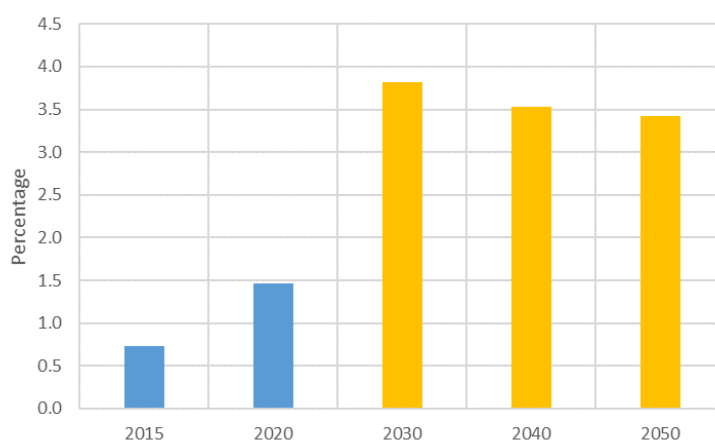
Box 58. Forest area over total surface area

	Forest area over total surface area

Definition	Share of forest area over total surface area.
Type	Official
Source	National Forest Inventory (Ministry for Ecological Transition) Miteco_IFN
Time coverage	1964-2017
Frequency	Decade
Unit	Percentage and area (ha)
Normative trend	Non-decreasing
Data	
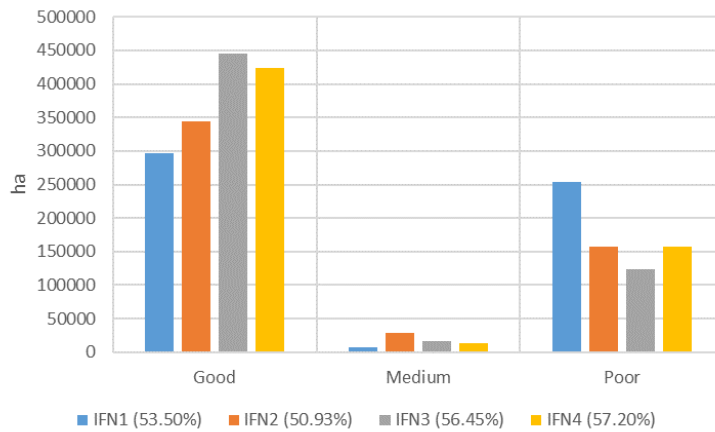
Source: Author's own elaboration

Box 59. Terrestrial protected areas as a percentage of total area

	Terrestrial protected areas as a percentage of total area
Definition	Natural Protected Areas as a result of the compilation of those spaces declared in accordance with national and regional regulations.
Type	Official
Source	Nature Data Bank (Ministry for Ecological Transition) Miteco, BDN
Time coverage	2021
Frequency	---
Unit	Percentage
Normative trend	Non-decreasing
Data	

Box 60. Estimated soil erosion

15 LIFE ON LAND	**Estimated soil erosion**

Definition	Soil erosion rates by water estimated based on the Revised Universal Soil Loss Equation (RUSLE) empirical computer model in tonnes per ha of EU territory per year (t ha-1 yr-1). Agricultural areas and natural grassland.
Type	Experimental
Source	JRC, Eurostat Eursotat AEI_PR_SOILER
Time coverage	2000; 2010; 2016
Frequency	---
Unit	T per ha.
Normative trend	Non-increasing
Data	
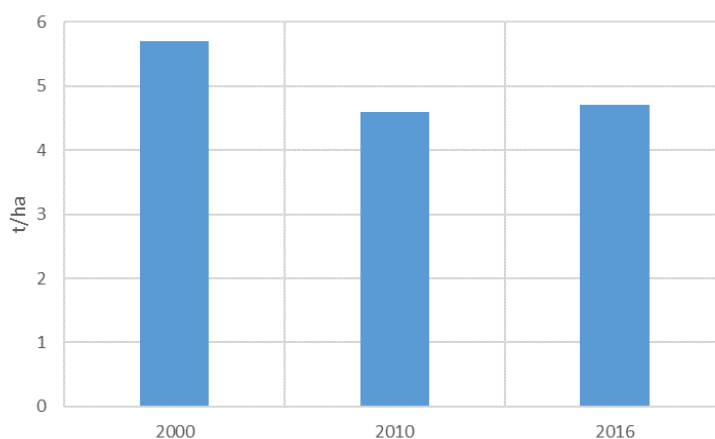
3.16 SDG16: Peace, justice and strong institutions

Only two of the indicators proposed by JRC for SDG16 are easily accessible for Navarre (see Table31), quality of government index (QGI) and an indicator of corruption extracted from QGI.

Table 31. Indicators for SDG16: Availability, suitability and alternatives
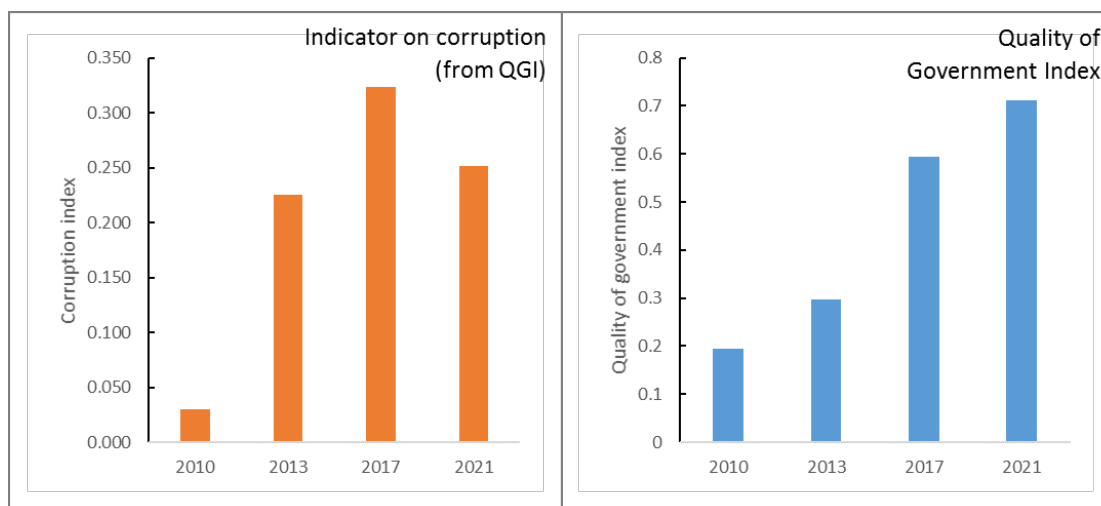
SDG16 – Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
16.5 (reduce corruption)	Extract from QGI an indicator on corruption (Box 61)	√	√		
16.6 (effective institutions)	Transparency index	X	√		
	Participation in the last elections	X	√		
	Quality of Government Index (Box 62)	√	√		

Source: Author's own elaboration

For SDG16 monitoring, we have experimental indicators that are calculated every 5 years. Their calculation is standardized with a value of 0 for the European Union average. The Quality of Government Index shows an increasing trend for Navarre, which is a good evolution.

For the interpretation of the corruption indicator, it must be taken into account that it measures "no abuse of public office for private gain. Therefore, it is an indicator that the higher its value, the better the situation of the region. The corruption index has a correct evolution with a slight worsening in the latest estimate.

Figure 20. Indicators for SDG15: Trends in Navarre from 2010

Source: Author's own elaboration

Table 32. Indicators for SDG16: Trends in Navarre from 2010

SDG16 – Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels					
SDG target	**JRC indicator**	**Normative trend**	**Last available year**	**Trend before 2015** [1] [2]	**Trend after 2015** [1] [2]
16.5 (reduce corruption)	Extract from QGI an indicator on corruption (Box 61)	Non-decreasing	2021	🟢	🟠
16.6 (effective institutions)	Quality of Government Index (Box 62)	Non-decreasing	2021	🟢	🟢

(3)   Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(4)   🟢 Significant progress towards the desired direction; ⚪ Moderate progress towards the desired direction; 🟡 No progress or insignificant changes; 🟠 Moderate movement away from the desired direction; 🟠 Significant movement away from the desired direction; ⚫ No evaluation.
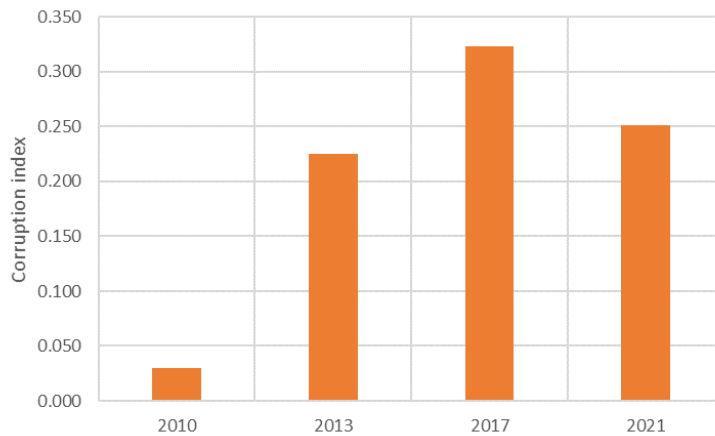
Source: Author's own elaboration

Box 61. Extract from QGI an indicator on corruption

	Extract from QGI an indicator on corruption
Definition	Corruption is one of the aspects (impartiality, corruption and quality) in the quality of government index. It measures whether there is no abuse of public office for private gain. Data is standardized around an EU mean of 0.
Type	Experimental
Source	European Commission, Gothenburg University
Time coverage	2010-2021
Frequency	Quinquennial
Unit	Index
Normative trend	Non-decreasing
Data	

Box 62. Quality of Government Index

16 PEACE, JUSTICE AND STRONG INSTITUTIONS	**Quality of Government Index**

Definition	The European Quality of Government Index (EQI) captures average citizens' perceptions and experiences with corruption, quality and impartiality of three essential public services – health, education and policing – in their region of residence. The EQI is a composite indictor that uses 17 survey items to proxy for a region's level of quality of government. Data is standardized around an EU mean of 0.
Type	Experimental
Source	European Commission, Gothenburg University
Time coverage	2010-2021
Frequency	Quinquennial
Unit	Index
Normative trend	Non-decreasing
Data	

3.17 SDG17: Partnerships for the goals

17 PARTNERSHIPS FOR THE GOALS

The four indicators proposed by JRC for SDG 17 are easily accessible for Navarre (see Table 33), but for the case of co-patents there is only information until 2015

Table 33. Indicators for SDG17: Availability, suitability and alternatives
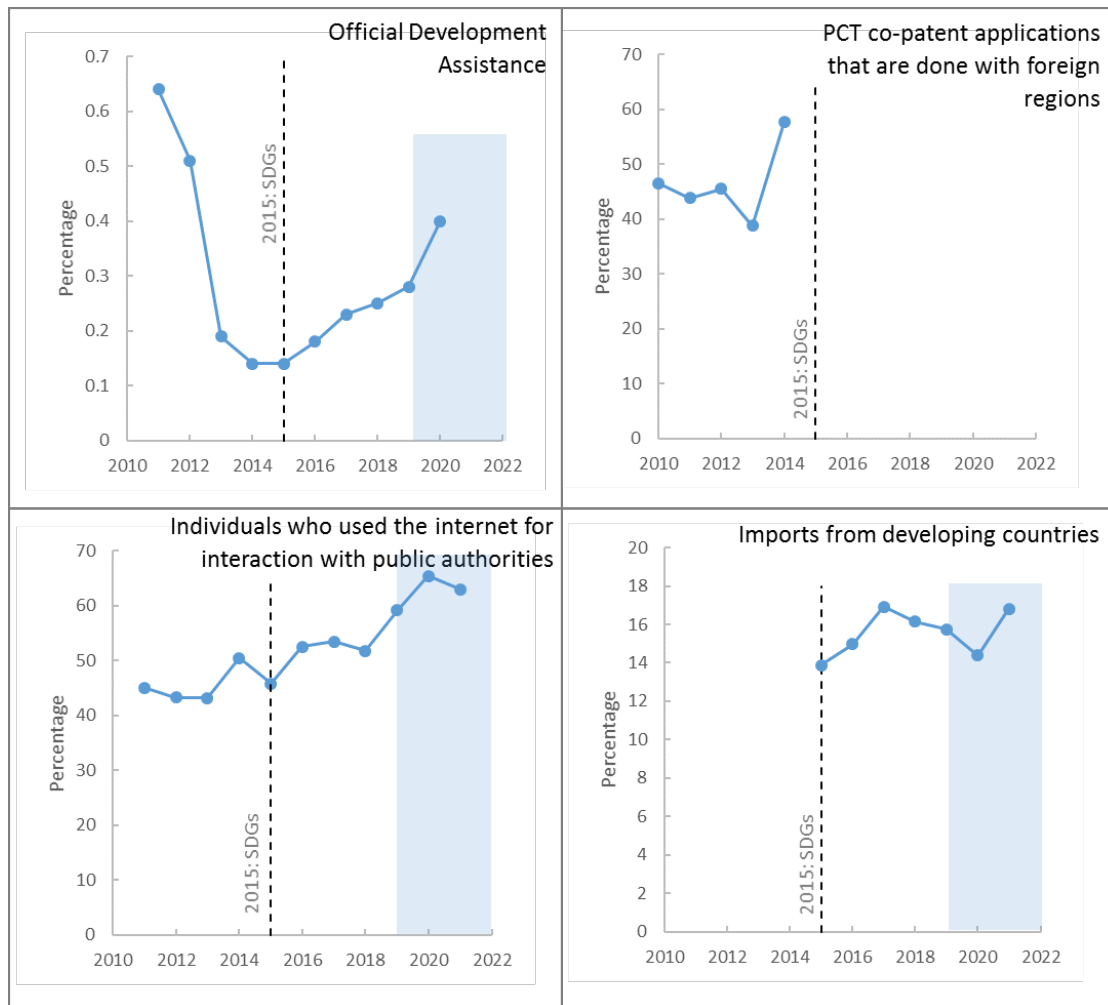
SDG17 – Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development					
SDG target	**JRC indicator**	**Availability**	**Fit for purpose**	**Alternative indicator**	**Complementary indicator**
17.2 (development assistance commitments)	Official Development Assistance (Box 63)	√	√		
17.6 (regional and international cooperation)	PCT co-patent applications that are done with foreign regions (Box 64)	√	√		
17.8 (enabling technology)	Individuals who used the internet for interaction with public authorities (Box 65)	√	√		
17.12 (imports from least developed countries)	Imports from developing countries (Box 66)	√	√		

Source: Author's own elaboration

We highlight the following ideas:

— Since 2015, official development assistance has been on a growing path that has not been lost even with the pandemic.

— Imports from developing countries are somewhat more variable but overall show a slight increase.

— It is worth mentioning the increase in the percentage of Individuals who used the internet for interaction with public authorities.

*Figure 21. Indicators for SDG17: Trends in Navarre from 2010*

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*Table 34. Indicators for SDG17: Trends in Navarre from 2010*
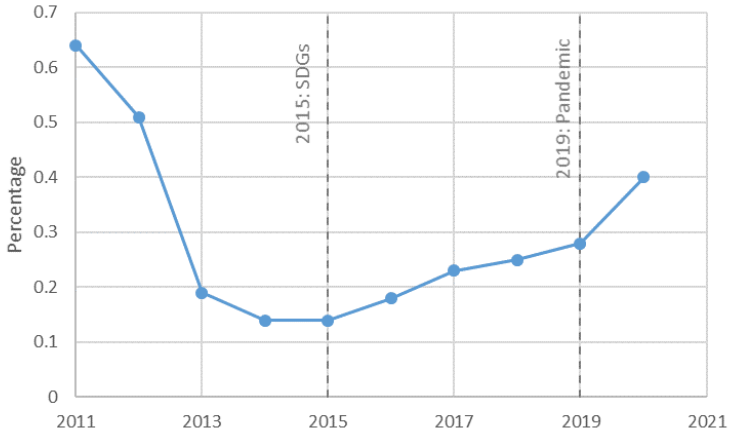
SDG17 – Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development					
SDG target	**JRC indicator**	**Normative trend**	**Last available year**	**Trend before 2015** [1] [2]	**Trend after 2015** [1] [2]
17.2 (development assistance commitments)	Official Development Assistance (Box 63)	Non-decreasing	2020	🟠	🟢
17.6 (regional and international cooperation)	PCT co-patent applications that are done with foreign regions (Box 64)	Non-decreasing	2014	🟢	⚪
17.8 (enabling technology)	Individuals who used the internet for interaction with public authorities (Box 65)	Non-decreasing	2021	🟢	🟢
17.12 (imports from least developed countries)	Imports from developing countries (Box 66)	Non-decreasing	2021	⚪	🟡

(5) Trend before 2015: variation from 2010 to 2015; Trend after 2015: variation from 2015 to last available year.

(6) 🟢 Significant progress towards the desired direction; 🟢 Moderate progress towards the desired direction; 🟡 No progress or insignificant changes; 🟠 Moderate movement away from the desired direction; 🟠 Significant movement away from the desired direction; ⚪ No evaluation.

Source: Author's own elaboration

17 PARTNERSHIPS FOR THE GOALS	**Official Development Assistance**

Definition	Percentage of the General Budget of Navarre, net of transfers to local entities and the contribution to the State, dedicated to Official Development Assistance (ODA) in terms of the Development Assistance Committee of the OECD.
Type	Experimental
Source	ODS-Navarra. General Budgets of Navarra ODS-Navarra_17.01
Time coverage	2011-2020
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	

Box 64. PCT co-patent applications that are done with foreign regions

17 PARTNERSHIPS FOR THE GOALS	**PCT co-patent applications that are done with foreign regions**
Definition	Share of PCT co-patent applications that are done with foreign regions (in % of co-patent applications, total count).
Type	Experimental
Source	OECD, Regional innovation
Time coverage	1997-2015
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	

Box 65. Individuals who used the internet for interaction with public authorities

17 PARTNERSHIPS FOR THE GOALS	**Individuals who used the internet for interaction with public authorities**

Definition	Percentage pf individuals who used the internet for interaction with public authorities.
Type	Official
Source	EU survey on the use of Information and Communication Technologies Eurostat ISOC_R_GOV_I
Time coverage	2011-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	

Box 66. Imports from developing countries

17 PARTNERSHIPS FOR THE GOALS	**Imports from developing countries**

Definition	Imports from developing countries as a percentage of total imports. Developing countries are defined as countries on the OECD Development Assistance Committee list of recipients of official development assistance (ODA).
Type	Official
Source	ODS-Navarra, Nastat ODS-Navarra_17.12
Time coverage	2015-2021
Frequency	Annual
Unit	Percentage
Normative trend	Non-decreasing
Data	

4. SDGS AND SDGS TARGETS THAT REQUIRE A CUSTOMIZED APPROACH

In this section, we highlight, first, the large number of local data sources that are available for Navarre and that have made it possible to access the large amount of information analysed above. It should be noted that many of these data sources are data viewers linked to public action plans linked to the Agenda2030.

Second, we summarize the proposals for alternative and/or complementary indicators suggested throughout this report. Many of these proposals have emerged from the analysis of the databases that we will comment on first. The action plans of Navarra propose their own indicators and some of them are better fitted to the targets we want to monitor.

Thirdly, we dedicate a subsection to the Sustainable Navarre Strategy that is currently being developed (Gobierno de Navarra, 2023). The importance of this strategy for sustainable development in Navarre was emphasized in the bilateral meetings held with regional managers and representatives. They considered the implications for governance and monitoring of this strategy more relevant than adding new indicators.

4.1 Data visualization and transparency in Navarre

As we have shown in the previous analysis, data availability in Navarre is extensive and rigorous. Many of the proposed indicators are currently being used in the region to monitor some of its action plans. One of the issues highlighted in the meetings held with representatives of the region was the commitment of the Autonomous Community to transparency in information, which has led it to offer data on different platforms in an easily accessible and manageable form. More and more frequently, a scorecard with indicators to monitor and assess their development accompanies the region's action plans. Some of them, which have also been of great help in the development of this report, are listed below.

In addition, Navarre has its own **Institute of Statistics (Nastat)** that provides official data for Navarre following international statistical standards. Many of the data provided by the different data viewers available in Navarre have Nastat as data provider.

Waste Inventory

Two waste indicators appear in the proposal, one in SDG11 (household and commercial waste, Box 51.) and the other in SDG 12 (hazardous waste, Box 52). Navarre is currently carrying out a detailed waste inventory, distinguishing more waste categories in order to develop the Navarre Waste Plan 2017-2027. The targets for 2027 are to achieve 75% of preparation for reuse and recycling of Household and Commercial Waste, compared to 48% at present (Gobierno de Navarra, 2016). Navarre's strong commitment to the reuse and recycling of waste, which could improve the sustainability of consumption in the region, is not reflected in the proposed indicators. These leads to a proposal below.

For more information: Waste inventory

                          Follow-up of waste plan

Innovation Observatory

Navarre is also committed to research, development and innovation. All R&D indicators proposed by JRC (SDG9 y SDG5) are included in the Navarre Innovation Observatory: people, resources, results and gender gap. Perhaps the missing issue is linking these indicators to the education indicators. Educational training is a key factor for the future of R&D in the region. Therefore, some of the proposed education indicators that may be somewhat repetitive could be replaced with an indicator on students pursuing STEM (science, technology, engineering, and mathematics) studies. Increasing this figure is a challenge in all countries. These leads to a proposal below.

The information provided by the Innovation Observatory fits with the monitoring of SDG4, SDG5 and SDG9.

For more information: Innovation Observatory

KLINa – Roadmap for Climate Change in Navarre

The monitoring of the climate change roadmap for Navarre (Gobierno de Navarra, 2017b) provides detailed information on mitigation indicators (greenhouse gas emissions, energy consumption or GHG emissions intensity in GDP). But also information on the targets to be achieved. This last point is undoubtedly relevant as it allows a better assessment of trends and the road ahead.

For more information: KLIna

Energy Plan for Navarre Horizon 2030

The aforementioned roadmap is closely related to the indicators that are available for monitoring the Energy Plan of Navarre (Gobierno de Navarra, 2017a). In this case, the information is extended with energy balances, electricity production and energy infrastructures. It should be noted that the Energy Plan of Navarre contains a long list of goals such as reducing greenhouse gas emissions, increasing the presence of renewable energies in energy consumption, disseminating a new energy culture in Navarre or increasing the opportunities for alternative modes of transport to the automobile, amog others.

For more information: pen2030

Social Reality Observatory

The social reality observatory provides information on poverty and inequality, but also on dependency, health, employment and housing. It offers indicators that may be more relevant to study the social reality of Navarre than some of those proposed by JRC. For example, in health, it works with metal health, an issue that may put health services in particular and society as a whole in check in the near future. Likewise, information is provided on the elderly and disability, a very relevant issue for the future sustainability of a region like Navarre with a population pyramid and demographic predictions that show a clear aging of the population. The aging index or the senile dependency index show a clear increase. This will help us to make some proposals below.

For more information: Social reality

4.2 Alternative and complementary indicators

Throughout the analysis carried out in previous pages, we have been detecting possible improvements in the proposed indicators through alternative indicators or by suggesting a complementary indicator. Table 35 summarizes these suggestions. Some of these alternative and complementary indicators have already been included in the previous analysis. At the risk of being repetitive, these proposals are briefly explained below.

Table 35. Alternative and complementary indicators

SDG	SDG target	JRC indicator	Availability	Fit for purpose	Alternative indicator	Complementary indicator
SDG1	1.1 (extreme poverty)	Material and social deprivation (Box 1)	√	√	Severe material and social deprivation	
	1.5 (exposure and vulnerability)	Affected people due to disasters	√	√		Share of build-up area exposed to river-flooding

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		(Box 4)				
SDG2	2.4 (sustainable food production)	Organic farming: areas with different crops (Box 8)	√	√		Productivity of organic farming
SDG3	3.3 (epidemics and diseases)	Deaths due to Covid-19	√	**X**	Patients cared for in mental health centres and suicide rate	
SDG4	4.3 (vocational and tertiary education)	Students enrolled in tertiary education (Box 15)	√	√		New students in STEM degrees
SDG8	8.1 (economic growth)	GDP at current market prices (Box 32)	√	**X**	GDP at constant prices or volume	
	8.2 (economic productivity)	GVA at basic prices (Box 32)	√	**X**	GVA per worker at constant prices or volume	
	8.5 (productive employment)	Compensation of employees (Box 35)	√	√	Compensation of employee at constant prices	Compensation of employees as a percentage of GDP
SDG9	9.5 (promote innovation)	Gross Domestic Expenditure on R&D (Box 39)	√	√		Gross Domestic Expenditure on R&D as a percentage of GDP
SDG10	10.2 (inclusion irrespective of status)	Unemployment of people with disabilities (Box 43)	√	√		Unemployment of people without disabilities
	10.4 (greater equality)	Gini index of disposable income (after taxes and transfers) (Box 44)	√	√		Gini index of disposable income (before taxes and transfers)
SDG11	11.2 (access to transport systems)	Stock of vehicles (passenger cars) (Box 47)	√	√		Stock of vehicles by type of motor energy (passenger cars)
	11.6 (environmental impact)	Household and commercial waste	√	√	Sorted and mixed household and	Recycling rate

		generation per inhabitant (Box 51)			commercial waste generation per inhabitant	

Target 1.1. Extreme poverty

Indicator: Severe material and social deprivation

Alternative for: Material and social deprivation

Definition**:** The severe material deprivation rate is an EU-SILC indicator that shows the inability to afford some items considered by most people to be desirable or even necessary to lead an adequate life. The indicator measures the percentage of the population that cannot afford at least two of the following nine items: (i) to pay their rent, mortgage or utility bills; (ii) to keep their home adequately warm; (iii) to face unexpected expenses; (iv) to eat meat or proteins regularly; (v) to go on holiday; (vi) a television set; (vii) a washing machine; (viii) a car; (ix) a telephone.

Type of data: Official data

Source: OCECAS 1.2.2.2; Nastat.

Primary source: EU Statistics on Income and Living Conditions (EU-SILC) / Encuesta de Condiciones de Vida (ECV)

Time coverage: 2010-2021

Normative trend: Non-increasing

Justification for change: This indicator is closer to the idea of extreme poverty than *material and social deprivation*. It is also a component of the AROPE indicator. Time coverage is longer than that of *material and social deprivation*. It is worth mentioning that correlation between both indicators is 0.5274 (see Table 3), positive but not high.

Limitations: Eurostat provides data for NUTS2 of *material and social deprivation* but not for *severe material and social deprivation*. The data available for Navarre come from local sources.

Figure 22. Severe material and social deprivation in Navarre
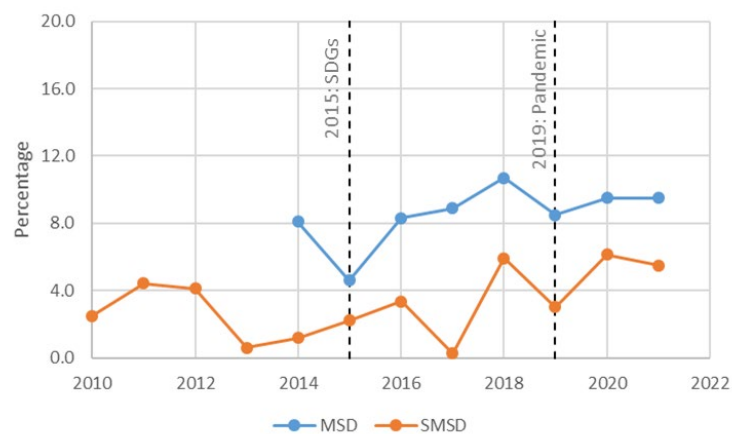
Source: Author's own elaboration

Definition: Share of build-up area exposed to river flooding for different return periods. The return period is the number of years within which a given flood is expected to recur; it is the inverse of the probability that a certain flood will be exceeded in any one year).

Type of data: Experimental data

Source: OECD Environmental indicators in regions

Time coverage: 2001-2020

Normative trend: Non-increasing

Justification for addition: This indicator is interesting for measuring exposure to extreme events such as floods. Rivers have been and are the backbone of the development of many cities. Many buildings are located in flood prone areas, so exposure to these risks can be significant. Some public policies are aimed at reducing this exposure and vulnerability. Likewise, climate change is modifying the return period of some of these events. An estimation of the built-up areas exposed to river flooding is a relevant factor to evaluate flood risk management.

Limitations: Although it could be a good measure of vulnerability, it only covers one type of disaster, flooding.

Figure 23. Share of build-up area exposed to river flooding
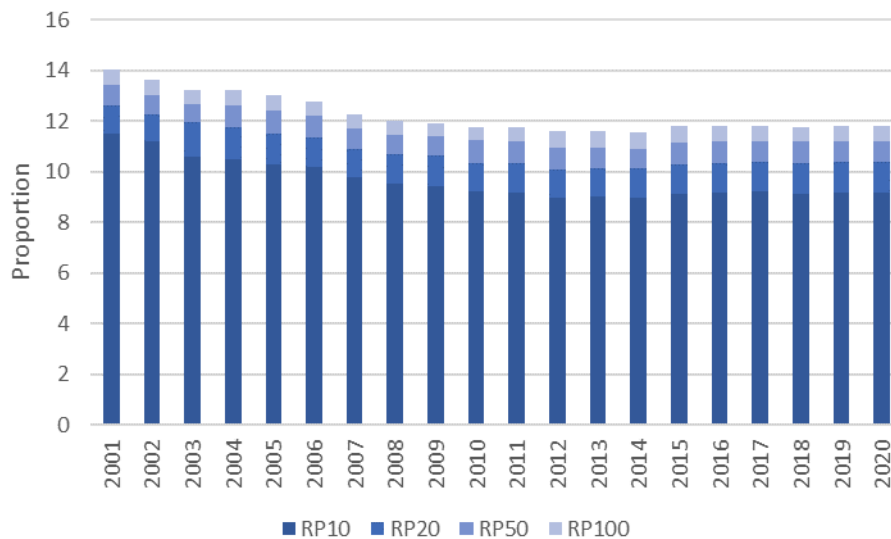
Source: Author's own elaboration

Target 2.4 Sustainable food production

Indicator: Productivity of organic farming

Complement for: Organic farming: areas with different crops

Definition: Indicator to be defined (production of different crops per hectare)

Justification for addition: The proposed indicator for the target sustainable food production measures the agricultural area used for organic farming. For this to be a good indicator of sustainability, it should be accompanied by some measure of productivity of this type of agriculture. Is organic production capable of replacing non-organic production? Although the Spanish Ministry of Agriculture, Fisheries and Food provides spatially disaggregated information on organic agriculture, it only gives details of area and types of crops but not of production, so it is not possible to calculate productivity at present.

Target 3.3 Epidemics and diseases

Indicator: Patients cared for in mental health centres

Alternative for: Deaths due to Covid-19

Definition: Number of patients cared for in mental health centres.

Suicide rate: number of suicides per 100.000 inhabitants

Type of data: Official data

Source. Mental Health Plans of Navarre and Social Reality Observatory; Spanish Statistical Institute

Time coverage: Patients care for in mental health centres 2015-2021, Suicide rate 2000-2021

Normative trend: Patients care for in mental health centres: undetermined; Suicide rate: non-increasing

Justification for change: On the one hand, on May 5, 2023, WHO chief declared the end of covid-19 as a global health problem. On the other hand, the WHO Comprehensive Mental Health Action Plan 2013-2030 sets out clear actions for Member States, the WHO Secretariat and international, regional and national partners to promote mental health and well-being for all, to prevent mental health conditions for those at-risk and to achieve universal coverage for mental health services (WHO, 2021).

According to the Mental Health Plan of Navarre 2019-2023 (Gobierno de Navarra, n.d.), individual mental health is determined by multiple social, psychological and biological factors. For example, persistent socioeconomic pressures are a well-known risk to the mental health of individuals and communities. This is evidenced by the relationship of poor mental health with poverty indicators and in particular with low educational attainment. Deterioration of mental health is also associated with rapid social change, stressful working conditions, gender discrimination, social exclusion, unhealthy lifestyles, risks of violence, and the risk of violence against women and children. Mental health is becoming a major health problem in the most developed countries and regions. The data shows that in Navarre, patients treated in mental health centres have grown by more than 17% from 2005 to 2021. Furthermore, these patients have grown by 7.5% after the Covid-19 pandemic (see Figure 24). It can also be observed an increase in the suicide rate after the pandemic.

Limitations: It is probably necessary to complement these indicators with data on resources dedicated to mental health, especially in terms of personnel trained to care for this type of patient. The rate of psychiatrists and psychologists per 100,000 inhabitants is generally very low in Spain compared to the European average and the demand for this type of medical care is increasing day by day.

Figure 24. Patients cared for in mental health centres in Navarre and suicide rate
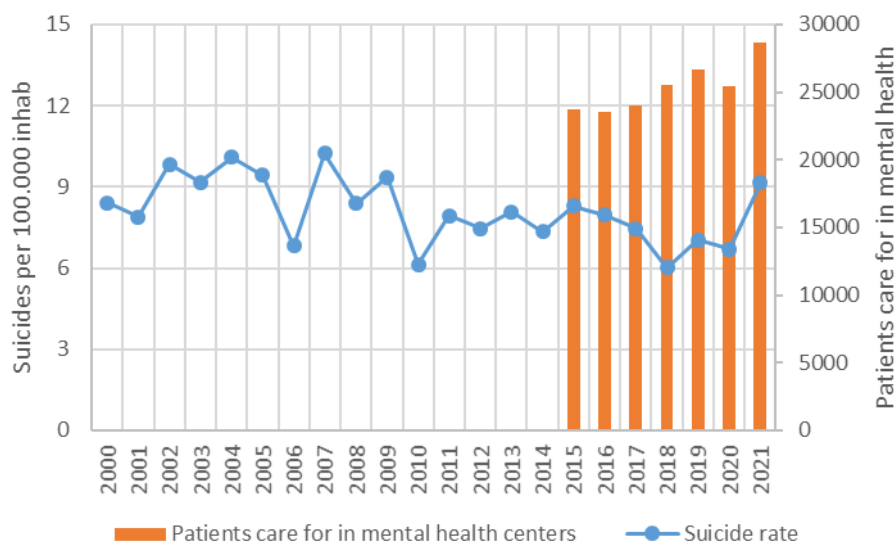
Source: Author's own elaboration

Target 4. Vocational and tertiary education

Indicator: New students in STEM degrees

Complement for: Students enrolled in tertiary education

Definition: Proportion of new entrants in STEM degrees over total new entrants. STEM studies are Engineering, Architecture and Science.

Type of data: Official data

Source: Innovation observatory of Navarre / Observatorio de innovación de Navarra

Primary source: Ministry of Universities. Integrated University Information System / Ministerio de Universidades. Sistema integrado de información universitaria

Time coverage: 2015-2021

Normative trend: Non-decreasing

Justification for addition: Whether research and innovation will continue in the future depends largely on the training of the younger generations. SDG4 discusses participation in education and in general and vocational programs. SDG11 highlights the need to foster innovation and for this, we need well-trained people. Adding the proportion of STEM students may be an interesting data both for education and for future innovation. According to the data provided by the Innovation observatory of Navarre, the proportion of new entrants in STEM degrees over total new entrants in Navarre in 2020 was 32.14%, a figure higher than the one for Spain (22.82%) or for the UE27 (28.88%).

Figure 25. New students in STEM degrees in Navarre.
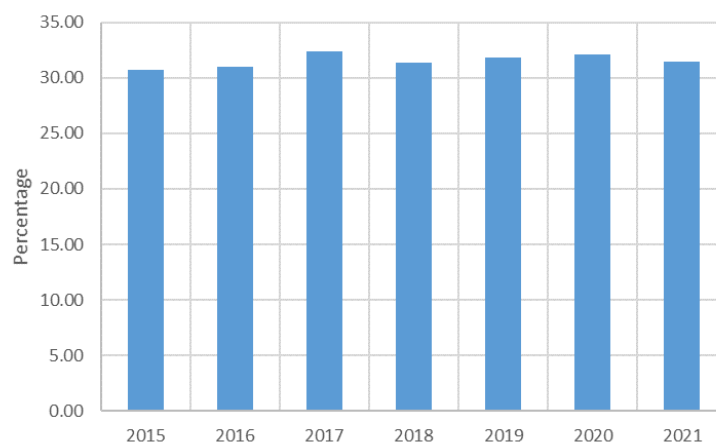
Source: Author's own elaboration
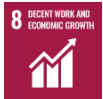
Target 8.1. Economic growth

Indicator: GDP at constant prices or volume

Alternative for: GDP at current market prices

Definition: Gross domestic product: GDP is equal to the sum of the gross value added of all resident institutional units engaged in production, plus any taxes on products and minus any subsidies on products.

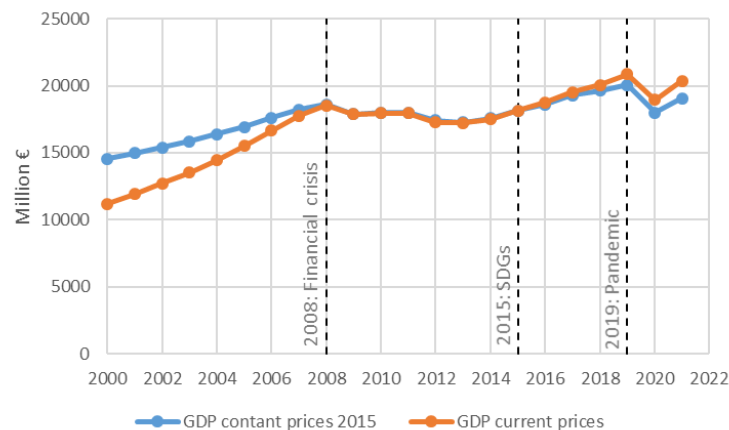Type of data: Official data

Source: Eurostat

Time coverage: 2000–2021

Normative trend: Non-decreasing

Justification for change: The real GDP is calculated with the prices of a base year (constant prices) while the nominal GDP is calculated with the prices of the current year (current prices). If we look at the trend of nominal GDP, its variation may be due to changes in production or changes in prices. If we look at the trend in real GDP, its variation is due to changes in production. The differences between both trends can be notable in times of high inflation. To measure economic growth, the change in real GDP must be calculated, not in nominal GDP. Otherwise, the results on GDP variation (economic growth) could be misleading. In Figure 26 we can observe the differences between the trend of real GDP (in constant prices 2015) and of nominal GDP (current prices). We can see that, in general, real GDP grows more slowly than nominal GDP as this last one includes the variation of prices.

Real GDP is often given in volume, giving the value of real GDP in the base year the value 100. This normalization simplifies the handling of the figures and allows for quick and easy comparison of trends for regions whose absolute values of GDP differ substantially. We recommend the use of volume figures to monitor economic growth.

Figure 26. Real GDP and nominal GDP in Navarre

Source: Author's own elaboration

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Target 8.2. Economic productivity

Indicator: GVA per employee at constant prices

Alternative for: GVA at basic prices

Definition: GVA per employee is the gross value added of all resident institutional units engaged in production per employee.
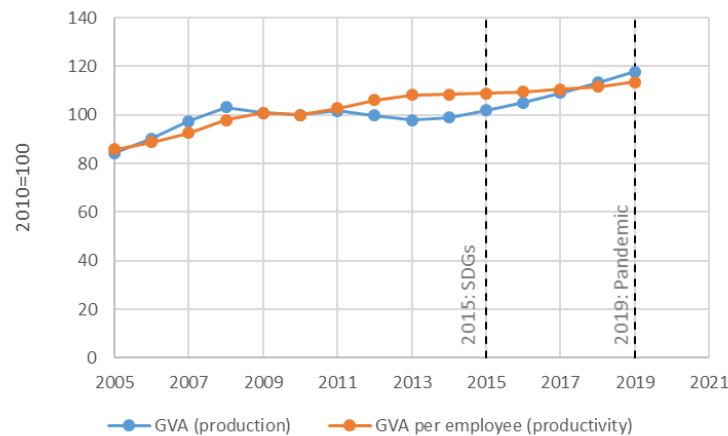
Type of data: Official data

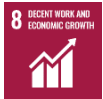Source: Nastat

Time coverage: 2005-2019

Normative trend: Non-decreasing

Justification for change: The goal of this indicator is to measure and monitor the evolution of productivity. GVA shows production but not productivity. To measure productivity we need to relativize production with respect to the number of workers. The Statistical Institute of Navarre provides data on both GVA and employees, so this productivity indicator can be calculated. To see the differences between the evolution of GVA and the evolution of GVA per employee, Figure 27 depicts both time series, normalizing the data (value in 2010=100). It is worth mentioning that these calculations have been done in constant prices (base2010). Productivity growth is smoother and steadier than production growth.

Figure 27. GVA and GVA per employee in Navarre (2010=100)

Source: Author's own elaboration

Target 8.5. Productive employment

Indicator: Compensation of employees at constant prices

Alternative for: Compensation of employees at current prices

Definition: The compensation of employees consists of all remuneration, in cash and in kind, which employees receive from their employers in return for work done during the relevant accounting period. The payments cover: gross (pre-tax) wages and salaries; employers' actual social contributions; imputed social contributions. Calculated in constant prices.
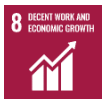
Type of data: official data

Source: Nastat

Time coverage: 2005-2019

Normative trend: Non-decreasing

Justification for change: See next indicator, Compensation of employees as a percentage of GDP.

Target 8.5. Productive employment

Indicator: Compensation of employees as a percentage of GDP

Complement for: Compensation of employees at current prices

Definition: Compensation of employees as a percentage of GDP.

Type of data: Official data

Source: Nastat

Time coverage: 2005-2019

Normative trend: Non-deceasing

Justification for change: Compensation of employees, together with gross operating surplus, is one of the components of GDP on the income side. In addition to its evolution in absolute terms, we are interested in analysing its weight in GDP in order, on the one hand, to compare it with the weight of gross operating surplus and, on the other hand, to make a comparison between regions.. Figure 28 depicts both, compensation in absolute values and as a percentage of GDP. We can observe than, although the compensation of employees has grown steadily since 2013, the compensation of employees as a percentage of total GDP has remained stable or it has declined slightly.

Figure 28. Compensation of employees in Navarre: absolute values and percentage of GDP
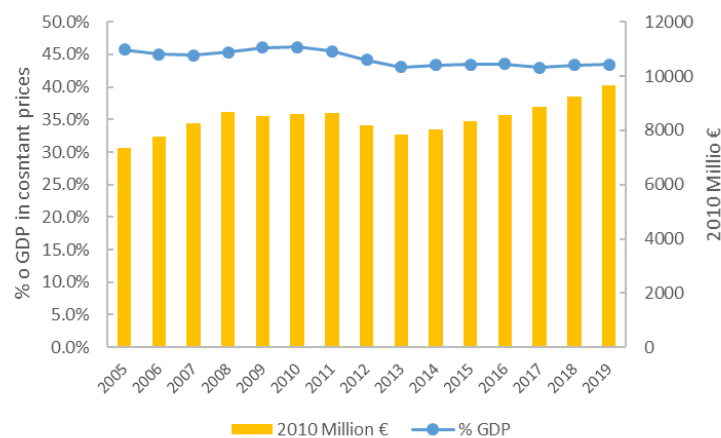
Source: Author's own elaboration

Target 9.5. Promote innovation

Indicator: Gross domestic expenditure on R&D as a percentage of GDP

Complement for: Gross domestic expenditure on R&D

Definition: Gross domestic expenditure on R&D (GERD) (expenditure on research and development by business enterprises, higher education institutions, as well as government and private con-profit organizations) as a percentage of total GDP.

Type of data: Official data

Source: Eurostat (also in Nastat and Innovation Observatory of Navarre)

Time coverage: 2000-2020

Normative trend: Non-decreasing

Justification for addition: In addition to the absolute value of R&D investment, it is necessary to know what percentage it represents of a region's total GDP in order to analyse the relevance of this investment in its economy as a whole. Moreover, this relative value allows comparisons with regions of different sizes.

Figure 29. GERD in Navarre: Absolute values and percentage of GDP.

Source: Author's own elaboration

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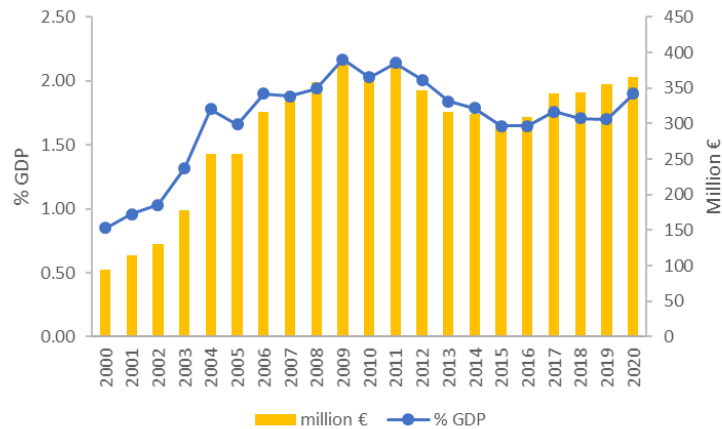
Target 10.2. Inclusion irrespective of status

Indicator: Unemployment of people without disabilities

Complement for: Unemployment of people with disabilities

Definition: Ratio of unemployed persons to economically active persons in the population between 16 and 64 years of age without disabilities.

Type of data: Official data

Source: Nasata (Ocecas)

Time coverage: 2014-2020

Normative trend: Non-increasing

Justification for addition: JRC's proposal to monitor the target *inclusion irrespective of status* is to measure the unemployment of people with disabilities. This proposal allows to see the evolution of this rate and if it follows a non-increasing trend. However, if we really want to monitor inclusion, we should analyse the distance with the unemployment rate of people without disabilities. Whether the gap between these two decreases could be a good proxy to monitor inclusion. In Navarre, as can be seen in Figure 30, this gap was slightly increasing since 2016, but in 2019 the trend changes.

Figure 30. Unemployment of people with and without disabilities in Navarre.
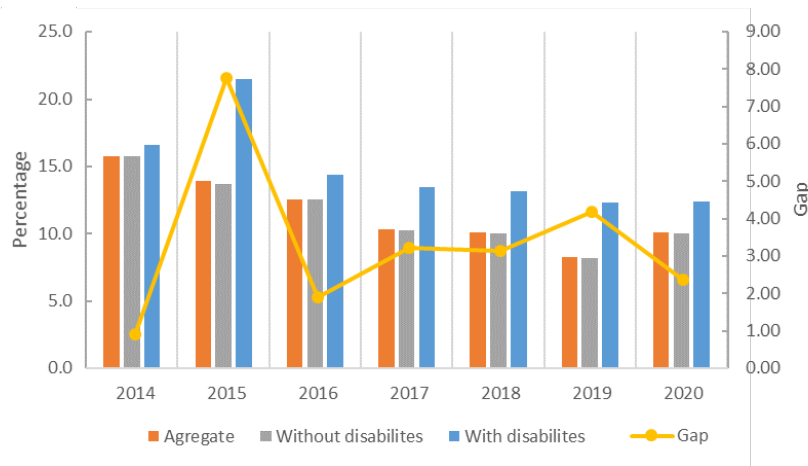
Source: Author's own elaboration

Target 10.4. Greater equality

Indicator: Gini index of disposable income before taxes and transfers

Complement for: Gini index of disposable income after taxes and transfers

Definition: The Gini coefficient measures the extent to which the distribution of income before taxes and transfers within a country deviates from an equal distribution. A coefficient of 0 expresses perfect equality where everyone has the same income, while a coefficient of 1 expresses full inequality where only one person has all the income.

Type of data: Experimental data

Source: OECD

Time coverage: 2013

Normative trend: Non-increasing

Justification for addition: JRC's proposal is to consider the Gini index of disposable income after taxes and transfers. If we add to this data the Gini index of disposable income before taxes and transfers, we can see whether taxes and transfers are doing their original redistributive job. What we expect is that the Gini index calculated after taxes and transfers will be lower than the Gini index before taxes and transfers, that is, a greater equality. In Figure 31, we can see how this redistributive effect is clear in Navarre, the Gini index decreases by 33%. The only drawback is that there is only data for 2013 so it is not possible to study the trend.

Figure 31. Gini index of disposable income in Navarre: before and after taxes and transfers.

Source: Author's own elaboration

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Target 11.2. Access to transport systems

Indicator: Stock of vehicles by type of motor energy

Complement for: Stock of vehicles

Definition: Number of passengers cards by type pf motor engine (petrol, diesel, other).

Type of data: Official data

Source: OTLE – Observatorio del Transporte y la Logística de España (Ministerio de Transportes, Movilidad y Agenda Urbana) / Spanish Transport and Logistics Observatory (Ministry of Transport, Mobility and Urban Agenda).

Time coverage: 2005-2021

Normative trend: Non-increasing for petrol and diesel cars.

Justification for change: Although indicator *stock of vehicles* is aimed at monitoring the target *access to transport systems*, it would be interesting to use the indicator to analyse whether there is a transition towards more sustainable transport models. Europe has historically been a diesel island (T&E, 2017) and the transition towards other type of engines it proving hard and slow. In the case of Navarre (see Figure 32), the proportion of diesel cars has exceeded the proportion of gasoline cars since 2007. In fact, gasoline cars follow a decreasing trend in Navarre from 2005 until 2015 where they start to grow again. The trend of diesel cars is increasing throughout the period considered, with a slower growth since 2015, the year when gasoline cars started to grow. The presence of other types of motor energy is almost anecdotal; in the year 2021 they barely represent 0.5% of the total number of passenger cars. However, it is worth noting that the number of passenger cars with engines other than diesel and gasoline has multiplied by 16 from 2015 to 2021.

Figure 32. Stock of vehicles by type of motor energy in Navarre
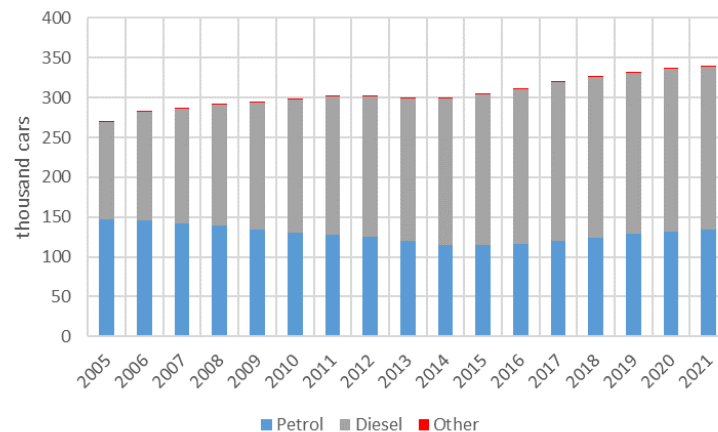
Source: Author's own elaboration

Target 11.6. Environmental impact

Indicator: Sorted/mixed household and commercial waste generation per inhabitant

Alternative for: Household and commercial waste generation per inhabitant

Definition: Domestic waste generated by households, commerce and services, from urban collection, distinguishing between mixed waste and sorted waste (per capita).

Type of data: Official data

Source: Nastat

Time coverage: 2010-2020

Normative trend: Aggregate, non-increasing; Proportion of sorted waste, non-decreasing.

Justification for change: It is important to have data on urban waste collection as this allows us to monitor the environmental impact of cities. However, we must also take into account that the treatment of this waste is also important to monitor this impact. A first step in the treatment of waste is waste separation. Waste separation can be done after collection or before collection. Doing it before collection implies the involvement of citizens and the facilitating role of the authorities who provide the infrastructures and information necessary to do it correctly. Navarre has opted for separate collection, so it is important to monitor the evolution of this type of collection. Figure 33 shows waste generation per capita in Navarre distinguishing between mixed waste and sorted waste. Separated waste accounts for about 40% of the total waste generated for the entire series considered.

Also linked to SDG12.

Target 11.6. Environmental impact

Indicator: Recycling of household and commercial waste

Complement for: Sorted and mixed household and commercial waste generation per inhabitant

Definition: Amount of household and commercial waste destined for recycling in relation to total waste generation.

Source: Wate inventory of Navarre / Inventario de residuos de Navarra

Time coverage: 2010-2020

Normative trend: Non-decreasing

Justification for addition: This indicator complements *Household and commercial waste generation per inhabitant*. Both indicators should be presented together. A primary objective in achieving sustainable cities is to reduce the amount of waste generated. Waste reduction policies must be applied at different stages of the consumption chain, as there are so-called cascading externalities.

Nevertheless, this is not the only objective in waste management; it is also necessary to increase waste treatment, including recycling. Separate waste collection helps to achieve this. Navarre is committed to this type of collection and various local agencies have implemented policies to raise awareness among the population of the need to separate waste correctly. The success of these policies is reflected not only in the amount of waste separated but also in the recycling of waste. In Figure 33, we can see that the recycling rate in Navarre has increased from 23% in 2010 to 46% in 2020.

Also linked to SDG12.

Figure 33. Recycling of household and commercial waste
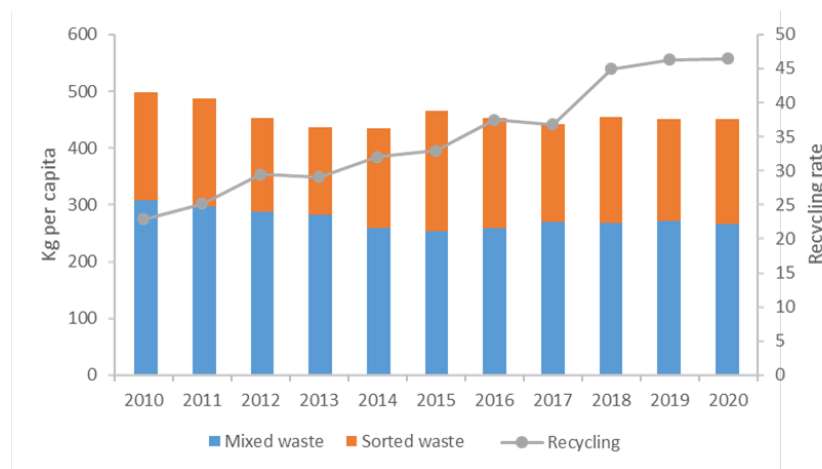
Source: Author's own elaboration

4.3 Sustainable Navarre Strategy

At the time of writing this report, Navarre is developing its *Sustainable Navarre Strategy* (Gobierno de Navarra, 2023). The purpose of this strategy is to materialize a useful tool for the *evaluation of public initiatives* that contribute to the sustainable development of Navarre. The goal of this strategy is to establish procedures for the comprehensive evaluation of the effect that the different public policies of the Autonomous Community of Navarre have on sustainability, both in terms of design (ex-ante) and results (ex-post).

It addresses the multilevel *governance* approach by designing a tool that focuses on regional policymakers, but is intended to be applicable to all stakeholders and agents, including local and regional authorities, citizens, businesses, universities, etc. It aims to become a coordinated action between the different authorities and stakeholders, on the road to shared responsibility at the different levels of government (Gobierno de Navarra, 2023).

In order to facilitate coordination between the different sectoral policies, the Sustainable Navarre Strategy is structured in six strategic areas: climate change, energy transition, culture and heritage, green economy, social cohesion and shared commitment. The Sustainable Navarre Strategy links some 100 plans and actions currently (May 2023) in place to these six strategic areas. It also assesses their sustainability impacts and links them to the SDGs. A selection of these plans and actions is shown in Annex 1.

Table 36. Indicators in the Sustainable Navarre Strategy

SDG	Indicator	Strategic area	JRC proposal
SDG1	Proportion of people at risk of relative poverty, considering the regional poverty line	Social cohesion	**X**
SDG2	Proportion of the agricultural area in which productive and sustainable agriculture is practiced	Climate change	**√**
SDG3	Life expectancy at birth	Social cohesion	**X**
SDG4	Proportion of regional public administrations' expenditure on employment promotion.	Culture and heritage	**X**
SDG5	Employment gap. Difference between the male and female activity rate.	Culture and heritage	**X**
SDG6	Quality of bathing waters	Climate change	**X**
SDG7	Renewable energy production with respect to primary energy consumption.	Energy transition	**√**
SDG8	Average hourly labour income	Green economy	**X**
SDG8	GDP per capita at purchasing power parity	Social cohesion	**X**
SDG9	Proportion of people employed in the manufacturing sector	Green economy	**X**
SDG9	Expenditure on research and development as a proportion of GDP	Shared commitment	**√**
SDG10	Proportion of people living below 50% of median income, considering the national average.	Social cohesion	**X**
SDG11	Number of homes rehabilitated per 100 inhabitants	Energy transition	**X**
SDG11	Urban consumption of the municipality. (% Residential surface area / Total municipal surface area)	Culture and heritage	**X**
SDG12	Ratio of recycled municipal waste to total municipal waste generated and treated	Green economy	**X**

SDG13	Total greenhouse gas emissions from resident units per capita	Climate change	**✗**
SDG15	Protected area (RENA) *To be replaced by Ecosystem Services Indicators	Climate change	**√**
SDG16	Proportion of not convicted detainees to total number of prisoners	Shared commitment	**✗**
	Ratio of the proportion of women in the public sector to the proportion of women in the population between 16 and 64 years old	Shared commitment	**✗**
SDG17	Percentage of the General Budget of Navarre allocated to development cooperation (0.7%).	Shared commitment	**√**
	Number or % local sustainability actions.	Shared commitment	**✗**

Source: Adapted from Gobierno de Navarra (2023)

As stated above, evaluation is a fundamental process for this project. For a correct evaluation, it is essential to have a table of indicators to summarize the ex-ante and ex-post processes. An analysis has been made of the public initiatives approved and in force at the time of drafting this Strategy (see Annex 1) and the indicators that were considered the most strategic have been extracted. There are 21 indicators in the strategy. The indicators are listed in Table 36. Although many of these indicators are not included in the JRC proposal, they do not add additional information over the current proposal. In addition, the list of indicators is presented but no further information about them (definition and/or metadata) is developed. Therefore, one of the most noteworthy points of this proposal is its commitment to a governance model that allows any plan or action to be analysed in terms of both ex-ante and ex-post sustainability.

5. CHALLENGES IN DATA AVAILABILITY AND COLLECTION

We group the challenges encountered throughout this report under three headings: the challenge of data sources, the challenge of the regionalization of indicators and the challenge of overall data interpretation.

Data sources

The difficulties in searching and obtaining data for European regions often lie in whether we are considering a region considered NUT2 or NUT3 in the nomenclature of European regions. The NUTS classification (Nomenclature of territorial units for statistics) is a hierarchical system for dividing the economic territory of the EU for the purpose of the collection, development and harmonisation of European regional statistics, the socio-economic analyses of the regions and the framing of EU regional policies. Many of the data provided by Eurostat at the regional level are either in NUT2 or in NUT3. Navarre is both a NUTS2 and a NUTS3 region (see Figure 34), so we find in Eurostat a large amount of data on the region. This classification is also used by other institutions such as the OECD, so the availability of data for Navarre is wide and easily accessible when it comes to supranational sources. Any information that can be obtained from these supranational sources can facilitate comparisons between regions, since if data are available for Navarre, they will also be available for similar regions.

Figure 34. Navarre in the NUTS classification
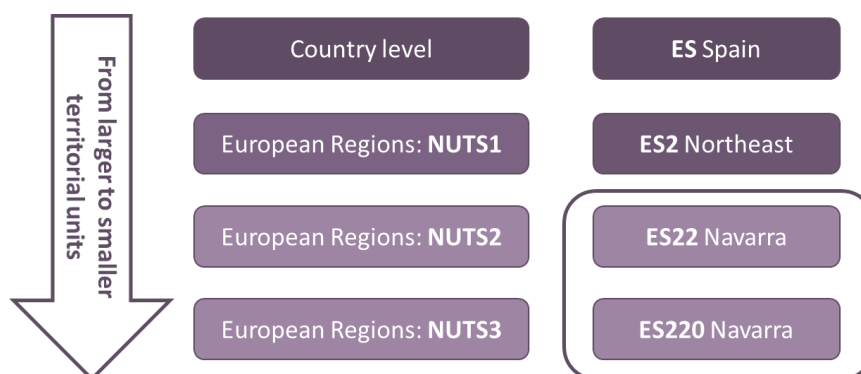
Source: Author's own elaboration

This clear definition of the region is also maintained in national sources such as the Spanish National Statistics Institute (INE) and, of course, the information provided by the different Ministries of the country. These national information sources also provide many easily accessible data on much more specific issues that may be difficult to find in supranational sources. In this case, similar data may not be found for other European regions, which may make interregional comparison difficult.

Navarre is also a political and administrative unit within Spain with various public policies transferred by the State for regional management. Thus, Navarre also has its own statistical institute (Nastat) that provides a lot of socioeconomic information about the region. The data is freely accessible and easy to download. In addition, Nastat is the institution that centralizes data collection in Navarre and is used by public authorities when they need to develop indicators to monitor local public policies. This makes data availability at the local level also extensive and easily accessible. From the beginning of this project to the present, some of the sources consulted have substantially improved the presentation and accessibility of data. Data is becoming more and more visible and accessible online. Therefore, Navarre can be considered a privileged region in terms of data availability and access. However, there is a drawback from this extensive data viewer: sometimes it is difficult to find the primary data source.

However, not everything is as positive as it may seem. Increasingly, the monitoring of policies and strategies requires the use of indicators that are difficult to calculate at the regional level. Neither supranational, national nor local sources have regional information on this type of indicators. They are only available at the country level. Such is the case for the well-known footprints (ecological footprint, carbon footprint or water footprint) or other indicators such as water stress or genuine savings. Some of these indicators could be useful in monitoring the SDGs but need to be regionalized.

Regionalization of indicators

At stated above, the greatest difficulties arise with indicators that are calculated by some institutions but at the national level and their calculation at the regional level is complicated. Such is the case of carbon footprint, food waste, water stress or adjusted net savings (genuine savings). The FAO or the World Bank promote these measures but it is difficult to adapt them to the regional level. Two of the indicators mentioned above (carbon footprint and food waste) were in the list of indicators proposed by JRC and it has not been possible to obtain them for Navarre (the possibility was consulted with the regional statistical institute). The others have not been proposed but would be good indicators for monitoring the SDGs. On the one hand, water stress would show water availability and would complement the current indicators focused on water quality. On the other hand, adjusted net savings (net savings plus education expenditure and minus energy depletion, mineral depletion, net forest depletion, and carbon dioxide and particulate emissions damage) could join in one indicator several aspects of the SDGs. It could be interesting to work on the calculation of these magnitudes at a regional level.

Thus, the usefulness of some of these indicators in monitoring the SDGs is already reflected in the JRC proposal. In fact, I would like to point out that these two indicators are proposed precisely for monitoring the SDG12, one for which it is more difficult to obtain regional indicators. In Navarre, some public policies recognize the need to calculate certain indicators at the regional level for good monitoring of said policies. Such is the case, for example, of the *Agenda for the development of the Circular Economy in Navarre 2030*, that recognizes, for example, the need to regionalize the material footprint in absolute terms and the material footprint per GDP (Gobierno de Navarra, 2019). This indicator is also on the EU action plan for the Circular Economy. The material footprint can be more precise to monitor target 12.2., *management of natural resources*, than the carbon footprint.

In the same way, there are some SDGs for which some goals remain to be covered. This gap could be address with the regional calculation of some indicators. Such is the case of SDG6 for which there are indicators to monitor universal access to water and water quality but there is no indicator for water scarcity. For this purpose, water stress could be a good option. As FAO points out, a high level of water stress has negative effects on social and economic development, increasing competition and potential conflict among water users. In addition, Securing environmental flow requirements is essential to maintaining ecosystem health, resilient, and available for future generations (FAO and UN water, 2021). Disaggregating the indicator is of paramount importance to provide a finer view of both the causes and effects of water stress, reaching even the river basin level (FAO and UN water, 2021).

The list of indicators whose regionalization would be interesting could be very long. Therefore, we point out three that deserve special attention for the purposes of this report.

— *Water stress (SDG6)*

Water stress is the ratio between total freshwater withdrawn by major economic sectors and total renewable freshwater resources, after taking into account environmental water requirements.

Water stress is an indicator that appears in the UN global indicator framework for the SDG.

There is a methodology available from the Food and Agriculture Organization of UN

— *Material footprint (SDG12)*

The material footprint refers to the amount of material extracted from nature, both inside and outside a region, to manufacture or provide the goods and services consumed by its citizens.

The EU's Eighth Environment Action Programme aims to significantly decrease the EU's material footprint. Material footprint, material footprint per capita, and material footprint per GDP are indicators that appear in the UN global indicator framework for the SDG

There is a methodology available from the European Environmental Agency

— *Food waste (SDG12)*

Food waste is defined as food and associated inedible parts removed from the human food supply chain in the following sectors: manufacturing of food products (under certain circumstances); food/grocery retail; food service; and households. "Removed from the human food supply chain" means one of the following end destinations: landfill, controlled combustion, sewer, litter/discards/ refuse, co/anaerobic digestion, compost / aerobic digestion or land application (UNEP, 2021)

There is a methodology available from Eurostat

Overall data interpretation

Managing such a large number of indicators as those analyzed in this report poses the great challenge of making a global interpretation of the results. Is the analyzed region on the right path towards sustainability? This question is very difficult to answer without a correct analysis of the relationships between indicators or the development of some composite index that allows us to group the indicators.

In this report we have analyzed the trends of each of these indicators according to a normative trend. But looking at trends alone can sometimes be misleading as the region can start from absolute values that make it difficult to see substantial improvements. This is what happens in Navarre, for example, with some of the poverty indicators. As recently published, Navarre has the lowest AROPE rate in Spain, despite being the Spanish region with the least improvement in 2022 (Navarre 14.4%, Spain 26%) (EAPN, 2023).

Moreover, when analysing trends, we see that some indicators are improving, others are worsening and some are stagnant (see Figure 35, for a summary of trend evaluation in Navarre). Can the improvement in one indicator compensate for the worsening of another? Are we betting on strong sustainability, in which substitution is not possible, or on weak sustainability, in which substitution is possible and/or acceptable?

Figure 35. Evaluation of trends in Navarre from 2015 onwards.
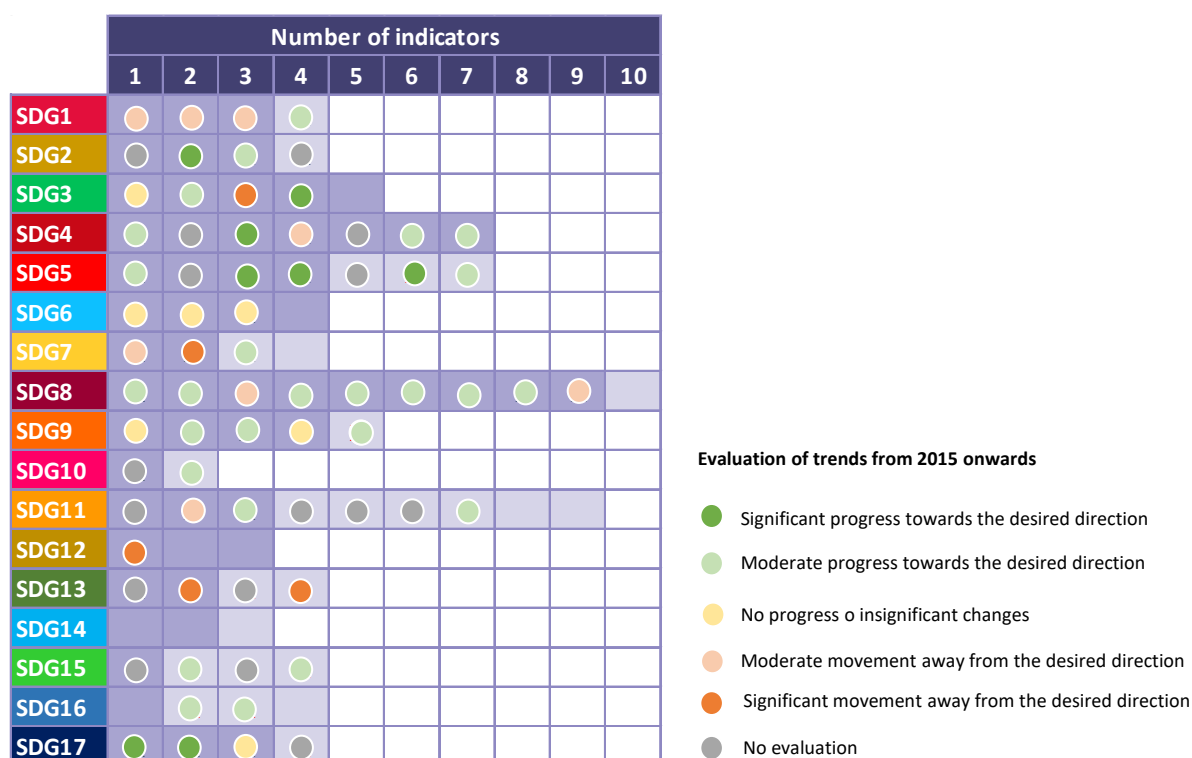
Source: Author's own elaboration

Undoubtedly, one of the greatest challenges of any set of indicators is to show guidelines that can be used to assess these indicators and that, in this way, they can be truly useful for the regions and for decision-makers. How to do this is beyond the scope of this report.

6. RECOMMENDATIONS TOWARDS THE DEVELOPMENT OF A EUROPEAN WIDE REGIONAL INDICATOR SET FOR MONITORING THE SDGS

As Pradhan *et al.* (2017) point out, in contrast to conventional development agendas that focus on a narrow set of dimensions, the SDGs provide a holistic and multidimensional view of development. Thus, the SDGs represent a universal set of goals that are interconnected in a complex web of interactions. Universality implies that none of the SDGs has priority, while their multidimensional and integrated nature results in complex feedbacks between the different SDG targets (Le Blanc, 2015; Bali Swain and Ranganathan, 2021).

On the other hand, as Nilsson et al. (2016) rightly point out, countries/regions must interpret the SDGs and their interrelationships according to their national/regional circumstances and levels of development, as interactions will vary from country to country or from region to region. Differences in geography, governance and technology, among others, make it dangerous to rely on generalized knowledge for progress in achieving the SDGs in a given region. In the same vein, Bali Swain and Ranganathan (2021) conduct an analysis for different regions and show that universal benchmarking of the SDGs can be counterproductive.

The proposal for a set of indicators to monitor the SDGs at a regional level in the European Union should start from the idea of being a set of operational indicators. That is, a set that really serve the regions to have information on their progress towards sustainability. As mentioned above, handling a large number of indicators (83 indicators in the case of the JRC proposal) is complex both in terms of data collection and interpretation. The effort made to collect data may come to nothing if the data is not correctly interpreted. Here are some (general) recommendations for the development of a list of indicators.

Clear and concise definition. In the listing process, any proposed indicator should be accompanied by a clear definition of what it measures and how it measures it. This facilitates the search for data and the testing of estimates.

Reduce the list of indicators. For practical and operational reasons, perhaps one of the first recommendations towards the development of a European regional indicator for monitoring the SDGs set would be to reduce the number of indicators. All the proposals so far, contain a large list of indicators. We are aware that the JCR proposal analyzed here has already been reduced (see Vega-Rapún et al., 2022), but we still find the actual list not operational. It is not so much a question of quantity as of quality. These has been a long debate in the academic literature (Hák et al, 2018).

Avoid the use of redundant indicators. When long lists of indicators are given, it is necessary to consider what each of them contributes to the monitoring of the SDGs. In some cases, indicators are included whose information is redundant. Detecting these issues is fundamental for the construction of an adequate and adjusted set of indicators.

Identify trade-offs and synergies. In their analysis, Pradhan *et al.* (2017) identify synergies and trade-offs between pairs of SDGs and identify the most frequent interactions. For example, SDG 1 (End poverty) has a synergistic relationship with most of the other goals, while SDG 12 (Responsible production and consumption) is the goal most commonly associated with trade-offs. In the same vein, the ICSU (2017) report explores the nature of the interrelationships between the SDGs based on the premise that an analysis of the interactions between SDG domains can support more coherent and effective decision-making and facilitate tracking and monitoring of their progress.

Provide reference values. If the indicators are applied over a period of time, they can be used to determine a trend. Although absolute values may not entirely matter, we need a notion of what is acceptable (Moldan, 2012). Moreover, as noted above, a trend analysis can be misleading if it is based on absolute values considered acceptable. In this case, improvements will be much slower or there may even be small temporary worsening but still remain above acceptable levels.

Unit of measure. Whenever possible, use relative units that allow, in addition to the analysis of the region, comparison with other regions. For monetary series, use constant prices.

With all this, it seems that the list of indicators must be accompanied by some keys for their use and interpretation. The treatment of all the available information is essential to understand how the regions are in terms of sustainability: what path they have traveled so far, what path remains to be traveled, what could be the future trends and what could be the policies to implement that could lead us towards sustainability.

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LIST OF ABBREVIATIONS AND DEFINITIONS

AROPE   At Risk Of Poverty or Social Exclusion

BDN   Nature Data Bank

CDD   Cooling Degree Days

EPO   European Patent Office

FemAI   Female Achievement Index

FemDI   Female Disadvantage Index

FTE   Full-Time Employment

GDP   Gross Domestic Product

GERD   Gross Domestic Expenditure in Research and Development

GHG   Greenhouse Gas

GVA   Gross Value Added

HDD   Heating Dregree Days

IFN   Spanish Forest Inventory

INE   Spanish Statistical Institute

JRC   Joint Research Centre

NASTAT   Navarra's Statistical Institute

LFS   Labor Force Survey

LWI   Low Work Intensity

MAPA   Ministry of Agriculture, Fisheries and Food

MITECO   Ministry for Ecological Transition

MITES   Ministry of Labor and Social Economy

MSD   Material and Social Deprivation

OCECAS   Central Statistical Bodies of the Autonomous Communities

OECE   Organisation for Economic Co-operation and Development

OTLE   Spanish Transport and Logistics Observatory

PCT   Patent Cooperation Treaty

PEN   Navarra's Energy Plan

QGI   Quality of Government Index

SDGs   Sustainable Development Goals

SMSD   Severe Material and Social Deprivation

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Annex 1 Sustainable Navarra Strategy. Leveraging initiatives

The Sustainable Navarra Strategy includes approximately 100 lever initiatives, specific policies (planning instruments or administrative management initiatives) that are related to the SDGs. Some of them are listed in Table A1. The relationship of each initiative with the different SDGs is provided by Gobierno de Navarra (2023). See Gobierno de Navarra (2023) for an exhaustive list of these initiatives.

Table A1. Sustainable Navarra Strategy. Leveraging initiatives. Some examples.

SDG	Leveraging initiatives
SDG1	III Prevention Plan: Drugs and Addictions (2018 – 2023)
SDG1	I Inspection and Control Plan for Gambling and Entertainment (2017 – 2020)
SDG2	Rural Development Program (2021 – 2027)
SDG2	Plan for the promotion of organic production for the period (2018 – 2020)
SDG3	III Mental Health Plan (2019 – 2023)
SDG3	Occupational Health Action Plan for Navarre (2017 – 2020)
SDG4	Strategic Plan for Vocational Education and Training (2017 – 2020)
SDG4	Educational system, ICT, attention to diversity
SDG5	Strategic Plan for Equality between Women and Men 2022–2027
SDG5	Action Plan for Sport and Women
SDG7	Energy Plan of Navarra 2030 – PEN2030
SDG7	Sustainable Mobility Master Plan (2018 – 2030)
SDG8	Employment Plan of Navarra 2021–2024
SDG8	Smart specialization strategy for Navarra S4 (2021 – 2027)
SDG9	Industry 2020 Plan
SDG9	Science, Technology and Innovation Plan (2021 – 2025)
SDG10	Strategy for Intercultural Coexistence in Navarre (2021 – 2026)
SDG10	Housing Plan (2018 – 2028)
SDG11	Special Emergency Plan for Flood Risk (2018)
SDG11	Reactivate Navarre Plan (2020 – 2023)

SDG12	Agenda for the development of the Circular Economy in Navarre 2030
	Waste Plan of Navarra (2017 – 2027)
SDG13	Climate Change Roadmap – HCCN 2017-2030-2050
	LIFE-IP NAdapta-CC Project
SDG15	Forestry Agenda of Navarra (2019 – 2023)
	ZEC management plans
SDG16	Navarre model of restorative justice and criminal enforcement
	I Open Government Plan (2021 – 2023)
SDG17	III Master Plan for Cooperation in Navarre (2021 – 2024)
	Navarre's External Action Plan (2021 – 2024)

Source: Adapted from Gobierno de Navarra (2023)

Annex 2 GHG emission drivers: an IPAT analysis

Throughout this report, we have pointed out the need to analyse the relationship between indicators in order to advance in the interpretation of results. Below we analyse the relationship between some of these indicators using the extended IPAT identity (York *et al*, 2003; Holdren, 2018)). The IPAT identity based upon index decomposition analyses allows identifying the relationship between the driving forces and environmental impacts. The IPAT identity is $I \equiv P \times A \times T$ where I is environmental impact, P is population, A is affluence and T is technology. The identity basically says that for economic growth to occur without environmental impact, it is necessary that the rate of technological improvement offset the sum of the rate of change in population and the rate of income growth.

During the last years, much research has been devoted to extend and adopt the original IPAT identity to incorporate more factors, mainly to study the drivers of CO2 (Brizga et al, 2013). The extended IPAT analysis for GHG is express as follows:
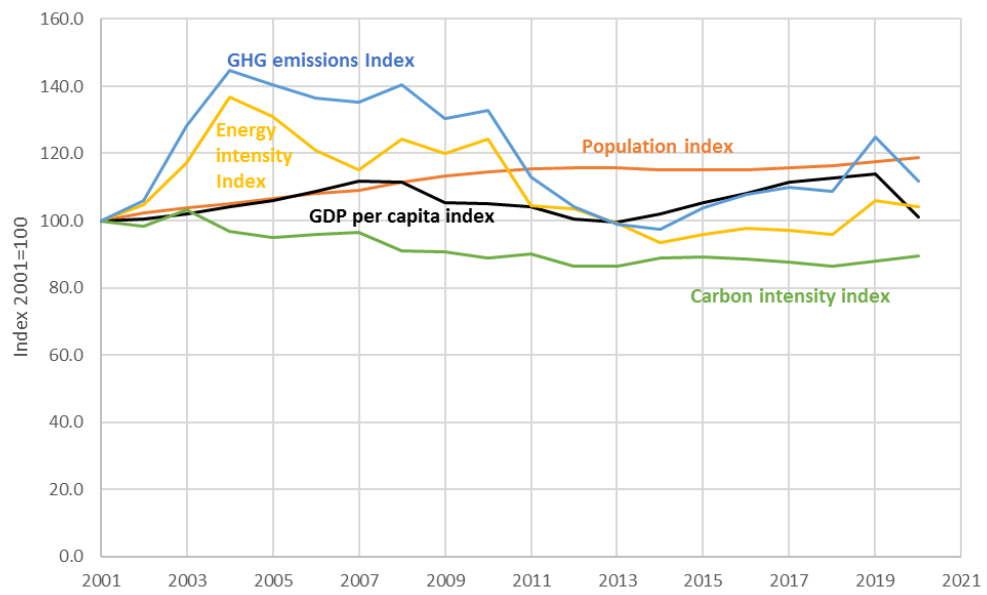
$$GHG \equiv Population \times \frac{GDP}{Population} \times \frac{Energy}{GDP} \times \frac{GHG}{Energy}$$

According to this identity, the drivers of GHG emissions are population, GDP per capita, energy intensity and carbon intensity. The last two drivers, energy intensity and carbon intensity are considered sustainability levels. In order for economic growth to occur without GHG emissions, it is necessary that the rate of energy intensity improvement (decrease in energy consumption per GDP) and the rate of carbon intensity improvement (GHG generated per unit of energy)

In the list of indicators discussed in this report, we can find GHG emission (SDG13), energy intensity (SDG7) and GDP (SDG8). We can also find share of renewable energies (SDG7), thus, the energy mix behind carbon intensity. These indicators are linked through the IPAT identity.

The results of the extended IPAT analysis for GHGs in Navarra are shown is Figure A1. All the variables are expressed in index with 2001 value=100. Sustainability levers (energy intensity and carbon intensity) are acting as such in a soft way and their improvement is not sufficient to counteract the pressure on GHGs from economic and demographic growth. Sustainability levers are acting as such in a soft way and their improvement is not sufficient to counteract the pressure on GHGs from economic and demographic growth. It can be seen that the slight improvement in carbon intensity offsets the slight increase in population. Thus, energy intensity and economic growth seems to play a determining role in the evolution of GHG emissions.

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Figure A1. GHG emission drivers in Navarra, 2001-2020

Source: Author's own elaboration

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