European Commission

JRC SCIENTIFIC INFORMATION SYSTEMS AND DATABASES REPORT

# EU Bioeconomy Monitoring System indicator update

*Addressing indicator gaps: social impacts of trade and share of renewable energy in bio-based industry*

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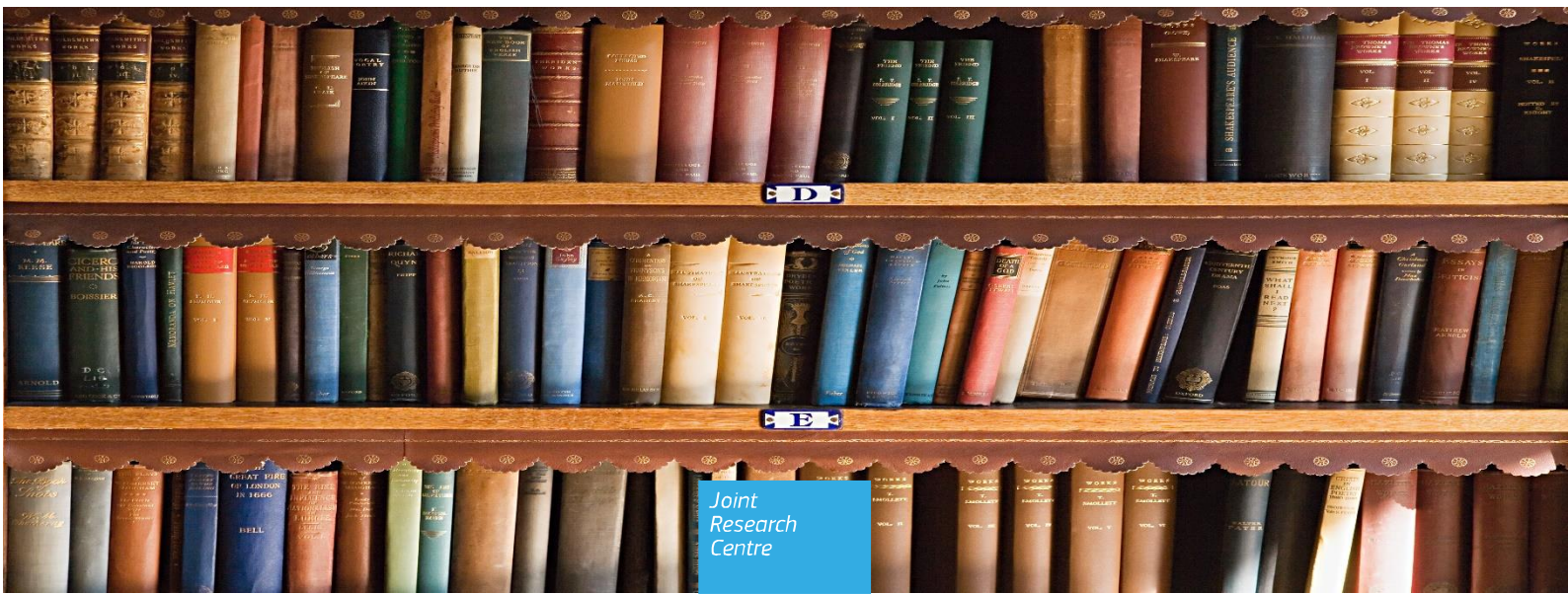
S. Mubareka (ed)



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# Contents

## Foreword

This report documents the progress made in filling gaps in indicators that have been identified as important to monitoring the progress towards a sustainable and circular EU bioeconomy. The indicators will be implemented in the EU Bioeconomy Monitoring System. This first set of indicators cover the topics of (a) social impact of trade; (b) renewable energy use in bio-based industries. This work is partially funded by DG Research and Innovation under the Administrative Agreement DG RTD N° 013 KCB (LC-01591551) JRC Reference N ° 35895 NFP.

Given the very different nature of the two topics, they have been developed by different experts. This is reflected as the two main chapters in this report (Chapters 2 & 3).

## Acknowledgements

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## Abstract

The conceptual framework of the EU Bioeconomy Monitoring System was constructed to assess the EU's progress towards a circular and sustainable bioeconomy. It was envisioned to cover the three dimensions of sustainability: environment, society and economy. Indicators were selected to cover the various parts of the framework but gaps in the knowledge or data still exist.

This document describes the progress made in filling gaps in the indicators that had been identified as being important to understand the progress of the EU Bioeconomy. In 2021, two gaps were addressed: Social impacts of trade and the share of renewable energy in bio-based industries (BBI).

It was found that although robust indicators exist to monitor the social condition in countries that are trading with the EU, it is not a straightforward task to monitor the social impact of trade. The attribution of the social condition to EU trading is not clearcut because it would require data collected at the local/sectoral level, which would then need to be triangulated with changes in the volume of trade with the EU and related to that specific location. In the absence of local indicators that are country-specific, one cannot infer that "social spillovers" are happening because of a specific trade agreement. It is however possible to re-frame the question to acknowledge the overall vulnerability of trading countries. In this way the monitoring system, although unable to track progress towards higher positive impacts on trading countries, can track the overall progress in those trading countries. The JRC therefore proposes to publish the recommended indicators for the countries whose main trading partner has been or currently is the EU for a time period between 2000 to the latest available data. These indicators are sourced from international sources such as the International Labour Organisation.

Regarding renewable share of energy for bio-based industries, this indicator is developed to understand the trends in share of renewable energy for bio-based industries (BBI). BBI aims to decarbonise the economy and reduce the dependency on non-renewable resources, and should therefore have the same or even higher standards for their use of renewable sources of energy with respect to other industries.

## Introduction

The EU Bioeconomy Monitoring System is pursuant to the Action 3.3.2 of the EU Bioeconomy Strategy (COM/2018/673). It addresses the need for a comprehensive monitoring system by establishing a mechanism to measure the progress of the EU bioeconomy towards the five strategic objectives it tackles. It defines and implements a comprehensive monitoring framework for the EU bioeconomy, which covers environmental, social and economic dimensions of sustainability and relates to the overarching Sustainable Development Goals (SDGs) context.

The EU Bioeconomy Monitoring System was officially launched in November 2020 on the occasion of the Global Bioeconomy Summit. The system is embedded in the Knowledge Centre for Bioeconomy at this location: https://knowledge4policy.ec.europa.eu/bioeconomy/monitoring_en.

The monitoring framework consists of four levels. As shown in Figure 1, the highest level is that of the EU Bioeconomy Strategy objectives themselves. Each of these is broken down into normative criteria, which in turn, is broken down into key components. The indicators are then assigned to the level of the key components. This hierarchical design allows for a logical aggregation of indicators for higher level indicators to be developed.

This document describes the progress made in filling gaps in the indicators that had been identified as being important to understand the progress of the EU Bioeconomy. In 2021, two gaps were addressed: Social impacts of trade and the share of renewable energy in bio-based industries (BBI). The first, social impacts of trade, addresses in fact two gaps: one related to trade of food and the other to the trade of non-food. The indicators are placed within the framework as shown in Table 1.

*Table 1. Gaps filled in relation to the Bioeconomy Monitoring System framework.*

| Indicator name | Bioeconomy Strategy Objective | Bioeconomy Strategy Normative Criteria | Bioeconomy Strategy Key Component |
|---|---|---|---|
| Social impact of trade in exporting countries of food (to EU) | Ensuring Food and Nutrition Security | Local economies, societies and environmental conditions of countries exporting food to the EU are not hampered but rather harnessed by the trade of raw and processed biomass and related technologies | Social impact of trade in exporting countries of food (to EU) |
| Social impact of trade in exporting countries of non-food (to EU) | Reducing dependence on non-renewable unsustainable resources, whether sourced domestically or from abroad | Local economies of countries exporting non-food commodities to the EU are not hampered but rather harnessed by the trade of raw and processed biomass and related technologies | Social impact of trade in exporting countries of non-food (to EU) |
| Share of renewable energy in gross final energy consumption of bio-based industries or bioenergy industries | Reducing dependence on non-renewable unsustainable resources, whether sourced domestically or from abroad | Resource efficiency, waste prevention and waste-re-use along the whole bioeconomy value chain is improved | Energy efficiency |

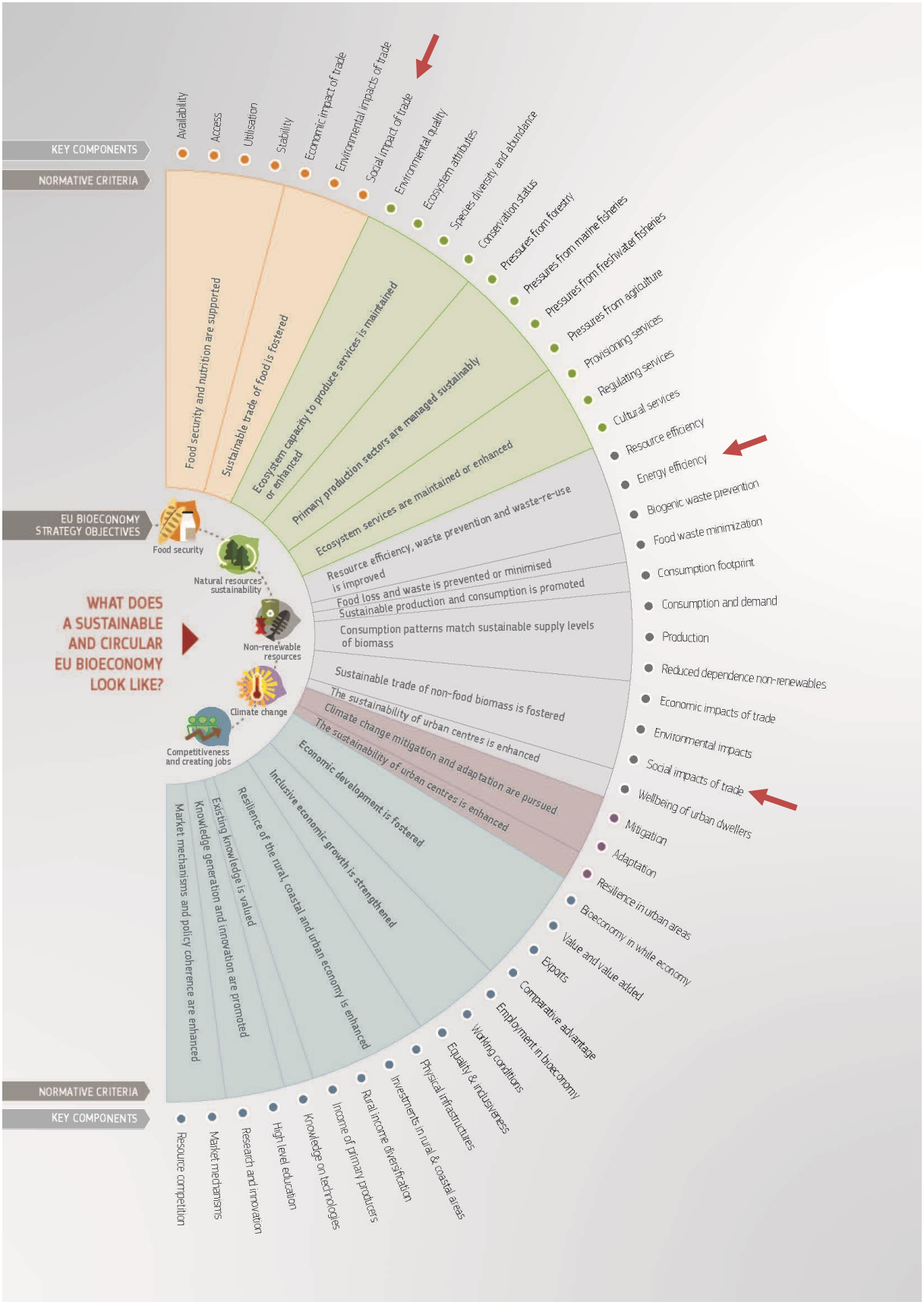


*Figure 1.Conceptual framework of the EU Bioeconomy Monitoring System. The red arrows indicate the gaps addressed in this report.*

# 1 Assessing the social impact of trade for the EU Bioeconomy

C. Melim-McLeod, E. Olsen and M. Follador

## 1.1 Context and objective

The World Trade Organisation (WTO) defines regional trade agreements (RTAs) as "reciprocal preferential trade agreements between two or more partners."[1] The number of RTAs in force has increased exponentially in recent decades (Figure 2). According to the WTO, there were 339 regional trade agreements in force as of 1 February 2021, corresponding to 548 notifications from WTO members and include goods, services and accessions[2].

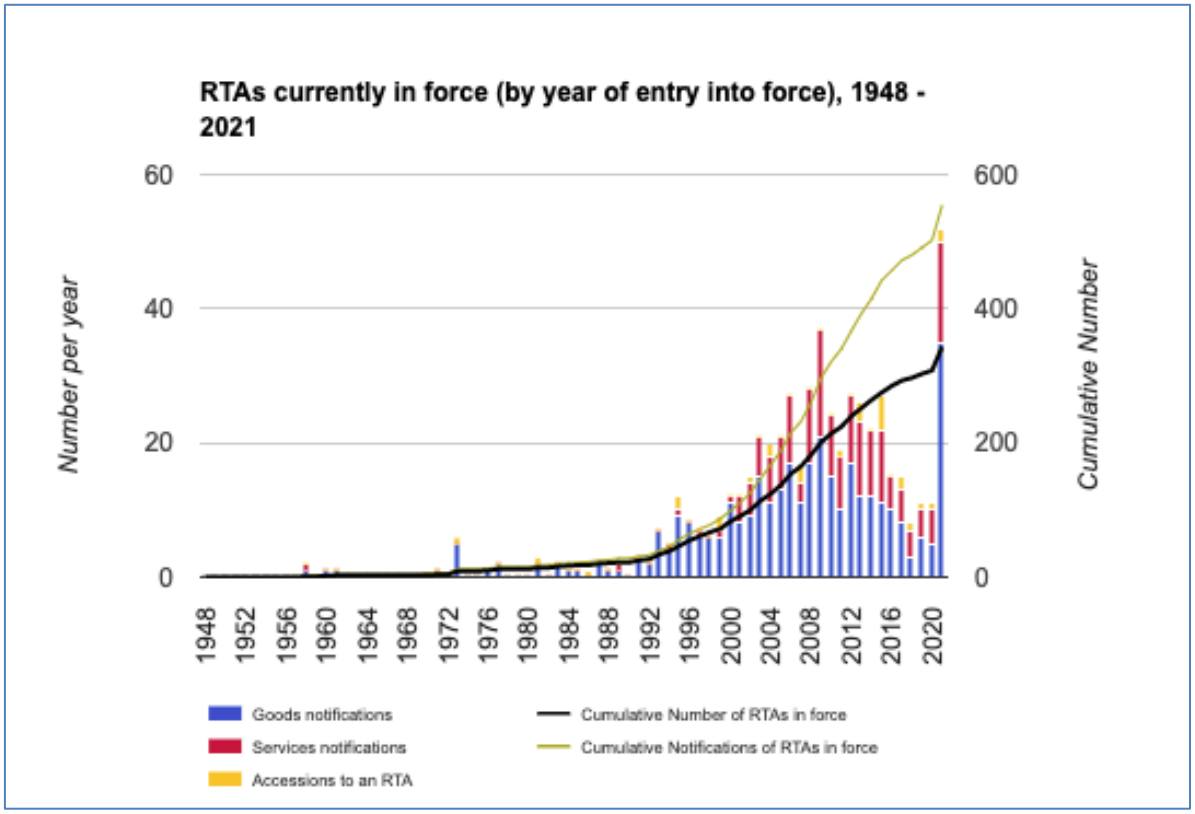


*Figure 2. Evolution of number of regional trade agreements*

Of all the RTAs registered in the WTO, the most significant in terms of trade volume are those between trade blocs, or groups of countries that have reduced or removed trade barriers for their participants. For the purposes of this report, these will be referred to as Free Trade Agreements (FTAs).

Several RTAs mention international conventions as a legal basis for social provisions[3] related to the agreement. The most common social provisions mentioned in RTAs are related to labour, gender, human rights, education, corporate social responsibility, public health, and cultural heritage. The International Labour Organization (ILO) Conventions are the most frequently mentioned in RTAs. New generation bilateral EU trade agreements, such as the EU-Vietnam and EU – China agreement, were more likely to have integrated social provisions related to the new Social Development Goals agenda.

[1] https://www.wto.org/english/tratop_e/region_e/region_e.htm
[2] ibid

[3] Social Provisions: stipulations in trade agreements aiming at protecting societal welfare from the potential negative effects of trade liberalization (Postnikov, 2020)

However, despite the high number of FTAs registered with the WTO, and the growing concerns on the sustainability of supply chains, very few take social impact monitoring in consideration.

## 1.2 Methodological approach

Most of the trade agreements (TAs) that mention social provisions in their text are EU trade agreements with individual countries or other trade blocs.[4]These TAs were selected for an in-depth inspection (Table 2).

We examined the text of these treaties as well as other documents by other international organizations in detail to identify the basis for social provisions which could be used for monitoring and evaluation purposes. As a next step, we identified how social issues were incorporated into the trade agreements. For this purpose, we undertook a "deep-dive" into the text of the treaties and assessed:

i) Whether the agreement *includes cooperation* between the parties related to social issues;
ii) If the agreement seeks to *promote social cooperation*;
iii) Whether the treaty mentions *mechanisms to monitor* and indicators for doing so in the implementation of the social provisions.

We then entered information on *clauses on monitoring and assessment of social impacts.* In this process, we identified whether the agreement provided for specific monitoring mechanisms and indicators for ex-ante and ex-post assessments.

Finally, we sought to establish whether any assessments analysing social impacts had been conducted and if so, we aimed at identifying the main issues that were raised in these assessments and what had been done to mitigate these. The matrix enabled us to identify gaps in the existing monitoring systems, including indicators.

*Table 2: Selected trade agreements with the EU for in-depth analysis*

| Trade Bloc | Type of agreement with the EU |
|---|---|
| African, Caribbean and Pacific States (ACP) | Partnership Agreement |
| Andean Community (ANDEAN) | Trade Agreement (with Peru, Colombia and Ecuador) |
| Asia Pacific Economic Cooperation (APEC) | N/A |
| Association of Southeast Asian Nations (ASEAN) | Bilateral trade agreements with individual ASEAM member states (Singapore and Malaysia, Vietnam, Thailand, Philippines and Indonesia. |
| CARIFORUM, formerly Caribbean Community (CARICOM) | Economic Partnership Agreement |
| Central African Economic and Monetary Community (CEMAC) | Bilateral trade agreements (with 6 countries in the region) |
| Central American Common Market (CACM) | Association Agreement |
| COMESA Common Market for Eastern and Southern Africa | Economic Partnership Agreement |
| Commonwealth of Independent States (CIS), including certain associate and former member States | N/A |
| East African Community | N/A |
| European Free Trade Association (EFTA) | Economic Area Agreement |
| Eastern and Southern Africa | Interim Economic Partnership Agreement |
| Gulf Cooperation Council – GCC | On hold since 2008 |
| South Asian Association for Regional Cooperation (SAARC) | Development cooperation and bilateral Partnership Agreements |
| Southern African Development Community (SADC) | Economic Partnership Agreement |
| Southern Common Market (MERCOSUR) | Mercosur Association Agreement |

[4] https://ec.europa.eu/trade/policy/countries-and-regions/negotiations-and-agreements/#_in-place

| | |
|---|---|
| United States- Mexico- Canada Agreement (USMCA), formerly North American Free Trade Agreement (NAFTA) | N/A. The EU has agreements with Canada and Mexico. The Transatlantic Trade and Investment Partnership with the United States was put on hold in 2016. |
| West African Economic and Monetary Union (WAEMU) | Economic Partnership Agreement |
| West African Economic Community (ECOWAS) | Economic Partnership Agreement |

Our selection among the 339 RTAs in force today, was based on the agreements we found containing reference to internationally recognized normative frameworks, i.e. United Nations conventions or multilateral agreements.

### 1.2.1 Social Impact Monitoring Frameworks

#### *1.2.1.1 EU and international Social Impact Monitoring Frameworks*

We briefly introduce and discuss key frameworks used by the EU and other multilateral international organizations for monitoring social impact in trade deals or development programmes.

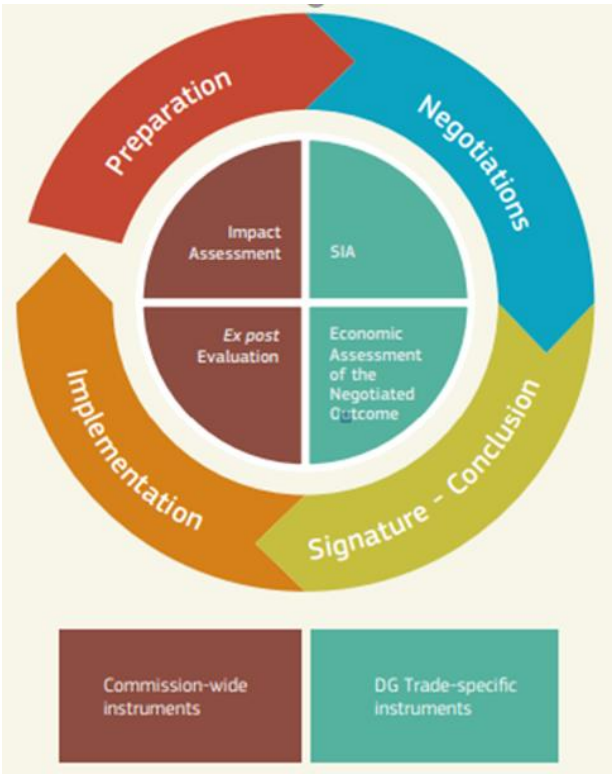


*Figure 3: Sustainability Impact Assessment cycle. Source: EC, 2016*

**The EU Social Impact Assessment (SIA)**

The European Commission's approach to identifying the social impact of trade agreements is integrated in a four-step process of assessment and evaluation during the life of a proposed new trade agreement[5] (Figure 3). This process includes an Impact Assessment (IA) conducted at the initial design stage; a Sustainability Impact Assessment (SIA) during negotiations; an Economic Assessment of the negotiated outcome after the conclusion of the negotiations, and finally an ex-post evaluation, conducted after the implementation of the trade agreement.[6]

SIAs are specific to major trade negotiations and complement IAs with a more in-depth analysis of the potential impacts of the agreement, in addition to enabling a wider outreach to stakeholders in both the EU and partner countries. Compared to economic assessments, which analyse the economic outcomes on reduction of trade barriers, social issues are a significant component of the SIA. Conducting a SIA acknowledges that contexts and cultures differs around the word, hence the aim of the analysis is also to identify key sectors that should be subject to further detailed analysis, in addition to obtaining in-depth contributions and inputs from various stakeholders. The aim of the SIA is to provide a detailed assessment of the most likely social impacts and identify the groups of people or stakeholder that will be affected. In conducting a SIA, particular attention should be given to the assessments related to employment; working conditions; and distributional impacts (poverty, income

[5] European Commission (2016) Handbook for trade sustainability impact assessment, 2nd edition. http://trade.ec.europa.eu/doclib/docs/2016/april/tradoc_154464.PDF

[6] Ibid.

inequalities, disposable income, vulnerable consumer groups).[7] Potential impacts on the health and safety of individuals or populations should also be considered.[8]

A human rights analysis should also be part of the SIA. The analysis refers to human rights as described in the Charter of Fundamental Rights of the European Union, the core UN treaties and conventions, ILO conventions on core labour standards, the European Convention on Human Rights, other regional human rights conventions, and where relevant, customary international law.[9] The analysis should (i) identify the specific human rights most likely to be affected by the proposed agreement; (ii) account for the extent to which the particular measures foreseen in the agreement may enhance or impair the enjoyment of the relevant rights, and/or strengthen or weaken the ability of the EU and the partner country/ies to fulfil or progressively realize their human rights obligations. In other words, the analysis should identify measures/changes which, if introduced as part of a proposed trade agreement, might not immediately affect the rights of specific individuals/groups - but might over time weaken the ability of the governments concerned to fulfil their HR obligations.

**International frameworks**

Social standards have also been introduced by multilateral international organizations and applied in ex -ante assessments to anticipate possible negative impacts of their programmes and/or operations in a given country or setting and prevent, mitigate or compensate these impacts.

These assessments differ from social impact assessments done prior to trade agreements in that there is an assumption that the organisation providing the funding can vet the programme or transaction in question on a case-by-case basis; On the other hand, entities negotiating trade agreements on behalf of trading blocs do not have the authority to approve or vet every single commercial transaction undertaken under its aegis. Nonetheless, international social impact assessment frameworks are included here as they may guide the selection of relevant indicators that are not highlighted in the texts of existing trade agreements, in line with the Sustainable Development Goals.

Table 3 presents the standards used in social impact assessments for projects financed by the World Bank (WB), the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), and the Green Climate Fund (GCF).[10]

As the table shows, there are similarities in the frameworks of all organizations, with some variations among them. UNDP is the only organization to highlight the principle of Leave No One Behind (LNOB) as a criterion to be integrated in all programming. The principle is defined as follows:

> *"People get left behind when they lack the choices and opportunities required to participate and benefit from development progress. All persons living in extreme poverty, in any form, are left behind, together with those enduring disadvantage(s) that deny or limit their choices and opportunities relative to others in society."*[11]

In addition, UNDP holds gender and human rights as separate social areas, while the World Bank combines gender and human rights under "Labour and Working Conditions". Human rights are also

[7] Ibid.
[8] See Better Regulation: tool #27: Impacts on Health
[9] European Commission (2016) *ibid.*
[10] Sources:
Environmental and Social Standards (2018). Available at https://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards#ess4
UNDP Social and Environmental Safeguards (2019). Available at https://www.undp.org/content/undp/en/home/librarypage/operations1/undp-social-and-environmental-standards.htmlUNEP Environmental and Social Sustainability Framework (2020). Available at https://wedocs.unep.org/bitstream/handle/20.500.11822/32022/ESSFEN.pdf?sequence=1&isAllowed=yGreen Climate Fund Environmental and Social Policy (2018). Available at https://www.greenclimate.fund/document/environmental-and-social-policy
[11] Source: https://www.undp.org/content/dam/undp/library/Sustainable%20Development/Brochure_LNOB_web.pdf

included under the same rubric by UNEP and GCF, although the GCF has a separate assessment framework for gender.

*Table 3: Standards used in social impact assessment by multilateral international organizations, namely the World Bank (WB), the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), and the Green Climate Fund (GCF)*

| Social issues | WB | UNDP | UNEP | GCF |
|---|---|---|---|---|
| Leave No One Behind | | x | x | x |
| Human Rights | | x | x | x |
| Gender Equality and Women's Empowerment | | x | x | x |
| Labour and Working Conditions including non-discrimination and equal opportunity, child labour and minimum age, forced labour, occupational health and safety | x | x | x | x |
| Community Safety and Health, including community exposure to health issues as a result of investments, particularly in infrastructure or mining | x | x | x | x |
| Land Acquisition, Restrictions on Land Use and Involuntary Resettlement in situations of physical and/or economic displacement as a result of relocation, loss of residential land, loss of shelter, loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood | x | x | x | x |
| Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities | x | x | x | x |
| Cultural Heritage 12 | x | x | x | x |

#### *1.2.1.2 Assessment of existing Social Impact Monitoring Frameworks*

Monitoring FTAs involves reporting on the agreement implementation and ensuring that the contractual obligations are being implemented. Mechanisms to monitor the trade agreements are often in place in the treaties, and most commonly the agreements state that the parties will undertake continuous monitoring through their respective participative processes and institutions. However, we did not identify any indicators dedicated to assessing social impacts per se, with the exception of indicators found in sustainability impact assessments.

We did find, however, statements and mechanisms in the treaties that mention social provisions. A vast majority of the trade agreements have stated in their treaties that monitoring shall ensure that the agreement in benefits their people, particularly vulnerable groups. In many instances, the creation

[12] The World Bank defines cultural heritage as follows: T*angible cultural heritage, which includes movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Tangible cultural heritage may be located in urban or rural settings, and may be above or below land or under the water; • Intangible cultural heritage, which includes practices, representations, expressions, knowledge, skills—as well as the instruments, objects, artifacts and cultural spaces associated therewith—that communities and groups recognize as part of their cultural heritage, as transmitted from generation to generation and constantly recreated by them in response to their environment, their interaction with nature and their history.* Source*:* https://pubdocs.worldbank.org/en/837721522762050108/Environmental-and-Social-Framework.pdf#page=99&zoom=80 p. 85

of a special committee for monitoring the implementation and administration of the trade agreement is included in the treaty. For example, the Economic Partnership Agreement in the East African Community includes a special committee on Customs and Trade facilitation that is expected to monitor the implementation and administration of the treaty, while the Common Market for Eastern and Southern Africa includes a Secretariat for following up and monitoring the implementation of member states. Table 4 presents an overview of the text on social impact monitoring found in FTAs.[13]

*Table 4: Overview of trade agreements that include social impact monitoring*

| Trade agreement | Text included in the agreement on monitoring social impact |
|---|---|
| Cariforum | Monitoring must ensure that the benefits for men, women, young people and children deriving from the partnership is maximized. |
| EU- Eastern and Southern Africa (EPA) | Monitoring, on the basis of agreed indicators will also address achievements of development strategies, as well as the effectiveness of the institutional arrangements and their achievements in meeting aid effectiveness objectives. |
| EU- East African Community (EPA) | The cooperation in fisheries shall include a functioning monitoring system of the environmental, economic and social impacts. A separate group shall monitor the implementation and progress of this work. The Parties shall also establish the "Agriculture Dialogue", who shall monitor the progress in implementing this part. |
| EU- SADC (EPA) | Monitoring must ensure that it benefits the people deriving from it, in particular vulnerable groups. |
| EU-COMSEA | A Consultative Committee shall be responsible for monitoring the implementation of the provisions related to development of the private sector and women in development and business. |
| EU- China | The Parties recognize the importance of reviewing and assessing sustainability impacts through their respective processes and institutions. |
| ANDEAN | The Parties shall establish a Sub-committee on trade and Sustainable Development, responsible for labour, environmental and trade matters. |

Although RTAs rarely include provisions for monitoring social impact *per se*, various mechanisms for addressing social issues are in place in many agreements, most commonly as part of the text related to cooperation between the parties (Table 5). Therefore, as shown above, there is a new generation of trade agreements involving more actors on more levels, with both business and civil society involved in the promotion and monitoring of the implementation of social provisions.

In some of the FTAs between the EU and partner countries or regions, the parties commit to monitor impacts of the agreement and to establish monitoring and advisory bodies including independent and representative civil society organisations, such as business associations, trade unions, and non-governmental organizations. In the EU-South Korea FTA, for example, civil society organizations on both sides meet once a year to discuss the implementation of the labour provisions, after which their report is sent to the South Korean government and the European Commission. Similar trends are found in other treaties we have assessed, such as the Free Trade Agreement of The Common Market for Eastern and Southern Africa (COMSEA). In this agreement, a Consultative Committee including the business community and other interest groups is meant to provide a link and facilitate dialogue

[13] The full text of all agreements is available on https://ec.europa.eu/trade/policy/countries-and-regions/negotiations-and-agreements/#_in-place

between the communities, in addition to being responsible for monitoring and implementing provisions related to private sector development and women in development and business.

*Table 5: Overview of trade agreements including other mechanisms for addressing social provisions*

| Trade agreement | Other Mechanisms for dealing with social provisions in trade agreements |
|---|---|
| Cariforum | The Parties may consult each other and the CARIFORUM-EC Consultative Committee on social issues, and they may seek advice from the ILO on tools addressing trade-related social challenges. |
| EU-SADC (EPA) | The Parties may exchange information and share experiences to promote coherence and mutual support between trade, social and environmental objectives, and shall strengthen dialogue and cooperation on sustainable development issues that may arise in the context of trade relations. |
| ECOWAS/WSEMU and EU | A Joint Council shall promote dialogue and cooperation on social issues among the Parties. |
| ANDEAN | The Parties shall consult domestic labour, environment or sustainable development groups, evaluation of impacts on labour, and studies of labour. |
| EU - Vietnam | The Parties will work together on trade-related aspects of sustainable development, including ILO Decent Work Agency, and exchange information and experience on methodology and indicators for impact assessment on trade sustainability. |

### 1.2.2 INDICATORS FOR MONITORING SOCIAL IMPACTS

RTAs and bilateral trade agreements are, as shown in the previous sections, increasingly going beyond the mere mentioning of sustainability (environmental and social issues) to include detailed sustainability provisions in the main body text, chapters, specific paragraphs, and related side arrangements. In our assessment, we found that the following social provisions were most commonly included in trade agreements: labour rights, including employment, human rights, corporate social responsibility (CSR), gender equality, public health and culture.

However, although social issues are increasingly taken into consideration in the treaties, frameworks designed to monitor the social impact of trade agreements are scarce and what does exist may not be available in the public domain. Consequently, there is also a notable absence of clear indicators used to monitor social issues associated with trade and its impacts.

Table 6 presents an overview of the social provisions commonly included in trade agreements. We thereafter present sources for the identification or development of relevant indicators.

*Table 6: Social provisions in trade agreements*

| Social Provision | Social Provisions identified in treaties | Possible sources for developing social impact indicators for trade agreements |
|---|---|---|
| Labour rights<br><br>Labour provisions are according to the literature the most frequent social provisions in RTAs.<br><br>Typically, they include:<br><br>1) Freedom of association and the effective recognition of the right to collective bargaining;<br><br>2) The elimination of forced or compulsory labour;<br><br>3) The abolition of child labour and<br><br>4) The elimination of discrimination in respect of employment and occupation. | COMSEA will promote co-operation with particular respect to<br><br>-Employment and working conditions<br><br>-Labour laws;<br><br>-Vocational training and the eradication of adult illiteracy in the region;<br>- The prevention of occupational accidents and diseases;<br>-The right of association and collective bargaining between employers and workers.<br><br>Other agreements (e.g. EU-Mercosur, EU-China and EU-Vietnam) will promote the fundamental rights in the ILO convention and to promote the Decent Work Agenda, however no indicators are included for monitoring these aspects.<br><br>ANDEAN has included ILO's fundamental conventions | ILO Handbook "Monitoring and Assessing Progress on Decent Work"<br><br>https://www.ilo.org/integration/themes/mdw/map/lang--en/index.htm |
| Human Rights<br>The main mechanism for incorporating human rights into the EU's trade agreements consists of an essential elements human rights clause that enables one party to take appropriate measures in case of serious breaches by the other party. The clause also covers democratic principles and rule of law. | In 2018, human rights provisions were found in 172 out of 556 RTAs.[14] However, the monitoring and enforcement of HR related clauses has been found to be particularly erratic.[15]<br><br>The EU-Mercosur SIA does mention human rights, however. | The EC has published guidelines on the analysis of human rights impacts in trade agreements, which also provides a list of the core human rights conventions and monitoring bodies for each of them.[16] |
| Corporate social responsibility (CSR)<br><br>CSR as a term designates private sector policies for including social dimensions in their business operations. Although CRS is not a new phenomenon, only 4 recent RTAs have included provisions related to this issue.[17] | The EU-China agreement will promote CSR, including the uptake of relevant practices by businesses and taking into account relevant internationally recognized guidelines and principles.<br><br>ANDEAN and EU-Vietnam agreements have included provisions to exchange info and experiences related to good practices of CSR. | OECD guidelines for responsible companies.<br>https://businessconduct.dk/oecd-guidelines<br><br>OECD Guidelines for Multinational enterprises:<br>http://mneguidelines.oecd.org/annualreportsontheguidelines.htm<br><br>UN Guiding Principles on Business and Human Rights:<br>https://www.ohchr.org/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf |
| Poverty /Inequality<br><br>Poverty indicators include the poverty headcount ratio, poverty gap, and number of poor at both international and national poverty lines. Inequality indicators include the Gini index and income or consumption distributions. | ANDEAN has included cooperation initiatives aimed at promoting MSMEs in trade as a means of reducing poverty.<br><br>The ECOWAS and WAEMU's trade agreement with EU highlights that in the fight against poverty, the parties will draw up and implement programmes likely to strengthen macro-economic frameworks, | World Bank Database on Poverty and Inequality<br><br>https://datacatalog.worldbank.org/dataset/poverty-and-equity-database |

[14] https://www.wto.org/english/res_e/reser_e/ersd201815_e.pdf
[15] https://lamptest.fp7-frame.eu/frame-reps-9-1/
[16] https://trade.ec.europa.eu/doclib/docs/2015/july/tradoc_153591.pdf
[17] https://www.wto.org/english/res_e/reser_e/ersd201815_e.pdf

| | | |
|---|---|---|
| | promote rapid and sustainable economic growth and create infrastructures essential for the development of the West African Union. These include:<br><br>Support institutional reforms intended to adapt the national and regional administrative authorities to the requirements of trade liberalization<br><br>Strengthen the capacity of the production sectors in the West African Region<br><br>For specific indicators on poverty and inequality, see Mercosur SIA (Annex 1) | |
| Gender equality<br><br>Including gender in trade agreements is a relatively recent phenomenon.[18] In 2017, WTO members endorsed a joint declaration that called for collaboration to make trade and development more gender responsive, including sharing experiences relating to policies and programmes aimed at encouraging women's participation in domestic and international trade.[19]<br><br>A detailed analysis of 556 RTAs, including 292 agreements currently in force and notified to the WTO (as of November 2018), identified 75 agreements with at least one provision mentioning explicitly gender or women. | ANDEAN has included a statement that the Parties will cooperate on initiatives aimed at promoting MSMEs in trade as a means of reducing poverty, however no indicators are included for monitoring the social impact.<br><br>The EPA of SADC has included a development matrix that includes the promotion of female entrepreneurship through targeted interventions.<br><br>COMSEA has included that the parties shall promote effective integration and participation of women at all levels of development, in particular through what we have interpreted as social provisions:<br><br>- Participation at decision-making levels<br><br>- Elimination of regulations and customs that are discriminatory against women<br><br>- Promotion of effective education awareness programmes aimed at changing negative attitudes towards women<br><br>- Create or adopt technology which ensure employment and progress for women workers<br><br>-Encourage and strengthen institutions which are engaged in labour saving devices aimed at improving the productive capacity of women. | Convention on the Elimination of All Forms of Discrimination Against Women<br><br>https://www.un.org/womenwatch/daw/cedaw/<br><br>Indicators for Sustainable Development Goal 5 (Gender Equality)<br><br>https://unstats.un.org/sdgs/indicators/indicators-list/<br><br>Additional research is required to identify data sources that would enable monitoring across countries. |
| Public Health<br><br>Health concerns related to trade agreements have tended to focus on two areas; the protection of multinational Intellectual Property Rights and the implication for access to essential medicines, and the privatization of health care and health-related services.[20]<br><br>In addition, the following health related concerns are in trade agreements: unhealthy commodities, and access to medicines. The latter has become particularly relevant due to Covid-19. | COMESA a mentions that the Parties will evolve mechanisms for joint action in the following areas:<br><br>– Combating outbreak of epidemics;<br><br>– Facilitating mass immunization | Sustainable Development Goal 3 (Good Health and Well Being) indicators<br><br>https://unstats.un.org/sdgs/indicators/indicators-list/<br><br>Additional research is required to identify data sources that would enable monitoring across countries. |
| Food Security<br><br>Food security has been mentioned in several trade agreements, mostly through the parties cooperation to ensure food security and nutrition. | The need to pay special attention to small scale farmers is included in several treaties but no specific provisions are specified. | Sustainable Development Goal 2 (Zero Hunger) indicators<br><br>https://unstats.un.org/sdgs/indicators/iindicators-list/ |

[18] https://www.wto.org/english/res_e/reser_e/ersd201815_e.pdf
[19] https://www.wto.org/english/res_e/reser_e/ersd201815_e.pdf
[20] https://www.annualreviews.org/doi/full/10.1146/annurev-publhealth-031914-122739

| | | |
|---|---|---|
| | | Additional research is required to identify data sources that would enable monitoring across countries. |
| Culture<br><br>Several trade agreements have included clauses dealing with cultural heritage or knowledge.<br><br>In particular traditional knowledge related provisions are included within the framework of intellectual property rights. A critique is that such a framework not necessarily protect peoples' rights to use, share, improve and further develop knowledge in the context of local livelihoods.[21] | The EPA of SADC has included a development matrix that includes IPR including folklore and traditional knowledge.<br><br>COMSEA has included an article that involves promotion of co-operation through cultural and sporting exchanges.<br><br>EU-Vietnam agreement has included IPR provisions related to traditional knowledge. | ILO Indigenous and Tribal Peoples Convention169<br><br>https://www.ilo.org/global/topics/indigenous-tribal/lang--en/index.htm United Nations Declarations on the Rights of Indigenous Peoples<br><br>https://www.un.org/development/desa/indigenouspeoples/declaration-on-the-rights-of-indigenous-peoples.html<br><br>Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization<br><br>https://www.cbd.int/abs/<br><br>Additional research is required to identify data sources that would enable monitoring across countries. |

### 1.2.3 GAPS AND LIMITATIONS

Although several social provisions are included in trade agreements, few efforts are made to monitor their effective implementation and impacts. Where programmes are related to social provisions such as fighting poverty and food security, these are most often suggested to be monitored through strengthening economic frameworks, whilst little attention has been paid to social impact indicators.

However, although monitoring systems have not been identified in the sources reviewed, recent agreements have some indicators included in the sustainability impact assessment as well as in impact evaluations. Several ex-ante studies show negative social impacts related to issues which are not included in the actual treaties. The ex-ante evaluation of the CARIFORUM, for example, shows severe negative social impact in several sectors, noting that women and men are disproportionally taking part in the formal economy. Gender is, however, not included in any form in the RTA.

The recently published EU-Mercosur SIA[22] provides a comprehensive discussion on indicators for monitoring social impacts.

### 1.2.4 OTHER USEFUL DATA SOURCES AND DOCUMENTS

Other data sources were identified during the state of play review, which could be useful to support further research in the area of social impact monitoring. They are briefly listed below.

#### *1.2.4.1 The EU Handbook for Trade Sustainability Impact Assessment*

The Handbook[23] contains a section on Sectoral Analysis, which can help address the issue of attribution discussed in chapter 4.3, as suggested by this excerpt from page 24 *:*

*Detailed sectoral analysis is conducted in order to provide deeper insight into the effects of trade negotiations on the key economic sectors identified at the screening and scoping phase (although the*

[21] https://grain.org/article/entries/91-ftas-trading-away-traditional-knowledge
[22] https://trade.ec.europa.eu/doclib/press/index.cfm?id=2260
[23] https://trade.ec.europa.eu/doclib/docs/2016/april/tradoc_154464.PDF

*list of sectors could be adjusted based on the outcome of the overall economic, social and environmental impacts' analysis). Sectors that will be subject to further detailed analysis in the SIA should be selected according to several criteria, such as their weight (e.g. GDP, share of employment, share of household consumption) in the EU, in partner country(ies) or developing countries, in particular LDCs ; the particularly significant (positive or negative) expected economic, social, human rights or environmental impacts of the agreement in these sectors; their integration in global value chains; and concerns and priorities raised by stakeholders. Indeed, stakeholder consultations are a vital element for identifying sectors for further detailed analysis. The aim is to assess quantitatively and qualitatively the economic, social, human rights and environmental impacts of the agreement under negotiation on the selected sectors as well as knock-on effects on other indirectly affected sectors identified in the overall analysis. The in-depth sectoral analyses should identify and highlight specific subsectors, activities, products, vulnerable social groups and geographical areas that are most likely to be affected, either positively or negatively, by the outcome of the negotiations. (…) Sectoral analyses may also contribute to analysing the impact that the trade agreement under negotiation could have on corruption. The methodology to be used for this purpose is likely to be multifaceted. It should be based as much as possible on the existing economic modelling results developed for the overall analysis, but should go beyond that in terms of the actual analysis. Case studies can be a particularly useful approach in this regard. The analysis should also rely on extensive stakeholders' feedback, technical experts' opinions, surveys, etc.*

#### *1.2.4.2 SDG country profiles*

The SDGs web site[24] managed by the United Nations Department of Economic and Social Affairs Statistics Division provides country profiles for all SDGs. The user can choose a country and SDG from a drop -down menu for at-a-glance information.

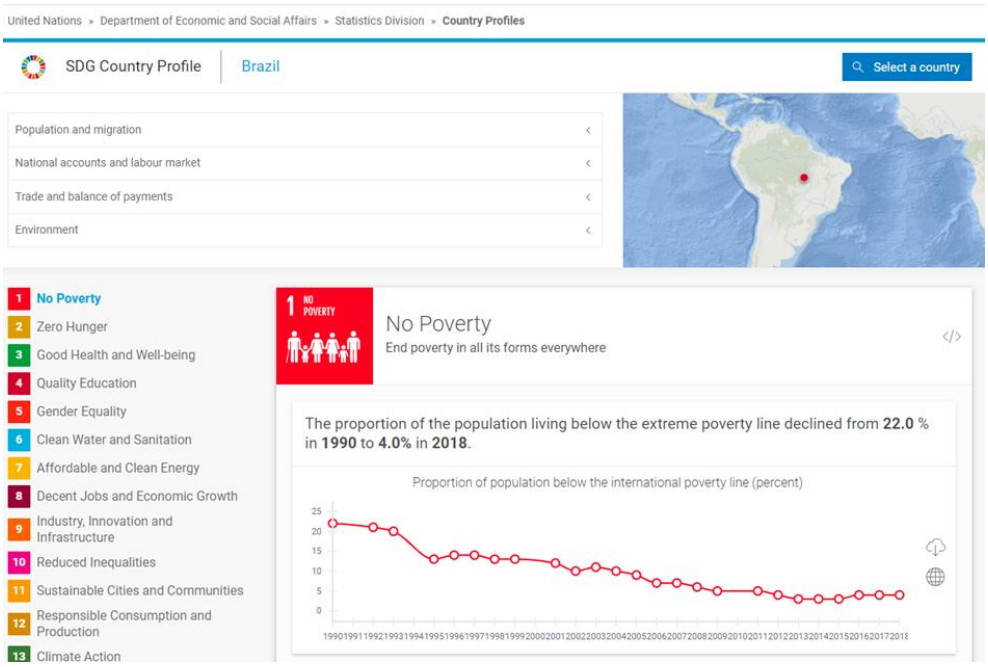


*Figure 4: example of country profile for SDG1 showing the evolution of extreme poverty in Brazil. Source: United Nations[25]*

[24] https://country-profiles.unstatshub.org/

[25] https://country-profiles.unstatshub.org/

#### *1.2.4.3 Voluntary National Reviews Database*

This database[26] contains countries' own assessments of their efforts to achieve the SDGs.

As part of its follow-up and review mechanisms, the 2030 Agenda for Sustainable Development encourages member states to "conduct regular and inclusive reviews of progress at the national and sub-national levels, which are country-led and country-driven" (paragraph 79).

The voluntary national reviews (VNRs) aim to facilitate the sharing of experiences, including successes, challenges and lessons learned, with a view to accelerating the implementation of the 2030 Agenda. The VNRs also seek to strengthen policies and institutions of governments and to mobilize multi-stakeholder support and partnerships for the implementation of the Sustainable Development Goals.

This online review platform is dedicated to compiling information from countries participating in the voluntary national reviews of the High-level Political Forum on Sustainable Development.

## 1.3 Social Impact Indicators

### 1.3.1 General considerations

The results of the previous sections - based on the review of the text of 15 trade agreements - revealed that the term "monitoring" does not necessarily entail a monitoring framework including a baseline, indicators and targets. Rather, it is employed in the sense of "keeping track" or "following" a process through a qualitative assessment.

For example, monitoring of the EU-Vietnam trade agreement provision on International Property Rights (IPR) is carried out through a hierarchy of committees. The agreement foresees a Trade Committee at ministerial level, and there are five specialized committees that report to it, along with two working groups. It is through this structure, which is accompanied by regular informal meetings and contacts with Vietnam, that the agreement is monitored. In the same vein, in the case of the EU – South Korea agreement, monitoring refers to following the process of ratification of the fundamental ILO conventions[27] by South Korea through a Trade and Sustainable Development Committee, and does not include any social impact indicators of the agreement.[28]

Another challenge is understanding the potential cause-effect correlations between shifts in national-level indicators and changes in the volume of traded commodities that may happen as a result of a specific trade agreement.

### 1.3.2 Recommended indicators at country level

This section discusses the recommended social impact and SDG indicators. Below is a narrative description of each indicator including the justification for its selection, as well as links to SDG indicator metadata sheets[29] (with definitions, concepts, classifications, data source type and data collection method, and various methodological considerations). All text under "Justification" is copied verbatim from the source referenced in the footnotes.

[26] https://sustainabledevelopment.un.org/vnrs/#keyword

[27] International Labour Organization (ILO) standards can be found at: https://www.ilo.org/global/standards/introduction-to-international-labour-standards/conventions-and-recommendations/lang--en/index.htm

[28] E-mail communication with Mariella Cantagalli and Rocio Perez-Segura (DG Trade), May 12, 2021.

[29] https://unstats.un.org/sdgs/metadata

#### *1.3.2.1 LABOUR: Abolition of child labour*

Corresponding SDG Indicator: **8.7.1** - Proportion and number of children aged 5-17 years engaged in child labour, by sex and age.

Justification:

The number of children engaged in child labour corresponds to the number of children reported to be in child labour during the reference period (usually the week prior to the survey). The proportion of children in child labour is calculated as the number of children in child labour divided by the total number of children in the population. For the purposes of this indicator, children include all persons aged 5 to 17.

International Conventions: Three principal international legal instruments – ILO Convention No. 138 (Minimum Age) (C138), United Nations Convention on the Rights of the Child (CRC), ILO Convention No. 182 (Worst Forms) (C182) together set the legal boundaries for child labour, and provide the legal basis for national and international actions against it.

For more information, please consult the SDG 8.7.1 Indicator Metadata sheet.[30]

#### *1.3.2.2 LABOUR: Informal employment by sex and economic activity*

Corresponding SDG Indicator: **8.3.1** - Proportion of informal employment in total employment, by sector and sex.

Justification:

This indicator presents the share of employment which is classified as informal employment in the total economy, and separately in agriculture and in non-agriculture. Concepts: Employment comprises all persons of working age who, during a short reference period (one week), were engaged in any activity to produce goods or provide services for pay or profit.

In contexts where social protection coverage is limited, social security benefits (such as unemployment insurance) are insufficient or even inexistent, and/or where wages and pensions are low, individuals may have to take up informal employment to ensure their livelihood. In these situations, indicators such as the unemployment rate would provide a very incomplete picture of the labour market situation, overlooking major deficits in the quality of employment. Statistics on informality are key to assessing the quality of employment in an economy and are relevant to developing and developed countries alike. For more information on the ILOSTAT indicator description for informality, please consult the ILO web site.[31]

#### *1.3.2.3 LABOUR: Freedom of association and the effective recognition of the right to collective bargaining*

Corresponding SDG Indicator: **8.8.2** - Level of national compliance with labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status.

Justification:

The indicator measures the level of national compliance with fundamental rights at work (freedom of association and collective bargaining, FACB) for all ILO member states based on six international ILO supervisory body textual sources and also on national legislation. It is based on the coding of textual sources against a list of evaluation criteria and then converting the coding into indicators.

The principles of freedom of association and collective bargaining (FACB) are and have long been at the core of the ILO's normative foundations. These foundations have been established in the ILO's Constitution (1919), the ILO Declaration of Philadelphia (1944), in two key ILO Conventions (namely

[30] https://unstats.un.org/sdgs/metadata/files/Metadata-08-07-01.pdf
[31] https://ilostat.ilo.org/resources/methods/description-informality/

the Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87) and the Right to Organise and Collective Bargaining Convention, 1949 (No. 98)) and the ILO Declaration on Fundamental Principles and Rights at Work (1998). They are also rights proclaimed in the Universal Declaration of Human Rights (1948) and other international and regional human rights instruments. With the adoption of the 1998 ILO Declaration, the promotion and realization of these fundamental principles and rights also became a constitutional obligation of all ILO member States.

#### *1.3.2.4 LABOUR: Elimination of discrimination in respect of employment and occupation*

Corresponding SDG Indicator: **8.5.1** - Average hourly earnings of employees, by sex, age, occupation and persons with disabilities.

Justification:

This indicator provides information on the mean hourly earnings from paid employment of employees by sex, occupation, age and disability status. Concepts: Earnings refer to the gross remuneration in cash or in kind paid to employees, as a rule at regular intervals, for time worked or work done together with remuneration for time not worked, such as annual vacation, other type of paid leave or holidays. Earnings exclude employers' contributions in respect of their employees paid to social security and pension schemes and also the benefits received by employees under these schemes. Earnings also exclude severance and termination pay. For international comparability purposes, statistics of earnings used relate to employees' gross remuneration, i.e. the total before any deductions are made by the employer in respect of taxes, contributions of employees to social security and pension schemes, life insurance premiums, union dues and other obligations of employees. As stated in the indicator title, data on earnings should be presented on the basis of the arithmetic average of the hourly earnings of all employees.

The indicator is related to the ILO Discrimination (Employment and Occupation) Convention, 1958 *(No. 111).* For the purpose of this Convention the term discrimination includes*:*

(a) any distinction, exclusion or preference made on the basis of race, colour, sex, religion, political opinion, national extraction or social origin, which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation;

(b) such other distinction, exclusion or preference which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation as may be determined by the Member concerned after consultation with representative employers' and workers' organisations, where such exist, and with other appropriate bodies.[32]

#### *1.3.2.5 POVERTY: Poverty rate*

Corresponding SDG Indicator: **1.1.1** - Proportion of the population living below the international poverty line by sex, age, employment status and geographic location (urban/rural).

Justification:

The indicator "proportion of the population below the international poverty line" is defined as the percentage of the population living on less than $1.90 a day at 2011 international prices. The 'international poverty line' [in September 2020 was $1.90 a day at 2011 international prices.

Monitoring poverty is important on the global development agenda as well as on the national development agenda of many countries. The World Bank's Development Research Group maintains a database that is updated annually as new survey data become available (and thus may contain more recent data or revisions) and conducts a major reassessment of progress against poverty every year. PovcalNet is an interactive computational tool that allows users to replicate these internationally

[32] https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C111

comparable $1.90 and $3.20 a day global, regional and country-level poverty estimates and to compute poverty measures for custom country groupings and for different poverty lines.

#### *1.3.2.6 HEALTH: Infant mortality rate*

| Corresponding SDG Indicator: **3.2.1** - Under-5 mortality rate. |
|---|

Justification:

Under-five mortality is the probability of a child born in a specific year or period dying before reaching the age of 5 years, if subject to age specific mortality rates of that period, expressed per 1000 live births.

Although not directly related to biocommodities, mortality rates among young children are a key output indicator for child health and well-being, and, more broadly, for social and economic development. It is a closely watched public health indicator because it reflects the access of children and communities to basic health interventions such as vaccination, medical treatment of infectious diseases and adequate nutrition. Concepts: The under-five mortality rate as defined here is, strictly speaking, not a rate (i.e. the number of deaths divided by the number of population at risk during a certain period of time), but a probability of death derived from a life table and expressed as a rate per 1000 live births.

For more information, please consult Annex 2 and the SDG 3.2.1 Indicator Metadata sheet[33]

#### *1.3.2.7 HEALTH: Coverage of essential health services*

| Corresponding SDG Indicator: **3.8.1** - Coverage of essential health services. |
|---|

Justification:

Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population).

Countries provide many essential services for health protection, promotion, prevention, treatment and care. Indicators of service coverage – defined as people receiving the service they need – are the best way to track progress in providing services under universal health coverage (UHC). Since a single health service indicator does not suffice for monitoring UHC, an index is constructed from 14 tracer indicators selected based on epidemiological and statistical criteria. This includes several indicators that are already included in other SDG targets, thereby minimizing the data collection and reporting burden. The index is reported on a unitless scale of 0 to 100, with 100 being the optimal value.

With regard to commodities, it would be useful to verify the coverage of health services in commodity-producing areas, particularly areas where indigenous populations and other vulnerable groups are present.

#### *1.3.2.8 GENDER: Gender pay gap*

| Corresponding SDG Indicator: **8.5.1** - Average hourly earnings of employees by sex (Please note this is also mentioned under "Labour". |
|---|

Justification:

The gender wage gap measures the relative difference between the average hourly earnings for men and the average hourly earnings for women. It is computed as the difference between the gross average hourly earnings of male and female employees expressed as percentage of gross average hourly earnings of male employees. Earnings refers to regular remuneration received from employers,

[33] https://unstats.un.org/sdgs/metadata/files/Metadata-03-02-01.pdf

in cash and in kind, and includes direct wages and salaries for time worked or work done, remuneration for time not worked (e.g. paid annual leave), as well as bonuses and gratuities that are regularly received. It excludes contributions paid by employers to social security and pension schemes in respect of their employees, benefits received by employees under these schemes, and severance and termination pay.

#### *1.3.2.9 Indigenous peoples' rights*

Indigenous peoples' rights (IP rights) are a critical area to monitor in relation to commodities, as large agricultural commercial operations move into indigenous peoples' territories and threaten their rights.[34]

We identified three relevant instruments for monitoring IP rights: i) SDG indicators; ii) The ratification of ILO Convention 169 on Indigenous and Tribal Peoples; and iii) the Declaration on the Rights of Indigenous Peoples (UNDRIP). However, all have constraints, as explained below.

#### *1.3.2.10 SDGs indicators and IP rights*

According to the United Nations Department of Economic and Social Affairs (UNDESA), the key SDG indicators for monitoring IP rights are the following:[35]

- **1.4.2** Proportion of total adult population with secure tenure rights to land, (a) with legally recognized documentation, and (b) who perceive their rights to land as secure, by sex and type of tenure
- **2.3.2** Average income of small-scale food producers, by sex and indigenous status
- **4.5.1** Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict-affected, as data become available) for all education indicators on this list that can be disaggregated
- **5.a.1** Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure.

Justification:

The global indicator framework that will measure progress of implementation of the 17 sustainable development goals (SDGs) includes two indicators that refers directly to indigenous peoples (Indicator 2.3.2 and 4.5.1) and several other indicators that are relevant for indigenous peoples, particularly indicator 1.4.2 and 5.a.1 on land rights. Moreover, there has been much focus on the need of disaggregation of data which the UN Permanent Forum on Indigenous Issues among others have been advocating for. The global indicator list states that "SDG indicators should be disaggregated, where relevant, by income, sex, age, race, ethnicity, migratory status, disability and geographic location, or other characteristics, in accordance with the Fundamental Principles of Official Statistics." The global indicator framework was agreed by the Statistical Commission in 2017 as a voluntary and country-led instrument, but will still be work in progress and adjusted as necessary in the upcoming years. At this stage, indicators are being developed at the national and regional level.[36]

#### *1.3.2.11 ILO Convention 169*

A simple binary indicator (Yes/No) is suggested to evaluate whether the country has ratified the Convention 169. This may be supplemented by country-level qualitative information on the level of

[34] See for example https://www.regnskog.no/en/news/the-murky-waters-of-soy-fed-salmon, https://www.regnskog.no/en/news/biofuels-add-fuel-to-forest-fires

[35] https://www.un.org/esa/socdev/unpfii/documents/2016/Docs-updates/Indigenous-Peoples-and-the-2030-Agenda-with-indicators.pdf

[36] https://www.un.org/development/desa/indigenouspeoples/focus-areas/post-2015-agenda/the-sustainable-development-goals-sdgs-and-indigenous.html

compliance with individual articles of the Convention, available at: https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C169 [37].

Justification:

The ILO Convention169 on indigenous peoples and tribal peoples in independent countries contains clear provisions on the right of indigenous peoples to themselves decide their own cultural development, to learn to use their own language and to establish separate institutions to represent them in relation to the authorities. The convention also recognises indigenous peoples' wish and need for control over their own institutions, their own way of life and economic development. This means recognising indigenous peoples' wish to maintain and develop a separate identity, language and religion within the framework of the states

#### *1.3.2.12 Declaration on the Rights of Indigenous Peoples (UNDRIP)*

Quantitative indicators are not available for UNDRIP. As a UN Declaration, it is not legally binding, as a Convention would be. The level of compliance with UNDRIP may be assessed by qualitative studies to assess the level of harmonization of national legislation with the text of the Declaration[38]

Resources that merit further assessment are mentioned below:

- Smith, Jackson A. and Mitchell, Terry (2020) Development of an UNDRIP Compliance Assessment Tool: How a Performance Framework Could Improve State Compliance. https://doi.org/10.18584/iipj.2020.11.2.10713
- Indigenous Navigator Tools databased by the Danish Center of Human Rights. https://navigator.humanrights.dk/methodology

Justification:

The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) is an international instrument adopted by the United Nations on September 13, 2007, to enshrine (according to Article 43) the rights that "constitute the minimum standards for the survival, dignity and well-being of the indigenous peoples of the world." The UNDRIP protects collective rights that may not be addressed in other human rights charters that emphasize individual rights, and it also safeguards the individual rights of Indigenous people. The Declaration is the product of almost 25 years of deliberation by U.N. member states and Indigenous groups.[39]

## 1.4 The "attribution issue"

A major challenge in assessing social impacts of trade agreements is the issue of attribution. Indeed, claiming that shifts in national-level indicators can be attributed to changes in the volume of traded commodities that may happen as a result of a specific trade agreement is not straightforward.

While poverty or unemployment rates may go up or down in a certain country, this may be for a myriad of reasons related to national fiscal/monetary policy, welfare programs, systemic changes such as those caused by the COVID pandemic, or policies aiming at boosting the economy or implementing social safety nets, and variations may be too slight to be meaningful. Thus, attribution would require data collected at the local/sectoral level, which can be triangulated with changes in the volume of trade with the EU related to that specific location. In the absence of local indicators that are country-specific one cannot infer that "social spillovers" are happening as a result of a specific trade agreement.

[37] This may include issues such as cultural rights, right to land tenure, right to Free, Prior and Informed Consent (FPIC) which varies from country to country and requires a review of national legislation.

[38] https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf

[39] https://indigenousfoundations.arts.ubc.ca/un_declaration_on_the_rights_of_indigenous_peoples/

## 1.5 Drilling down into sub-national data: Brazil case study

*While SDG country profiles[40] show annual data trends, local level data by the Brazilian Institute of Geography and Statistics (IBGE)[41] provides trends quarterly, disaggregated by geographical region, state, sex and age. Potential correlations between trade and social changes could emerge only through disaggregated information according to site-specific or sector-specific contexts - information that is diluted and often lost in country-level SDGs (*

Table 7).

*Table 7: Brazil's SDG country profile vs. sub-national data*

| National level data available | Brazilian local level data produced by IBGE |
|---|---|
| Annual growth rate of real GDP per capita | Average monthly income, updated every trimester, and disaggregated by region, state, sex and age |
| Annual share of agriculture added value in total GDP | Percentage of people employed in agriculture and other sectors, including livestock, fishing, forestry, fish farming, industry, construction, commerce, transport, hospitality, food and beverages, IT, finance, real estate, public administration, defence, social security, education, health, social and domestic services. Data is updated every trimester and disaggregated by region, state, sex and age. |
| Annual proportion of informal employment | Percentage of people in informal employment disaggregated by region, state, sex and age |
| Annual child mortality rate | Deaths per 1000 live births – numbers and percentage disaggregated by state |

The following figures show the different level of detail brought by these two data sources.

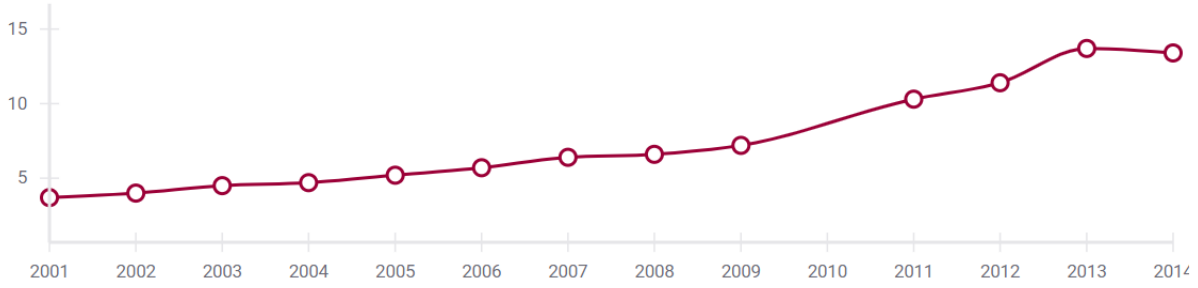


*Figure 5: SDG 8.5.1 - Average hourly earnings of employees (BR$) from 2001 to 2014. Source: United Nations[42]*

[40] https://country-profiles.unstatshub.org/

[41] https://www.ibge.gov.br/estatisticas/sociais/rendimento-despesa-e-consumo/9173-pesquisa-nacional-por-amostra-de-domicilios-continua-trimestral.html?edicao=30789&t=series-historicas

[42] https://country-profiles.unstatshub.org/

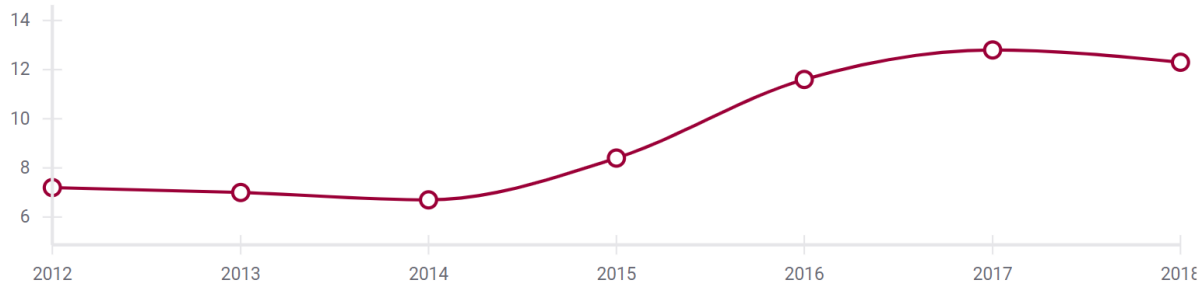


*Figure 6: SDG 8.5.2 – Unemployment rate in Brazil from 2021 to 2018. Source: United Nations*[43]

While the SDG 8.5.1 and 8.5.2 (Figure 5 and Figure 6) report annual data on average earnings and unemployment rate aggregated at country level, the IBGE figures show quarterly trends by regions, gender and sectors (Figure 7 and Figure 8), granularity that allows to capture the spatial variability of social attributes. As above mentioned, the impacts of TAs may be visible only in specific locations and sectors affected by changes in biocommodities' production as a result of changes in traded volumes. For example, the likely increase of domestic and international demand for Brazilian bioethanol will predominantly affect the southern regions of Brazil, which hold most of sugarcane crops and mills, with marginal impacts in the rest of the country. Therefore, the analysis of socioeconomic indicators linked to the expansion of sugarcane sector should be primarily focussed on southeast states' data (Figure 9).

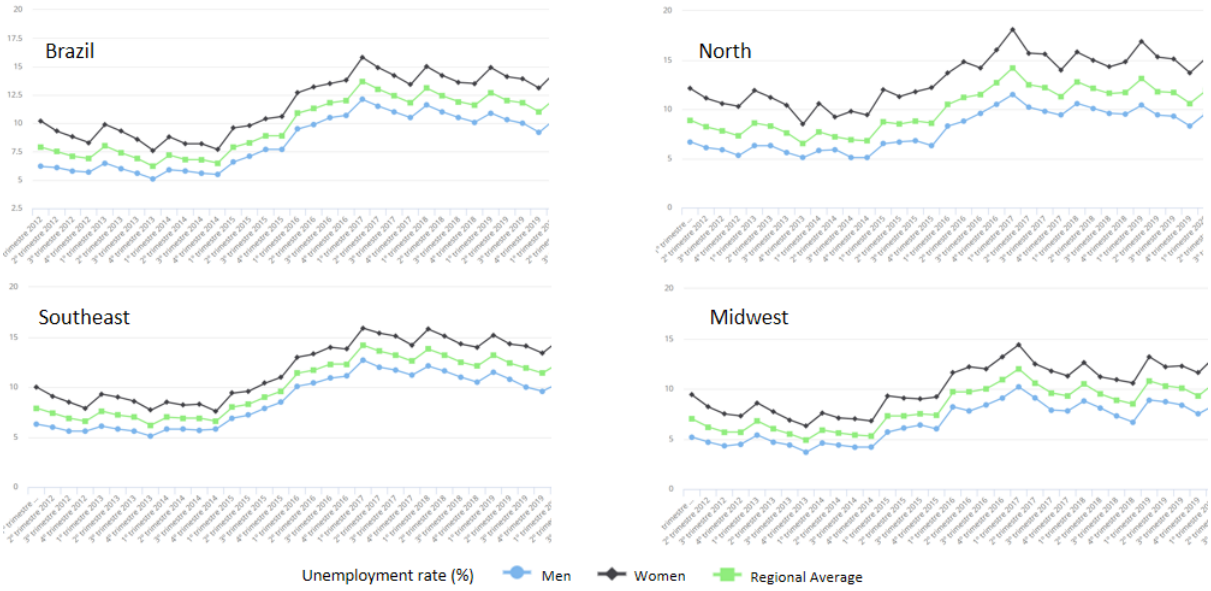


*Figure 7: Unemployment rate trends from 2012 to 2020 by gender and region with a quarterly time resolution. Source: IBGE*[44]

[43] Idem.
[44] https://www.ibge.gov.br/

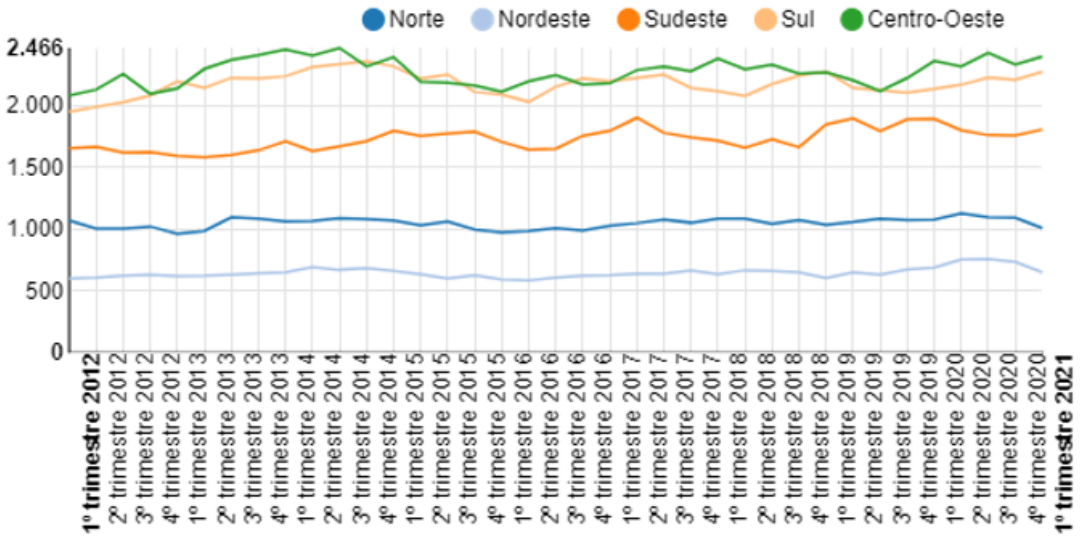


*Figure 8: Average income (BR$) for the agriculture, forestry, livestock, aquaculture and fishery sectors by regions. Quarterly data from 2012 to 2021. Source: IBGE*[45]

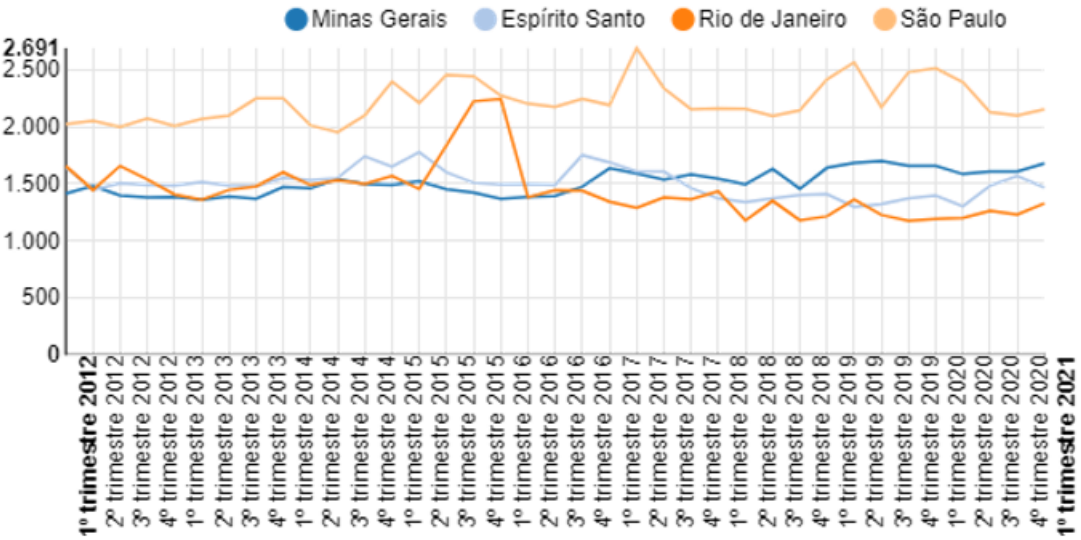


*Figure 9: Average income (BR$) for agriculture, forestry, livestock, aquaculture and fishery sectors in southeast states. Quarterly data from 2012 to 2021. Source: IBGE*[46]

## 1.6 Conclusions, social impact of trade

Although many indicators exist for the assessment of the social wellbeing in countries, these cannot be directly attributed to the EU's imports. The JRC therefore proposes to publish the recommended indicators described in section 2.3.2 for the countries whose main trading partner has been or currently is the EU for a time period between 2000 to the latest available data. In this way, an indication of the vulnerability is given without making any direct link to the commodities traded.

[45] https://www.ibge.gov.br/

[46] Idem.

# 2 Share of renewable energy used in bio-based industries

N. Robert

## 2.1 Context and objective

Developing bio-based industries (BBI) is a possible way to decarbonise the economy and reduce the dependency on non-renewable resources. However, if these BBIs rely on non-renewable sources of energy or on overall higher quantities of energy, the goal may not be achieved. It is therefore important to monitor that BBIs have at least the same standards for their use of renewable sources of energy as other industries and that they are not more energy intensive than alternative industries.

This chapter describes a way to estimate the share of renewable energy in total energy used by BBIs. This indicator is composed of the total quantity of renewable energy used by BBIs as numerator and the total energy used by BBIs as denominator. Together with several other indicators such as the share of renewables in the energy mix of a country (Eurostat's SHARES[47]), the energy productivity (value added per unit of energy), it indicates how the use of renewable energies by BBIs changes, as well as their relative use of renewable energies with respect to other sectors. A deeper analysis based on the elements composing the indicator can also indicate how much bioenergy is used in BBIs, which can be compared to the total use of bioenergy.

An increase in the share of renewables used by BBIs could be seen as positive (if the energy productivity does not decrease overall). Emphasis on the development shall be oriented on the sectors that are energy productive and can source their energy from renewables. For other sectors, the objective could be to support a transition towards a lower energy consumption, especially of non-renewables.

The indicator will be integrated in the EU Bioeconomy Monitoring System as Indicator 3.1.b.3- Share of renewable energy used specifically in bio-based industries (Table 1, Figure 1). It must comply with the selection rules established in the rules for establishing the monitoring system (Giuntoli et al., 2020). In particular, it must be timely, have a good coverage of all MS, be reproducible, and be updatable on a regular basis.

## 2.2 Methodological approach

### 2.2.1 DEFINITIONS

#### *2.2.1.1 Share of renewables*

Estimating the share of renewables in the total energy consumption can be done according to the same rules as those used in the national estimates of the shares in renewables. Rules to estimate the share of renewable energy are established in articles 5 to 11 of the Renewable Energy Directive (European Parliament and Council, 2009). Paragraph 6 of article 5 states that "the share of energy from renewable sources shall be calculated as the gross final consumption of energy from renewable sources divided by the gross final consumption of energy from all energy sources, expressed as a percentage."

According to the RED, "'gross final consumption of energy" means the energy commodities[48] delivered for energy purposes to industry, transport, households, services including public services, agriculture, forestry and fisheries, including the consumption of electricity and heat by the energy branch for electricity and heat production and including losses of electricity and heat in distribution and

[47] https://ec.europa.eu/eurostat/web/energy/data/shares

[48] Energy commodities are either extracted or captured directly from natural resources (and are termed primary) such as crude oil, hard coal, natural gas, or are produced from primary commodities." (OECD/IEA/Eurostat, Energy Statistics Manual 2005)

transmission". The calculation is done at the Member State level with highlights on the share of renewable in electricity, heat and transport.

The renewable energy share (RES) is equal to the Gross final consumption of energy from renewable sources (GFC_Ren, Article 5) plus/minus Statistical Transfers & Joint Projects (Articles 6-11) divided by the Gross final consumption of energy (GFC, Article 2f) taking into account Aviation adjustment (Article 5.6). In the case of the bioeconomy activities, statistical transfers and aviation adjustment do not play a role and a simplified ratio GFC_Ren/GFC can be calculated.

#### *2.2.1.2 Bioeconomy sectors / industries*

The list of bioeconomy activities presented in Ronzon & M'barek (Ronzon and M'Barek, 2018) is presented in

Table 8. As indicated in this table, the NACE nomenclature contains a limited distinction of full bioeconomy sectors aside partially bio-based activities.

*Table 8: Bioeconomy sectors and their classification according to the European statistical classification of economic activities*

| NACE Code | Bioeconomy Sector |
|---|---|
| A01 | Agriculture |
| A02 | Forestry |
| A03 | Fishing and aquaculture |
| C10 | Manufacture of food |
| C11 | Manufacture of beverages |
| C12 | Manufacture of tobacco |
| C13* | Manufacture of bio-based textiles |
| C14* | Manufacture of bio-based wearing apparel |
| C15 | Manufacture of leather |
| C16 | Manufacture of wood products |
| C17 | Manufacture of paper |
| C20* | Manufacture of bio-based chemicals (excluding biofuels) |
| *C2014** | *Manufacture of bioethanol* |
| *C2059** | *Manufacture of biodiesel* |
| C21* | Manufacture of bio-based pharmaceuticals |
| C22* | Manufacture of bio-based plastics and rubber |
| C31* | Manufacture of wooden furniture |
| D35* | Production and transport of bioelectricity and bio-heat |

* mixed sector, only partially bio-based

## 2.3 Data sources

Eurostat compiles the datasets on energy under the standard collection cycles of the "Energy Statistics Unit" according to Regulation (EC) No 1099/2008 on energy statistics (European Parliament and Council of the European Union, 2008). These datasets provide the basis for the calculation of the share of renewables.

As part of these datasets, the consumption of energy by economic activity (partly following the NACE rev. 2) is represented in the energy balance (table NRG_BAL_C[49]). This balance provides estimates of

[49] https://ec.europa.eu/eurostat/databrowser/view/nrg_bal_c/default/table?lang=en

the final energy consumption (harmonized in ktoe: kiloton oil equivalent, GWH and TJ) by groups of economic activities (defined according to NACE rev. 2, see

Table 9, column NRG_BAL), with details on the type of energy available for final consumption. The link to gross available energy is not straightforward. Energy consumption in the energy transformation activities and the distribution losses before the consumption by the BE activities have to be accounted for. Moreover, the NACE rev.2 categories being grouped, there is a lack of details on some activities. For instance, the industries "paper, pulp and printing" are grouped, while only "paper and pulp" activities are usually represented in the bioeconomy. Moreover, industries use electricity and heat which partly come from renewables.

*Table 9: Final consumption of energy in groups of sectors that include bio-economy activites available in the energy balance*

| NRG_BAL (Codes) | NRG_BAL (Labels) | Equivalent NACE Rev.2 code[50] |
|---|---|---|
| FC_OTH_AF_E | Final consumption - other sectors - agriculture and forestry - energy use | A01, A02 |
| FC_OTH_FISH_E | Final consumption - other sectors - fishing - energy use | A03 |
| FC_IND_FBT_E | Final consumption - industry sector - food, beverages and tobacco - energy use | C10, C11, C12 |
| FC_IND_TL_E | Final consumption - industry sector - textile and leather - energy use | C13, C14, C15 |
| FC_IND_WP_E | Final consumption - industry sector - wood and wood products - energy use | C16 |
| FC_IND_PPP_E | Final consumption - industry sector - paper, pulp and printing - energy use | C17, C18 |
| FC_IND_CPC_E | Final consumption - industry sector - chemical and petrochemical - energy use | C20, C21 |
| FC_IND_NSP_E | Final consumption - industry sector - not elsewhere specified - energy use | C22, C31, C32 |

The calculation of the share of renewables in bio-based economic activities requires solving three issues:

- How to estimate the quantity of primary renewable and non-renewable energy used to produce the electricity and heat consumed by the BBI sectors (taking into account transformation and transport losses)?
- How to estimate the renewable share in one of the sectors in case of sectors reported in a group (not necessarily limited to bioeconomy sectors) in the energy statistics?
- How to provide details on the bioeconomy sectors when the reported sector is only partially in the bioeconomy?

For the estimate of the share of renewables in the electricity and heat consumed by bio-based sectors, information is available in the energy statistics and is reported separately in the SHARES table (NRG_IND_REN[51], this share of renewables is also reported in the bioeconomy monitoring framework as indicator 3.4.c.1[52]). When calculating the share of renewable in transport, electricity consumed in this sector is considered as partially renewable using by default the national or the EU27 share of renewables in electricity production, whichever is highest. Member states can force the calculation with either of these.

[50] See paragraph 10 in https://ec.europa.eu/eurostat/documents/38154/10015688/Ren-Instructions-2018.pdf/bc81e198-d1fc-4799-bb35-f5f4f252e19b

[51] https://ec.europa.eu/eurostat/databrowser/view/nrg_ind_ren/default/table?lang=en

[52] https://knowledge4policy.ec.europa.eu/visualisation/eu-bioeconomy-monitoring-system-dashboards_en?indicatorId=3.4.c.1

More details on the use of energy by economic activity are available from the energy accounts. In these accounts (table ENV_AC_PEFASU[53] in particular), energy supply and use are reported by fuel types and by economic activity according to the NACE rev. 2 using 64 different categories, plus households. The total energy use is not comparable to total energy consumption in the energy statistics since the accounts report all inputs and all outputs, even inputs that are not used as energy by the sector, but transformed for instance, into another energy product (e.g. use of fuel wood and industrial by-products to produce pellets in the wood and wood products sector). Moreover, the energy types listed in the accounts differs from that of the energy statistics. Nevertheless, the balance between the supply and use and the energy products for own use can give information on the actual use of the different sources of energy in the different sector. This can be used as a basis to split the consumption reported in aggregated sectors in the energy balance while respecting the specificity of the sectors. Numbers in the accounts are in terajoules[54] (TJ).

Finally, we could not find specific details on the bioeconomy activities in mixed sectors (sectors that include both bio-based and non-bio-based activities (sectors marked with an asterisk in Table 8). For these sectors, the share of energy from renewable sources will be considered the same for bio-based and non-bio-based activities. To estimate the weight of these activities in the overall bioeconomy, the bio-based shares calculated in (Ronzon and M'Barek, 2018) at the level 4 of the NACE rev.2, are combined with the purchase of energy products reported in the structural business statistics. Limits of this approach are discussed further, later in this document. Because of the absence of details on the type of energy used in detailed statistics, a sensitivity analysis must be conducted to check the quality and suitability of the indicator.

## 2.4 Calculation

### 2.4.1 Principles of the calculation

Figure 10 represents the core of the calculation and the data sources used at each step.

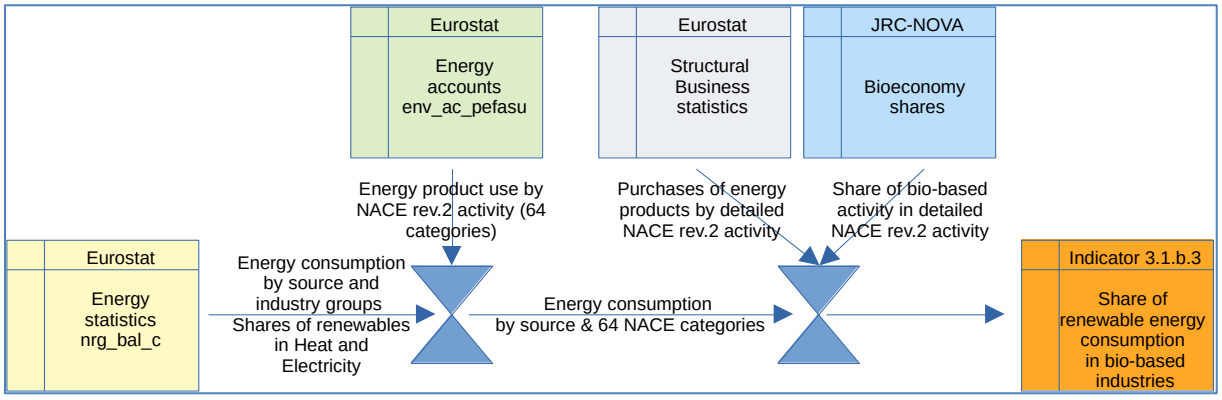


*Figure 10. Steps in the calculation. The names of the table given are those of Eurostat.*

The share of renewables is calculated based on the energy use by energy types. While most energy types reported in the statistics can be flagged as renewable or not renewable, electricity and heat cannot. In fact, electricity and heat are produced partly from renewables and partly from non-renewables, as reported in the energy statistics. Therefore, this type of energy is considered separately in the formula below.

The share of renewables in the sectors identified in the energy balance can be estimated as follows:

[53] https://ec.europa.eu/eurostat/databrowser/view/env_ac_pefasu/default/table?lang=en
[54] 1 tonne of oil equivalent = 41,868 TJ

$$SHARE_{Sector\ i} = \frac{FC_{REN_{Sector\ i}} \times \frac{GFC_{REN}}{AFC_{REN}} + FC_{E_{Sector\ i}} \times SHARE_E \times \frac{GFC_{E_{REN}}}{AFC_{E_{REN}}} + FC_{H_{Sector\ i}} \times SHARE_H \times \frac{GFC_{E_{REN}}}{AFC_{H_{REN}}}}{FC_{Sector\ i} \times \frac{GFC}{AFC}}$$

With FC: Final consumption

GFC: Gross final consumption

REN: Renewables

E: Electricity

H: Heat

AFC: Energy available for final consumption

SHARE: Share of renewables

To simplify the formula, each source of energy is not specified independently, however, the calculation of the ratio between the gross final consumption and the energy available for final consumption is calculated by energy product.

To calculate the shares in sectors that are grouped, before calculating the shares, the consumption of the different sources for energy is calculated using the final consumption of energy by sources *e* in the group of sectors *g* ($FC_{e,g}$) from the energy balance multiplied by the ratio of apparent use *U* of this type of energy in the detailed sector *s* identified in the energy accounts. To make this calculation possible, the energy statistics, which report the consumption of energy products classified according to the Standard International Energy Classification (SIEC), have to be reconciled with the energy accounts, which report the use of energy commodities as defined in the Commission Delegated Regulation (EU) 2016/172 (see Annex 1).

$$FC_{e,g} = \frac{U_{e,s}}{\sum_{i \in g} U_{e,i}}$$

The calculation is then performed as above.

As indicated earlier, unless additional information is available, the shares in mixed sectors is considered as equal to the share in the sector to which it belongs. This is a limiting factor and therefore, the share of renewable may be presented only when at least 75% of the activity is considered bio-based (average share over the time period). Elsewhere, only the share in the total BBI bio-based manufacturing sectors might be presented.

To calculate the share in bio-based manufacturing industries (all sectors classified under C in the NACE nomenclature) and in the bioeconomy (thus including primary sectors), we calculate the weighted share of renewables, where the weights correspond to the gross final energy consumption in each sector as a share of consumption in all bio-based sectors. The gross final energy consumption of activities in mixed sectors is considered to correspond to the gross final energy consumption in the mixed sector multiplied by the bio-based shares estimated with the methodology presented in Ronzon and M'Barek, 2018, possibly updated to comply with the approach used in estimating economic indicators of activities in mixed sectors.

### 2.4.2 TREATMENT OF THE DATA GAPS

The datasets used present many gaps, either for one element, or for all elements in a year or all years for one element. However, to be able to estimate the indicator for all year in the EU27, data gaps are a major limitation. The calculation cannot be performed without imputation of the missing data (there

is always at least an empty element for every year). A simple imputation method can be used combining the Last Observation Carried Forward (LOCF) and the Next Observation Carried Backward (NOCB) and the interpolation method. In practice, for one variable, a missing value is replaced by the interpolation between the previous available value and the next available value in the time-series if available. Elsewhere, if there are only values earlier in the time series, the last know value is repeated, and it there are only a value later in the time series, the first known value in the future is used. Imputation is applied on the results of the calculation rather than on raw data when calculating shares to avoid inconsistent shares due to e.g. a reduction in an activity in one sector which may not affect the share, but the primary consumption.

## 2.5 Limits

For partially bio-based activities, the statistics do not allow for a specific distinction and a specific approach is needed similar to what is used in (Robert et al., 2020; Ronzon and M'Barek, 2018) where the economic activity is considered homogenous in a subsector at the level 4 of the NACE rev.2 nomenclature (no difference in employment, turnover, and value added whether or not the activity uses biomass). For energy, this hypothesis might be acceptable when the bio-based part is a major contributor, such as the furniture sector. For some sectors and in particular those manufacturing bioenergy, the assumption may be weak. We would therefore avoid reporting numbers for sectors C20, C21 and C22 individually. However, these sectors might be considered when calculating the overall share for the bio-based sectors. Finally, the bio-based heat and power activities are almost entirely bio-based and therefore considered renewable. However, from the national statistics, it is not possible to estimate the quantity of non-renewable (in particular fossil fuel for manipulating the biomass) used in the transformation process. Dedicated surveys would be required.

## 2.6 Conclusions, share of renewables in BBI

EU Member States must report the share of renewable energy used by their industries. The novelty presented here is the estimation of a share or renewable used by bio-based industries, which required to split numerous sectors that would normally be grouped in the energy reporting. The method relied on the use of several datasets complementing the energy statistics such as the energy accounts, and the structural business statistics. The indicator is currently limited to the manufacturing BBIs. Bioenergy and bio-based construction are not considered. This indicator can be introduced to the EU Bioeconomy Monitoring System once peer reviewed with the methodological pipeline made available in a public repository or open-source package.

Together with the main indicators, several sub-indicators are estimated or can be derived at different steps of the methodology, such as the total energy use, the total renewable energy use and the total bio-energy use by BBIs. This piece of information will complement other indicators of the bioeconomy monitoring system to get a better understanding of the role that BBIs can play in supporting a shift towards a more sustainable use of energy.

## 2.7 References

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## Annexes

### Annex 1 Correspondence between the Standard International Energy Classification (SIEC) and energy products and residuals as defined in the Commission Delegated Regulation (EU) 2016/172 (prod_nrg)

| Code SIEC | SIEC | Code prog_nrg | prod_nrg |
|---|---|---|---|
| C0110 | Anthracite | P08 | Hard coal |
| C0121 | Coking coal | P08 | Hard coal |
| C0129 | Other bituminous coal | P08 | Hard coal |
| C0210 | Sub-bituminous coal | P09 | Brown coal and peat |
| C0220 | Lignite | P09 | Brown coal and peat |
| C0311 | Coke oven coke | P11 | Secondary coal products (coke, coal tar, patent fuel, BKB and peat products) |
| C0312 | Gas coke | P11 | Secondary coal products (coke, coal tar, patent fuel, BKB and peat products) |
| C0320 | Patent fuel | P11 | Secondary coal products (coke, coal tar, patent fuel, BKB and peat products) |
| C0330 | Brown coal briquettes | P11 | Secondary coal products (coke, coal tar, patent fuel, BKB and peat products) |
| C0340 | Coal tar | P11 | Secondary coal products (coke, coal tar, patent fuel, BKB and peat products) |
| C0350 | Coke oven gas | P10 | Derived gases (= manufactured gases excl. biogas) |
| C0360 | Gas works gas | P10 | Derived gases (= manufactured gases excl. biogas) |
| C0371 | Blast furnace gas | P10 | Derived gases (= manufactured gases excl. biogas) |
| C0379 | Other recovered gases | P10 | Derived gases (= manufactured gases excl. biogas) |
| E7000 | Electricity | P26 | Electrical energy |
| G3000 | Natural gas | P13 | Natural gas (without bio) |
| H8000 | Heat | P27 | Heat |
| N900H | Nuclear heat | P22 | Nuclear fuel |
| 04100_TOT | Crude oil | P12 | Crude oil, NGL, and other hydrocarbons (excl. bio) |
| 04200 | Natural gas liquids | P12 | Crude oil, NGL, and other hydrocarbons (excl. bio) |
| 04300 | Refinery feedstocks | P21 | Other petroleum products incl. additives/oxygenates and refinery feedstocks |
| 04400X4410 | Additives and oxygenates (excluding biofuel portion) | P21 | Other petroleum products incl. additives/oxygenates and refinery feedstocks |
| 04500 | Other hydrocarbons | P12 | Crude oil, NGL, and other hydrocarbons (excl. bio) |
| 04610 | Refinery gas | P20 | Refinery gas, ethane and LPG |
| 04620 | Ethane | P20 | Refinery gas, ethane and LPG |
| 04630 | Liquefied petroleum gases | P20 | Refinery gas, ethane and LPG |
| 04640 | Naphtha | P16 | Naphtha |
| 04651 | Aviation gasoline | P14 | Motor spirit (without bio) |
| 04652XR5210B | Motor gasoline (excluding biofuel portion) | P14 | Motor spirit (without bio) |
| 04653 | Gasoline-type jet fuel | P15 | Kerosenes and jet fuels (without bio) |
| 04661XR5230B | Kerosene-type jet fuel (excluding biofuel portion) | P15 | Kerosenes and jet fuels (without bio) |
| 04669 | Other kerosene | P15 | Kerosenes and jet fuels (without bio) |
| 04671XR5220B | Gas oil and diesel oil (excluding biofuel portion) | P17 | Transport diesel (without bio) |
| 04671XR5220B | Gas oil and diesel oil (excluding biofuel portion) | P18 | Heating and other gasoil (without bio) |
| 04680 | Fuel oil | P19 | Residual fuel oil |
| 04691 | White spirit and special boiling point industrial spirits | P21 | Other petroleum products incl. additives/oxygenates and refinery feedstocks |
| 04692 | Lubricants | P21 | Other petroleum products incl. additives/oxygenates and refinery feedstocks |
| 04693 | Paraffin waxes | P21 | Other petroleum products incl. additives/oxygenates and refinery feedstocks |
| 04694 | Petroleum coke | P21 | Other petroleum products incl. additives/oxygenates and refinery feedstocks |
| 04695 | Bitumen | P21 | Other petroleum products incl. additives/oxygenates and refinery feedstocks |
| 04699 | Other oil products n.e.c. | P21 | Other petroleum products incl. additives/oxygenates and refinery feedstocks |

| Code SIEC | SIEC | Code prog_nrg | prod_nrg |
|---|---|---|---|
| P1100 | Peat | P09 | Brown coal and peat |
| P1200 | Peat products | P11 | Secondary coal products (coke, coal tar, patent fuel, BKB and peat products) |
| R5110-5150_W6000RI | Primary solid biofuels | P23 | Wood, wood waste and other solid biomass, charcoal |
| R5160 | Charcoal | P23 | Wood, wood waste and other solid biomass, charcoal |
| R5210B | Blended biogasoline | P24 | Liquid biofuels |
| R5210P | Pure biogasoline | P24 | Liquid biofuels |
| R5220B | Blended biodiesels | P24 | Liquid biofuels |
| R5220P | Pure biodiesels | P24 | Liquid biofuels |
| R5230B | Blended bio jet kerosene | P24 | Liquid biofuels |
| R5230P | Pure bio jet kerosene | P24 | Liquid biofuels |
| R5290 | Other liquid biofuels | P24 | Liquid biofuels |
| R5300 | Biogases | P25 | Biogas |
| S2000 | Oil shale and oil sands | P09 | Brown coal and peat |
| W6100 | Industrial waste (non-renewable) | R29 | Non-renewable waste |
| W6210 | Renewable municipal waste | R28 | Renewable waste |
| W6220 | Non-renewable municipal waste | R29 | Non-renewable waste |

Source: own elaboration based on Commission Delegated Regulation (EU) 2016/172

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