X economies - Pathways towards a more resilient and sustainable world

Interactions and Impact of six X Economies within Latin America and Europe

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Abstract

This report about X economies is prepared in the scope of the Policy in Emerging Markets course of the Economics and Strategy in Emerging Markets Program, offered as a co-training between Maastricht University and UNU-MERIT.

The report addresses six economies and their interactions, firstly through a literature review and analysis, and secondly through the construction of an index. The X Economy Index (XEI) exposes how countries in Latin America and Europe perform in the environmental, social, economic, governmental, and research dimensions of each economy. The XEI covers 58 indicators in total, with data gathered for 48 countries.

All economies studied are complex and offer great potential for sustainability. This report, therefore, offers different transformative social and economic policy recommendations aiming at improving the sustainability and resilience of countries.

Data and online map of XEI are available from the Lab of UNU-MERIT.

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List of Abbreviations

AFD	Agence Francaise de Développement
CEPAL	Economic Commission for Latin America and the Caribbean
CLAIM	Cleaning Litter by Developing and Applying Innovative Methods in European Seas – initiative
CMU	Circular material use
ECOCE	(in circular economy, environmental associations in Mexico)
EGDI	E-Government Development Index
EIA	U.S. Energy Information Administration
EPI	Environmental Performance Index
EU	European Union
GCI	Global Connectivity Index
GDP	Gross domestic product
GGEI	Global Green Economy Index
GHG	Greenhouse Gases
GVA	gross value added
ICT	Information and Communication Technologies
IDB	Inter-American Development Bank
ILO	International Labour Organization
IMD	International Institute for Management Development
IMF	International Monetary Fund
IOC	Intergovernmental Oceanographic Commission (UN)
ISCED	(reference international classification of education programs)
Kfw	Kreditanstalt für Wiederaufbau (banking group)
LA	Latin America
LAC	Latin American countries
OECD	Organisations for Economic Cooperation and Development
SDGs	Sustainable Development Goals (from the UN)

SDI	Sustainable Development Index
SGI	Sustainable Governance Index
SPI	Social Progress Index
UN	United Nations
UNDP	United Nations Development Programme
WWF	World Wide Fund for Nature (until 1986: World Wildlife Fund)
XEI	X Economy Index

European Country Codes

AL	Albania
AT	Austria
BA	Bosnia and Herzegovina
BE	Belgium
BG	Bulgaria
CH	Switzerland
CY	Cyprus
CZ	Czechia
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
FI	Finland
FR	France
HR	Croatia
HU	Hungary
IE	Ireland
IS	Iceland
IT	Italy
LI	Liechtenstein
LT	Lithuania
LU	Luxembourg
LV	Latvia
ME	Montenegro
MK	North Macedonia
MT	Malta
NL	Netherlands
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
RS	Serbia
SE	Sweden

SI	Slovenia
SK	Slovakia
TR	Turkey
UK	United Kingdom

Introduction

Introduction

X economies or new economies describe alternative and new concepts of economy that are dedicated to a more sustainable future, more particularly to tackle the Sustainable Development Goals (SDGs) identified by the UN. Well known examples for new economies are the green economy or the circular economy. The different economies and their interactions are covered by the umbrella term X economy.

In this report, we use a broader definition of X economies, covering both the niche and the socio regime level in the system transition and change model identified by Geels (2004). In our understanding, X economies do not only include innovations, but, amongst others, new policies, altered areas of research, a change in the market user preferences, and a change in culture. Therefore, we partly disagree with the definition of new economies provided by DRIFT. Their definition focuses on businesses, initiatives, and networks only and does not include the socio regime level.

The model designed by Geels (2004) maps the process of system transition and change. External factors from the socio landscape level, for instance the SDGs, create a window of opportunity in the socio regime level, allowing a sustainability transition induced by the interaction of the various X economies. Consequently, the X economy constitutes the new socio regime.

As for the choice of the six economies, namely Blue, Circular, Collaborative, Digital, Feminist and Social economies, the Sustainable Development Goals (SDG's) were used as inspiration to decide on crucial aspects of the global economy that had to change to ensure a more sustainable future. The choice of these economies was therefore intended to cover the seventeen SDGs as well as possible. Hence, the Social Economy is the economy which enables the largest number of SDGs to be approached. Indeed, it addresses the issues of no poverty (1), zero hunger (2), good health and well-being (3), quality education (4), gender equality (5), affordable and clean energy (7), decent work and economic growth (8) and finally, reduced inequalities (10). As for the Circular economy, it allows to address the SDGs relating to sustainable cities and communities (11), responsible consumption and production (12) as well as life on land (15). Regarding the Collaborative economy, the latter tackles two of the three objectives addressed by the Circular economy, i.e. sustainable cities and communities (11) and responsible consumption and production (12). As for the Blue economy, it focuses on the objectives relative to water, i.e. clean water and sanitation (6), climate action (13) and life below water (14). The Digital economy, in addition to being a springboard for the development and spread of the alternative economies, allows the SDGs to focus on industry, innovation and infrastructure (9). And ultimately, the Feminist economy has one core objective, which is gender equality (5). All of these aspects and objectives could be grouped under four categories: Environment, People, Economy and Government, all of which will be discussed in the section dedicated to the creation of the index (chapter 3).

Source: The Commonwealth

The Report is divided into two main sections namely literature and quantitative data. These two main sections are further divided into smaller chapters. The structure is as follows: Chapter 1 will cover the definitions and prominence in Latin America and Europe of the six previously mentioned economies. Chapter 2 will further deepen the literature on these economies by focusing specifically on 5 interactions between these economies. Chapter 3 will cover the data and methodology used to quantitatively analyze the prominence of the economies in the chosen regions. Chapter 4 will layout the results gathered from the created index mentioning the implications and recommendations. Limitations and potential for further research will also be laid out in this chapter. Finally, the report will be concluded with a few suggestions of who it could be useful to and overall recommendations.

Chapter 1:
Definition & Presence

Source: The Commonwealth

Definition

As WWF mentions, there is no commonly accepted definition of blue economy, therefore several different meanings of this economy are explored in the following text. In "Principles for a Sustainable Blue Economy" by WWF (2018) it states that "For some, Blue Economy means the use of the sea and its resources for sustainable economic development. For others, it simply refers to any economic activity in the maritime sector, whether sustainable or not." WWF states that the blue economy "must respect ecosystem integrity".

The World Bank and the United Nations Department of Economics and Social Affairs denote the term blue economy as the sustainable use of ocean resources and coastal areas to promote economic growth, social inclusion, and the preservation or improvement of livelihoods. It takes diverse activities into account, such as renewable energy, fisheries, maritime transport, tourism, climate change and waste management. Whereby the range of economic sectors and related policies determine whether the use of oceanic resources and coastal areas is sustainable. (World Bank and United Nations Department of Economics and Social Affairs, 2017)

Presence in Latin America

By taking a look at the literature available in Web of Science the prominence of the blue economy in Latin America appears to be very poor with only 13 publications, whereby the blue economy is most present in Brazil with 6 publications, and Mexico and Peru with 2 each.

In Latin America in general, the ocean related economy contributes significantly to the GDP, but there is a lot of potential that has not been identified and realized yet (McKinley et al., 2018). In Peru, with a coastline of more than 3000 km, maritime industries are a key part of the economy (McKinley et al., 2018) and more than 200 thousand jobs are created merely by the fisheries sector (Christensen et al., 2014). Policies, like the General Fisheries Law (Decree Law N° 25977, published in 1992), for a more

sustainable use of these marine and coastal resources have been introduced, but the effectiveness is questioned by the OECD Territorial Report (2016). According to the report improved environmental and economic policies are required to guarantee sustainable maritime development and usage of resources, and maintain diversification (OECD Territorial Report, 2016). McKinley et al. (2018) agree and argue that to achieve a sustainable marine and coastal resource management, it is substantial to develop a strategy for the blue economy in Peru (McKinley et al., 2018). Gerhardinger et al. (2020) find that a vision of blue economy does not yet exist for Brazil and point out the importance of marine spatial planning and potential gaps that need to be addressed when taking environmental sustainability and social equity into consideration.

Presence in Europe

In Europe, the blue economy concept is more widespread than in Latin America with a total of 271 publications in Web of Science. According to the literature, the countries in Europe where the blue economy is most present are the United Kingdom with 67 publications, followed by Italy (25), France (19) and Germany (18). Though, Greece (EL) has the highest share in blue jobs in national employment with around 14%, followed by Malta (MT), and Croatia (HR) and the United Kingdom (UK) being at 18th rank, below the EU average.

In 2008, the EU's Marine Strategy Framework Directive became effective, promoting an ecosystem-based approach, combining marine economic potential while guaranteeing long-term sustainability, and requiring national marine strategies from the different member states to improve or maintain "good environmental status" to keep a healthy, productive and resilient condition of the ecosystem (European Commission, 2020). This year, in 2020, the European Commission published the 3rd edition of their annual "EU Blue Economy Report". The aim of this report is to provide support to policymakers and stakeholders to promote a sustainable development of oceans, and a sustainable usage of coastal resources (European Commission, 2020). According to the "EU Blue Economy Report" (2020), in 2018, the seven established sectors of the EU-28 (including UK) blue economy directly employed close to 5 million people, that equals 2,2% of the total employment, and generated around €218 billion in gross value added (GVA), equaling 1,5% of total GVA. Besides the efforts within the European Union borders, the EU intends to become a key leader in sustainable blue growth at a global level (European Commission, 2020).

Source: *Medium - Nothing says environmentally friendly like antiques*

Definition

Geissdoerfer et al. (2017, p. 760) defines the Circular Economy as "a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops."

The circular economy's main purpose is to make an economy more sustainable. This is achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling. Products and materials are kept in circulation for as long as possible by designing them to be more durable, reusable, repairable and recyclable (Schröder et al., 2020). It focuses on minimizing waste through the use of renewable energy, and through more sustainable business models and at the political level with more sustainable policies (Geissdoerfer et al., 2016).

Presence in Latin America

By looking at the amount of literature found in *Web of Science*, one can see that there are 364 publications in Latin America. Brazil (217 publications), Mexico (44 publications) and Chile (41 publications) are the top 3 countries in Latin America where the circular economy is present.

Mexico has become a regional leader in plastic recycling thanks to its waste management legislation, its recycling facilities and related infrastructure (Chebulgaeva, 2020). Non-profit environmental associations in Mexico such as ECOCE have partnered up with Unilever, Coca-Cola Company, PepsiCo, Nestlè, amongst others, to recycle plastic, as well as educate the Mexican population. They occupy a 60% share of the plastic recycling market in Mexico (*ECOCE*, n.d.). Unilever for instance, with the aim at reducing plastic waste, has cut the use of virgin plastic for its popular brands. Since 2019, Hellmann's mayonnaise is made up of 95% reused plastic (Chebulgaeva, 2020). The Dutch company Heineken in Mexico is also a good example of how companies are transitioning towards circularity. Heineken and Enel Energia Mexico (a Mexican energy company) have signed a 10-year contract under which the

brewery located in Chihuahua will be supported only by power from renewable sources such as wind and solar plants (Chebulgaeva, 2020). In Brazil, CBPak (a Brazilian packaging company), has begun to produce food containers using a non-edible type of cassava starch. Through partnerships with local composting companies, the containers get collected after a single use and converted into soil enhancers that are used to regenerate farmland (Chavin & Jeffries, 2017). In Chile, the 'Chilean Plastic Pact" led by the Ministry of Environment was signed in 2019, making it the first Latin American country to join the 'Plastic Pact', and the third country to implement it along with UK and France (*New Plastics Economy*, n.d.).

Even though the circular economy model has gained high political attention in Latin America in the recent years, one challenge that Latin America faces is that countries in this region rely on extractive industries such as oil and mining which will naturally reduce in demand as the economies transition to a circular model, and hence have a negative impact on their revenues (Schröder et al., 2020).

Presence in Europe

Even though the circular economy concept was developed in Europe, it has only been recently in the past decade when it has become prominent in the highest level of European policy making. By looking at the amount of literature in *Web of Science*, one finds that the amount of publications in Europe is higher than in Latin America, namely 5958 publications. UK (859 publications), Italy (798 publications) and Spain (643 publications) are the top three countries where the circular economy subject is covered.

The European Commission has launched several efforts such as the *roadmap for a resource efficient Europe* in 2011 for resource efficiency. In 2015, they launched *An Action Plan for the Circular Economy* which proposes amendments to legislation relating to waste and landfills as well as new initiatives (McDowall et al., 2020). To this date, all 54 actions under the plan have been delivered or are being implemented. In 2020, a new *Circular Economy Action Plan* was launched to move towards an even more circular economy to attend climate neutrality by 2050 (*EU Circular Economy Action Plan*, 2020). Even though the UK is currently transitioning out of the EU, the UK government stated that they had no intentions of weakening their current environmental protections after the transition period (*Circular Economy Package Policy Statement*, 2020).

Source: *Nesta*

Definition

The collaborative economy, often referred to as the sharing or peer-to-peer economy, can be defined as the economy which uses online platforms to match the needs and haves of people in ways that bypass the middleman. In this economy, consumers grant other consumers temporary access to underused assets, thereby unlocking the value of the asset (Botsman & Rogers, 2010; Nwaorgu 2018).

Some useful indicators that were used by the European Commission (2018) to monitor the economic development of the collaborative economy among its member states, and that could easily be extended to the world, are: the share of total revenue generated by collaborative platforms to national GDP; the share of persons employed in the collaborative economy in national total employment; and the number of collaborative platforms per one million residents.

There are various reasons why people turn to the collaborative economy. The ecological reasons are to reduce the production of goods by moving towards sustainable consumption (Drakšb, Snieškac & Valodkien, 2015). Perren (2015) states that environmental benefits are achieved by using assets that would otherwise go unused.

Presence in Latin America

Web of Science reveals that the Latin American countries with the most publications on the collaborative economy are: Brazil (8 publications), Mexico (4 publications) and Chile (2 publications). Yet, with a total of only 19 publications, we can conclude that Latin America is still far behind Europe.

A Nielsen report (2014) finds that the eagerness to share assets with others in developing regions (Asia-Pacific: 78%; Latin America: 70%) considerably exceeds the eagerness in developed regions (Europe: 54%; North America: 53%). However, despite this eagerness to share and the boom in Internet users

between 2000 and 2013 (from 5 to 50%) (World Bank, 2015), the lack of trust in others, in Latin America, remains a major obstacle to the development of the collaborative economy.

Uber is one of the most widely used collaborative platforms. Present in 71 countries, its main markets are the United States, Brazil, Mexico and Spain (Uber Estimator, 2020). The CEO of Uber also confided that Latin America is one of their best markets. This stronger presence in Latin America than in Europe can be explained by the more favorable regulations there. In September 2019, a Brazilian labor higher court ruled that no working relationship existed between Uber and its drivers, thereby facilitating Uber's expansion in Brazil (The New York Times, 2019).

Presence in Europe

Web of Science indicates that the European countries with the most publications on the collaborative economy are England, Germany and Spain. These 3 countries, with a total of 571 publications, demonstrate Europe's greater interest in the collaborative economy. Overall, publications in Europe amount to 215, substantially higher than those of Latin America.

The European Commission (2017) stated that the market size of the collaborative economy in the European Union was evaluated at €26.5 billion, in 2016. The market is composed of five main sectors: finance; transport; accommodation; and online skills. In the EU, in 2016, the five main countries active on the collaborative market are France, the UK, Poland, Spain and Germany. In Europe, in 2015, 32% of European consumers were aware of the collaborative economy of which only 5% had already taken part in it (ING International, 2015).

The giant of the collaborative economy, Airbnb, has prompted many European countries to adopt new regulations and policies. For example, France has allowed the collection of "tourist taxes" and updated its housing law to allow the sharing of primary residences without authorization. While other regions have introduced new regulations that complicate the use of Airbnb. Catalonia, for example, obliges users to apply for license, provide a VAT number and proof that nobody lives in the apartment (Vaughan and Daverio, 2016).

Source: *snowdropsolution.com*

Definition

The notion of the term “Digital Economy” comes with numerous different interpretations. According to the IMF, digitalization has marked a new phenomenon since the start of 2000s which is impacting our societies. The IMF defines this new fast-growing phenomenon as follows: “The digitalization of the economic activity can be broadly defined as the incorporation of data and the Internet into production processes and products, new forms of household and government consumption, fixed-capital formation, cross-border flows, and finance. The rapid pace of change has led to concerns about possible under-measurement of economic activity and economic welfare associated with digital products. The “digital economy” is sometimes defined narrowly as online platforms, and activities that owe their existence to such platforms, yet, in a broad sense, all activities that use digitized data are part of the digital economy: in modern economies, the entire economy.” (IMF, 2018).

The OECD is convinced that mobility, cloud, computing, social networking, sensor-nets and big data analytics are some of the most important trends in the digital economy in current times. These trends aim to establish a future that can be characterized collectively as “smart everything” (OECD, 2014). As the term suggests, “smart” impacts “everything”, from grids, homes, business processes, over energy, healthcare, transport and government, as well as “empowering businesses, consumers and society at large.”

The rapid evolution of the Digital Economy and technological change has shown that there is a massive potential of digital tech to find new solutions to tackle always existing challenges in the world. Digital Economy is not only related to the industry of “pure data gathering” but rather it impacts Education, Health, Governance, Society, Climate, Cooperation, Industry, Sustainability and many more. There are many ways in which digitality can contribute to sustainable development as the tech report of the United

Nations has pointed out. Just think about mobile phone services, technology in agriculture, disaster management, smart tools, public transport, sanitation, satellite, and so on - these are just a few examples of where technology and data monitoring already play a fundamental role, but there is so much more to mention still.

Presence in Latin America

According to the literature in Web of Science, the Latin American countries where the digital economy is the most present are Mexico (14 publications), Brazil (10 publications), and a tie between Colombia and Argentina (5 publications each). Overall, there were a total of 42 publications for Latin America, showing that there is still room for research and development of the digital economy in this region.

Even though Mexico is still in its early stages of digitization, their journey of digitizing government activities (such as requesting birth certificates online) serve as a perfect example of how the digital economy has helped Mexico improve its government productivity (Cesar et al., 2018). In 2009, the Colombian government issued an ICT Law to establish the Information Technologies and Communications Fund whose purpose was to finance programs and projects to facilitate universal access and service (OECD, 2019). Additionally, the Colombian government has put forth four main objectives to achieve by 2022 which include promoting digital transformation of society, fostering productivity in the government and in business through advanced digital technology, and promoting entrepreneurship for technology based start-ups (OECD, 2019).

Presence in Europe

In Europe, the countries where the digital economy is present the most according to the literature in Web of Science are the United Kingdom (203 publications), Romania (89 publications) and Spain (83 publications). In comparison with Latin America, Europe has a substantial higher number of publications, being 946.

In the last decade, the EU countries have seen an increase in access to the internet with 87% of households having access to the internet in 2017 compared to 70% in 2010 (EUROSTAT, 2018). In 2017 it was estimated that only 3% of businesses did not have an internet connection (EUROSTAT, 2018), which goes to show how digitized Europe has become. Furthermore, ICT education has proved to be a good basis for job opportunities amongst European countries where 90% of people with an ICT education are employed as ICT specialists (EUROSTAT, 2018).

Source: Dawn.com

Definition

Feminist Economics are said to have emerged after the publication of Marylin Waring's book, "If Women Counted", which is seen as the early beginning of a new field. A few conferences in the early 1990's were followed by the creation of the International Association for Feminist Economics in 1992 and the publication of the Feminist Economics Journal in 1995.

Feminist Economics focus on well-being, empowerment, and equity, as centers of economic analysis. In her paper about Social Provisioning as a Starting Point for Feminist Economics, Marilyn Power describes the five main components and objectives of feminist economics as:

- the incorporation of caring and unpaid labor as fundamental economic activities;
- the use of well-being as a measure of economic success;
- the analysis of economic, political, and social processes and power relations
- the inclusion of ethical goals and values as an intrinsic part of the analysis;
- the interrogation of differences by class, race-ethnicity, and other factors.

Feminist economics is thus not only focused on a gender equitable way of approaching economics, it also concerns other types of inequalities that may intersect with gender inequality. It is about understanding the process and the agency as well as the outcomes (Berik et. al., 2009).

Presence in Latin America

According to Web of Science the countries in Latin America with the highest number of publications are Argentina with 5, Colombia with 4, and Brazil with 3 publications. The overall number for Latin America is rather low with a total of only 17.

In the last decade, considerable progress on gender equality took place across Latin American countries, including a decreased maternal mortality rate, increased enrollment in formal education, higher labor force participation rate, and increased representation in public leadership (World Bank, 2020). Between 1990 and 2018, the labor force participation of women increased by 25 percent, leading to a participation rate of 52 percent in 2018 of women aged 15 and above, compared to 77 percent of men (World Development Indicators). However, women still work in lower-quality jobs and their economic opportunities are limited by less access to key productive assets (World Bank, 2020). Women-owned firms are less profitable, mostly due to differences in level of education and limited access to resources, and mainly operate in less economically profitable sectors, such as trade, manufacturing, and services (IFC, 2011; Bruhn, 2009).

The LAC Regional Gender Action Plan addresses critical gender issues, including the gender pay gap, teenage pregnancies and violence against women and suggests three main types of initiatives: (1) identifying opportunities to promote gender equality at the country level, (2) embedding gender in operations to address critical gender gaps, and (3) fostering knowledge activities and data collection on gender. Various initiatives were launched in Latin American Countries by different organizations and governments. (World Bank, 2020)

Presence in Europe

Web of Science identifies the United Kingdom (30 publications), Spain (12 publications) and the Netherlands (12 publications) as the countries in Europe with the highest presence of the feminist economy. The total number of publications in Europe amounted to 96, higher than in Latin America. Numbers on the gender employment gap show that the best performers are Latvia, Lithuania and Finland and the worst performers are Greece, Italy and Malta (European Commission, 2018). In general, women in the European Union earn more than 16% less on average, varying between 5.2% in Romania to 25.3% in Estonia (European Commission, 2018).

To achieve higher gender equality the various member states of the EU have adopted different policies, we will name a few in this section. In Germany, the Parental Allowance Plus and Partnership Bonus measures were introduced to keep women in the labor market and support a more equal share of parenting responsibilities. In Malta, free childcare for parents who work or are in education was established to encourage women to return to work. To establish transparency in wage structures, Poland released an user friendly app, in the UK companies with more than 250 employees are required to publish figures on pay and bonus pay gaps and in Germany, companies with more than 200 employees need to release figures on pay levels on request. To promote equality in decision-making, an Irish platform encourages young women to enter politics and trains female candidates and leaders. In Slovenia, a party list for national and local elections, as well as elections to the European Parliament must meet the gender quota, otherwise it can be rejected. And to combat gender-based violence and

protect and support victims several member states of the EU have launched legal measures, campaigns and actions in 2017. (European Commission, 2018)

Source: technicalintegrity.com

Definition

Social economics aims to deliver social benefits and satisfy needs through organizations that exist and operate outside (or between) both the market and the state. It develops as a permanent stream of inventions of various social mechanisms, mixing market exchange, state intervention and collective civil sector organization based on social movements driven by solidarity and reciprocity. The main societal issues this new economy tries to combat according to the literature include but are not limited to the (re)introduction of social justice into the economy, the redistribution of income and wealth within the market economy or the satisfaction of alienated individual and collective needs (Moulaert & Ailenei, 2005).

Social economy organizations are a crucial pillar for a more sustainable world as their main "raison d'être" is to eradicate social injustices like inequality, precarious labor conditions, poverty and many more. Social economy entities directly target various SDGs and can help to achieve them by providing an alternative to the classic capitalist economy, which has caused numerous social issues around the world (Arana Landin, 2020).

Presence in Latin America

Web of Science identifies Brazil (617 publications), Mexico (243 publications) and Colombia (138 publications) as the countries with the highest number of publications on the social economy. However, these 3 countries account for only 998 publications, far less than Europe. The social economy in Latin America suffers from fundamental problems that hinder its development: the lack of social and institutional visibility is one of the most serious.

The lack of institutional presence of its representative organizations must be solved by its acknowledgement by the public administration and other social agents as interlocutors within the consultative institutions on social and economic policies.

The difficulty of systematizing information on the social economy, which consolidates its social invisibility, hinders its development in Latin America. It is necessary to know, not just to intuit, the real impact of this economy. This absence of measurements makes it very difficult to highlight its true social relevance and the comparative difference with regard to other types of enterprises in terms of the impact of their economic, social and solidarity-based actions (Nilsson, 2012).

Nowadays, many Latin American governments are facilitating these changes by modifying laws, by integrating these behaviors into a new framework of economic culture, by promoting their access to public resources, to credit, to the market... In Argentina, for example, the "social policy of the social economy" has been institutionalized and targets poor sectors or employment problems and aims at their inclusion in the market. This program proposes to set up solidarity funds and the promotion of microcredit, as well as the strengthening of cooperatives and mutual insurance companies, associative spaces, advisory councils and civil society organizations. As a result, over the last ten years, the number of government bodies responsible for promoting the social economy has multiplied. Thus, in seven years, 14 out of 24 provinces have created organizational units related to the social economy (Coraggio, 2015).

Presence in Europe

Web of Science indicates that the European countries with the most publications on this economy are, by far, the UK, followed by Spain and Italy. These 3 countries amount to a total of 3053 publications. However, the European Economic and Social Committee (2012) reports that the EU countries where the concept of social economy is most accepted are Spain, France, Portugal, Belgium, Ireland and Greece. Spain because it is the country that approved the first European national law on the social economy and France because it is the birthplace of this economy. Whilst the more recent EU members are less involved in the social economy. Moreover, in the EU, the social economy provides paid employment to over 14.5 million people, or about 6.5% of the working population. A final important finding testifying to the importance of the social economy is that it grew faster than the EU population between 2002 and 2010.

Among the actions taken to promote the ecosystems of the social and solidarity economy, in 2020 the OECD has launched an action which will involve all EU countries over a period of three years. This action will lead to three main outcomes. First, an international guide on legal frameworks for the social economy. Secondly, an international guide on measuring social impact for the social economy. And finally, Peer Learning Partnerships to create opportunities to share knowledge and experience between

countries and stakeholders on various topics critical for the development of the social economy (OECD, 2020).

Chapter 2: Interactions

Interactions between the economies

The next section of this work aims to analyze part of the interactions between the six economies previously presented. We shall focus here on five interactions. The selection criterion for these five interactions is primarily the percentage of keywords matching between the two interacting economies. These percentages are presented in figure 1.

	Blue	Circular	Collaborative	Digital	Feminist	Social
Blue		6.46%	5.53%	5.52%	4.42%	6.67%
Circular	6.46%		7.74%	6.11%	3.69%	7.21%
Collaborative	5.53%	7.74%		10.00%	5.25%	6.76%
Digital	5.52%	6.11%	10.00%		5.59%	6.87%
Feminist	4.42%	3.69%	5.25%	5.59%		5.40%
Social	6.67%	7.21%	6.76%	6.87%	5.40%	

Figure 1: Percentage of matching keywords between economies

Methodology

In order to build up this matrix, we first investigated each economy on Web of Science. Afterwards, we downloaded the information and keywords of the 500 most cited articles, for each economy. Each of these keywords lists were then transferred into an Excel document. Each list, consisting of 2000 to 5000 keywords, was given a color to distinguish each economy's keywords from the others.

Subsequently, we created 15 additional Excel sheets, each one representing an interaction between two economies. On each of these sheets were the keyword lists of the two economies studied. An Excel formula was then used to determine the quantity of keywords that featured in the two economies studied. Figure 1 summarizes these results. Finally, the number of keywords appearing in the two economies is then compared to the total number of non-redundant keywords in the two economies, giving us a percentage of keyword interaction for these two economies. The results of this previous step are presented in figure 2.

We decided to address the interactions of

- Blue economy x Circular economy
- Digital economy x Feminist economy
- Digital economy x Collaborative economy
- Collaborative economy x Circular economy

- Circular economy x Social economy.

This decision was taken on the basis of the results presented in figure 1. Additionally, several interactions were chosen despite not yielding the highest percentage. These were chosen out of interest and relevance to the current environment, allowing for each economy to be present at least once.

Afterwards, we determined which aspects and thus which keywords had to be addressed when explaining the interaction between two economies. This time, using the same excel sheets, we examined how often the matching words recurred in the both lists. To the recurrence criteria, we added the relevance and specificity of the word in relation to the economies. In this way, we selected five keywords that would best contribute to describing the interaction between two economies.

In addition, we further refined our research on each economy on Web of Science. Firstly, by classifying the articles on the economies per country, the findings are shown in figure x. And secondly, by refining the search by selected economy and keyword, as well as per country, these results are presented in Appendix 1.

	Blue	Circular	Collaborative	Digital	Feminist	Social
Blue	**1612**	286	213	210	111	276
Circular	286	**2814**	391	306	137	385
Collaborative	213	391	**2240**	443	165	322
Digital	210	306	443	**2191**	173	324
Feminist	111	137	165	173	**902**	185
Social	276	385	322	324	185	**2523**

Figure 2: Number of matching keywords between economies

Source: Marine Conservation Organisation

1. Blue Economy x Circular Economy

In this section we will discuss some links between the blue economy and the circular economy. The most straightforward interaction between these two economies is the so-called marine or blue circular economy. It is understood as the implementation of the circular economy in ocean areas (Ding et al., 2020) and aims to balance sustainable economic benefits with long-term ocean health and to achieve a shift from cleaner, recycling-based industrial production to sustainable marine development and management (Keen et. al., 2018).

Marine plastic pollution has been identified as a threat to marine life (Carson et al., 2011), food chains (Schröder et al., 2019) and therefore to the planetary boundary (Villarrubia-Gomez, Cornell and Fabres, 2017). Single-use plastics and insufficient recycling are the main drivers (Schröder et al., 2019). The circular economy aims to reduce the consumption of goods and therewith plastic waste wherefore it qualifies as a realistic way to address the marine plastic pollution (Mendenhall, 2018). The acknowledgement of marine plastic pollution as a threat and the need to tackle it with a circular economy approach has been mentioned more often by different governments all over the world in recent years (Schröder et al., 2019).

Source: Can ICT empower women?

2. Digital Economy x Feminist Economy

We will now discuss some aspects in which the feminist economy and the digital economy intersect. Specifically, we will talk about digital entrepreneurship. This form of entrepreneurship is aimed particularly at under-represented segments of the population. For instance, women that are often marginalized and/or discriminated against. Digital entrepreneurship is a way to overcome discrimination based on gender. Indeed, using the internet helps to overcome the lack of entrepreneurial resources and experience (Martinez Dy et al., 2018). Moreover, the anonymity of the internet benefits women by preventing all kinds of gender-related restrictions in obtaining information, disseminating knowledge, inserting one's own content and expressing one's own opinions (Sorgner et al., 2017). Such activity appears to offer an equalizing, even emancipatory, route to socio-economic integration. Furthermore, distance education offers new educational opportunities, regardless of gender.

Another area that enables women to better integrate into the economic world is online banking, which provides new and easy ways to transfer money and access loans. Suri and Jack (2017), for example, discussed the effects of using the M-PESA mobile banking service in Kenya. The results of their study show that women benefited more from the positive effects of this service (e.g. loan opportunities, exit from agriculture to the service sector, savings) than men.

Finally, communication via the internet helps women to gain greater self-confidence and strength, and to learn new role models (Sorgner et al., 2017). Here, we may think about the online #metoo movement which triggered women's empowerment in their labor relation.

Source: Blue Tips – Collaboration in the workplace

3. Collaborative Economy x Digital Economy

The following section will cover the interaction and importance between the digital economy and the collaborative economy which has been growing in recent years (Sutherland & Jarrahi, 2018). In their paper, Chen & Wang (2019) consider the sharing economy to be built on the digital economy. In the following section, multiple manners in which these two economies interact will be discussed.

Sharing has been around for a long time, however the digitalization of such is a recent phenomenon. Findings by Sutherland & Jarrahi (2018) show that digital technology is a critical element of the sharing economy, for instance in the form of online platforms such as Airbnb and Uber where people can offer their services and/or request a service. Some benefits that digitalization has brought to the collaborative economy has been generating flexibility amongst users, has made match-making between client and customers easier lowering transaction costs, has extended its reach in terms of population and underutilized assets, and has helped to build trust amongst users through the sharing of information (Sutherland & Jarrahi, 2018). Furthermore, the interaction between these two economies has given the collaborative economy a greater purpose that goes beyond sharing of underused assets, which is the power of the data created in the digital systems (Chen & Wang, 2019). Such data from sharing platforms can give access to user behavior and can be analyzed to determine how they create value for consumers and firms, which in the long run can be used to create more value for the stakeholders involved.

Here, we can see how the digital economy boosts the value created by the collaborative economy and how it can assist firms which in turn can create more value.

Source: Charlotte News – Repair Cafe

4. Circular Economy x Collaborative Economy

In this section we will discuss some of the links between the collaborative economy and the circular economy. Both economies aim to reduce the consumption of goods, promoting a reduction in their production, with the objective of creating a sustainable future. In both economies, the aim is to increase the value of goods by giving them a second life or by increasing the number of people benefiting from their consumption through sharing. However, the circular economy is an economy that encompasses much more than the reduction of consumption/production of goods, whereas the collaborative economy is seen only as a means to achieve the circular economy (Cohen and Muñoz, 2015). Although environmental protection is generally not the main purpose of sharing economy platforms, sometimes the latter can still achieve some of the objectives of the circular economy (Taranic et al., 2016). For example, people using platforms that allow for the sharing of accommodation when travelling, such as AirBnB, generate 61-89% less GHG emissions, consume 63%-78% less energy, 12-48% less water and avoid the creation of waste by 0-32% compared to people staying in hotels (Frenken, 2017).

Source: Urabanic Hub

5. Circular Economy x Social Economy

In this section we will discuss the linkages between the circular economy and the social economy. We conducted a key word interaction analysis which revealed *climate change, management, sustainable development,* and *urbanization* as the most common and relevant keyword interactions for these two economies. The core interaction is displayed by the concept of sustainable urban development. It addresses the increasing need for resources and urges for more sustainable approaches and resource management (Agudelo-Vero et al., 2011) and therefore includes the circular economy into the social economy.

Rapid urbanization and increasing living standards harm the natural environment in various ways, such as altering ecosystems, changing regional climates and destroying wildlife habits (Grüber, 1998). Urbanization is currently based on tremendous resource consumption and waste production that go far beyond natural limits (Agudelo-Vero et al., 2011) and the circular economy approach does not yet play a major role in urban development (Agudelo-Vero et al., 2011). To accomplish sustainable urban development, it is necessary to coordinate social economic development and the ecological environmental development (Fen et al., 2019) and an integration of resource management into urban planning (Agudelo-Vero et al., 2011).

Chapter 3:
Data & Methodology

Data and Methodology

1. Methodology

The research line of this paper concentrates on analyzing the proliferation of the six X-Economies chosen and intends to reveal multi-level dynamics, impacts and interactions on regional and country-level. In order to quantitatively analyze to what extent the chosen X-economies contribute to the evolution of a more resilient and sustainable world, each of the X-economies had to be addressed separately in the first step.

The individual study of each X-Economy established a holistic overview of the thematic areas included and provided a first framework for deciding on potential indicators. Based on the literature review and the individual study of each X-Economy, a set of indicators for the impact measurement of each economy was developed. On this basis, a quantitative data research on regional and country level was undertaken to find numerical answers to the research questions. It is important to mention that the first draft of the quantitative database for this research included every country within the Latin American, as well as European Region. While this framework was chosen to give an initial overview of data availability on each of the X-Economies, it had to be re-evaluated and accordingly adapted to the results of the research. On the basis of data availability, the countries that missed data on more than 30 indicators overall were excluded from the database to avoid distortions in the composition of the final index. The countries being analyzed and evaluated further were therefore reduced to the set of 16 Latin American countries and 33 countries in Europe, as can be retrieved from the table below.

Latin America		**Europe**			
Argentina	Honduras	Austria	France	Luxembourg	Slovenia
Bolivia	Mexico	Belgium	Germany	Malta	Spain
Brazil	Panama	Bulgaria	Greece	Netherlands	Sweden
Chile	Paraguay	Croatia	Hungary	Norway	Switzerland
Colombia	Peru	Cyprus	Iceland	Poland	Ukraine
Costa Rica	Uruguay	Czech Republic	Ireland	Portugal	United Kingdom
Ecuador	Venezuela	Denmark	Italy	Romania	
El Salvador		Estonia	Latvia	Serbia	
Guatemala		Finland	Lithuania	Slovakia	

Figure 3: Countries in the X Economy Index

In order to establish an integral analysis, the indicators were classified into four main categories: « Environment », « People », « Economy », and « Government ». This categorization allows to identify the current performance and prioritize policy targets within the stakeholder field.

Each of the broad categories covers important sub-dimensions to expand the comprehension of the dataset and each X-Economies. The set of indicators is divided into the following categorization:

Environment	Ecosystem protection	20%
	Waste and recycling	
	Material Footprint	
	Renewable energies	
People	Behavior	25%
	Creativity	
	Living	
	Education	
	Inclusion	
Economy	Employment	22%
	GDP	
	Innovation	
Government	Expenditure & Investments	16%
	Programs	
Publications	Interactions	17%
	Economies	

Figure 4: Categories and Weight in Index

Since the research question emphasizes the impact and interrelations among the six X-Economies, a selection of five interaction indicators was included in the categorization. The five interaction indicators were selected on the basis of the literature review, the details will be discussed in the further analysis (Section 1.2.7).

On the basis of these categories, the indicators chosen will be explained into detail in the following section.

Once the data set was constructed, the indicators were put in relation to each other by normalizing the data to a value between one and ten. In accordance with the standardization methodology, every value in the dataset was converted into a standard score, commonly referred to as z-score, to allow for comparability between the categories. The conversion into z-scores resulted in a score indication on country level for each indicator, enabling for a further comparative analysis of the scores. Commonly speaking, the process of applying data normalization means re-scaling the values to be able to compare "apples with apples". Concretely, in the context of this paper, having a normalized score for each country in each single indicator made it possible to analyze the detailed performance of a country in each single measure.

After normalizing the scores, it was then required to attribute the corresponding weighting to each X-Economy and category. First of all, after a meticulous evaluation of its relevance, according to the literature review/indicator and data research, each X-Economy was allocated a respective weighting in relation to the importance of other X-Economies. The relevance of interactions between the X-Economies was as well included in the weighting, as can be observed from the following weighting overview:

Blue	5%
Circular	20%
Collaborative	5%
Social	20%
Feminist	15%
Digital	20%
Interactions	15%
TOTAL	100%

Figure 5: Weight of each economy Index

As can be observed from the weighting overview, the largest weight was attributed to the Circular, Social and Digital economy, due to the authentic data availability and the state of the literature in regards to the evolution of these three X-Economies. It is as well important to point out that these three economies in accordance to the perception and evaluation by the authors are the ones with the greatest impact on "creating a more sustainable and resilient world".

Moreover, it was not only a prerequisite to consider the weighting of each X-Economy in the score, but as well to represent the relative importance of each category (Environment, People, Economy and Government) in the specific indicator. In other words, the score for each country was calculated by

normalizing the value to a score between 0 and 10 (with 10 being the best achievable score). This score was then multiplied for each country according to their "Economy weight", their "Category subweight" or both, when calculating the final score. The tailored weighting and subweighting on X-Economy perspective and on Category perspective allows a broad overview on the country´s performance, failures and potential. In order to comprehend the weighting, the following example will give a brief summary and how weights have been allocated:

Circular	Environment	Circular material use (Circularity rate)	1	12
		National recycling rate	5	
		Municipal Waste per year per capita in kg (EU 2018)	1	
		Ecological Footprint per person gha	5	
	People	Bought a remanufactured product	1	1
	Economy	Eco-industry revenue, in % of total revenue	1	4
		Number of patents related to recycling and secondary raw materials (2015)	1	
		Eco Innovation Index (2019)	1	
		% of circular jobs in employment of total employment (2017)	1	
	Government	Gross investment in tangible goods (percentage of gross domestic product) related to circular economy	1	1
	Publications	Number of Publications written - Web Of Science	2	2

Figure 6: Example of Weighting per Economy

As have already been presented in the previous weighting overview, the Circular Economy received a relative weight allocation of 20% in relation to the other X-Economies. Moreover, as can be observed from the Sub-weight column (on the right), each Category was attributed a relative weight from the overall 20% weightage. This sub-weight was then again distributed between the different set of sub indicators, in accordance with their relative importance.

The Appendix provides a detailed description of the methodological approach of calculating the Economy Scorecard, the Category Scorecard and the final Composite Index - the X-Economy Index Scorecard. Detailed information on the individually allocated weighting is as well displayed in the Appendix.

In order to assess the external validity of the final composite index, the introduced indicator was compared to recognized benchmark indices by running a Pearson-correlation with selected indicators such as the Environmental Performance Index (EPI), the Sustainable Development Index (SDI), the

Social Progress Index (SPI), the Sustainable Governance Index (SGI) and finally, the Global Green Economy Index (GGEI).

To ensure validity of the chosen benchmark indices in the following, each correlation index will be shortly presented. The EPI Index is a collaborative project of the Yale Center for Environmental Law & Policy and The Center for International Earth Science Information Network (CIESIN) at Columbia University's Earth Institute[1]. The EPI is produced in collaboration with the World Economic Forum. The SDI was created by the United Nations to update the Human Development Index in the framework of monitoring the development of the Sustainable Development Goals.[2] The SPI has been introduced by the nonprofit Social Progress Imperative and measures well-being of a society.[3] The SGI is a set of indicators that has been developed by the Bertelsmann Stiftung[4] and finally the GGEI which is published by Dual Citizen LLC, a private U.S.-based consultancy - the GGEI is the most widely recognized indicator in this dimension internationally.[5]

The introduced X-Economy Index correlates at the 1% significance level with all of our benchmark indices:

	EPI	SDI	SPI	SGI	GGEI
Correlation	76%	72%	76%	81%	61%

Figure 7: XEI External Validity

From these results it can be clearly stated that the gathered data can be considered as valid, thereby external validity can be confirmed for the composite indicator.

[1] Environmental Performance Index: EPI Team | Environmental Performance Index (yale.edu)

[2] Sustainable Development Index Sustainable Development Report - Sustainable Development Report (sdgindex.org)

[3] Social Progress Index: Social Progress Imperative

[4] Sustainable Governance Index: Sustainable Governance Indicators (SGI) (bertelsmann-stiftung.de)

[5] Global Green Economy Index: Global Green Economy Index (dualcitizeninc.com)

2. Selection of Indicators

Source: aceadventurer.com

BLUE ECONOMY SNAPSHOT

The Blue Economy has become the reference of an emerging X-Economy to understand trends and future opportunities in all activities related to our oceans and seas. Despite notable developments in measurement frameworks regarding fisheries and aquaculture, the Blue Economy is only marginally reflected in the composite Index, since a large amount of the countries analyzed do either not have access to ocean waters or there is no sufficient data available yet. Nevertheless, the main categories represented by the Blue Economy are Environment & Government. There are of course numerous other activities constituting the Blue Economy, the focus of this paper will though only include the three indicators explained below - thus, the chosen approach leaves enough opportunities for adjustments in further research.

The first indicator refers to temporal trends in the mean percentage of each important site for marine biodiversity that is covered by designated protected areas. Secondly, the “Degree of implementation of

international instruments aiming to combat illegal, unreported and unregulated fishing" indicator measures progress towards the SDG Goal Target 14.6: "*By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation*." (UN, SDG Framework).

In terms of the last indicator, as the definition already implies, the indicator is based on the IOC Criteria and Guidelines on Transfer of Marine Technology and refers back to the SDG Goal 14, Target 14.a. aiming to "increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries".

BLUE ECONOMY INDICATORS

Name	**Unit**	**Category**	**Source**
Coverage of protected areas in relation to marine areas (Exclusive Economic Zones)	Percentage	Environment	UN Economic Commission for Europe
Degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing	Score (Level of implementation: 1 lowest - 5 highest	Government	Food and Agriculture Organization of the UN
National ocean science expenditure as a share of total research and development funding	Percentage	Government	Global SDG Indicator Platform
Publications		Publications	Web of Science

Figure 8: Blue Economy Indicators

Source: projboldlife.com

CIRCULAR ECONOMY SNAPSHOT

The circular economy presents a huge potential for global economic growth and boosts the world's resilience and sustainability. Since the circular economy disrupts the traditional linear economic model, the goal is to design a circular model through renewability, reuse, repair, replacement, reduced material usage and so on. Therefore, a large part of the indicators in the circular set are part of the Environmental Category, but as well largely represent the Economy branch, since the countries' economies and businesses are challenged to redesign their supply chains, processes and product innovations. The indicators included address as well people's individual behavior towards "sustainability" to reflect citizen awareness, engagement and participation in the circular economy. Furthermore, the indicator examines the performance of states in transforming their countries toward circularity in terms of investment.

In order to examine the indicators and thereby assess a country's performance correctly, some detailed explanations of individual indicators are needed. To begin with, the circular material use (CMU), according to the European Commission, measures "the share of material recovered and fed back into the economy" (2018). A higher CMU rate therefore means a reduced environmental impact. Another indicator in the Environmental category, "Municipal Waste" is described as wasted collected and treated

by or for municipalities (OECD, 2020). The Ecological Footprint on the other hand, measures in a very broad sense how much nature do we have, and how much nature do we use. In other words, the Ecological Footprint measures the "ecological assets that a given population requires to produce the natural resources it consumes, and to absorb its waste, especially carbon emission" (Global Footprint Network).

One of the indicators, "Bought a remanufactured product" is the result of a survey conducted by the European commission in the 28 (2013) Member States of the European Union with an overall of 26,595 respondents, who were surveyed about their attitudes towards Waste Management and Resource Efficiency.

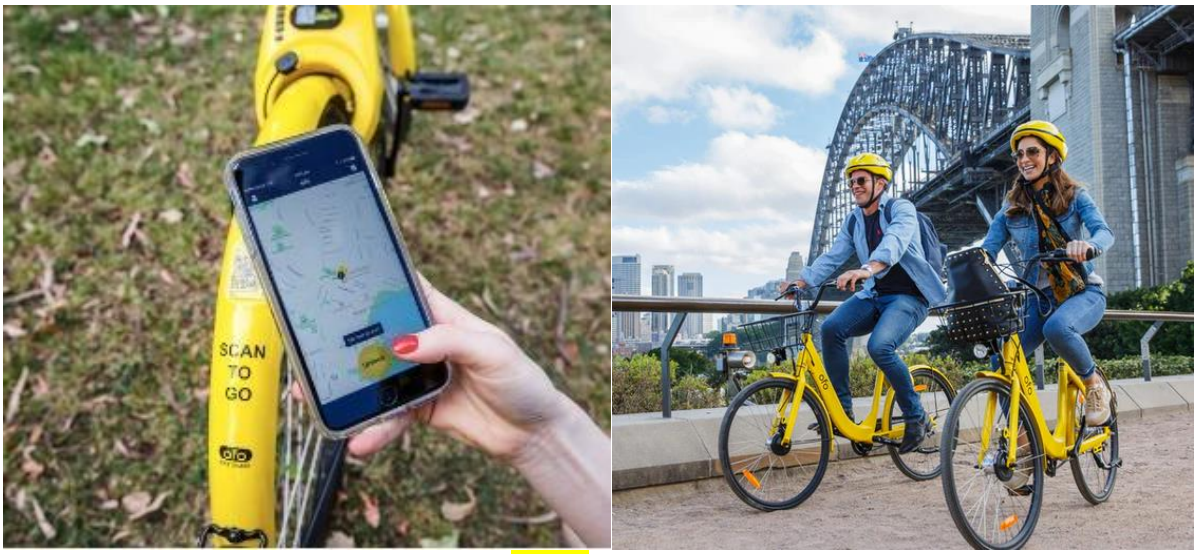
Finally, the last indicator to be explained is the Eco-Innovation Index. This composite Index captures different aspects of eco-innovation by including 16 indicators into five dimensions: eco-innovation inputs, eco-innovation activities, eco-innovation outputs, resource efficiency and socio-economic outcomes. Thereby, the Index illustrates how well individual states perform in these dimensions compared to the EU average. One downside of this index is as explained in the previous sentence, the Index only takes into account measurements of EU member states, and does therefore not provide data on the Latin American region needed for the research.

CIRCULAR ECONOMY INDICATORS

Name	Unit	Category	Source
Circular material use (Circularity rate)	Percentage	Environment	Eurostat
National recycling rate	Percentage	Environment	OECD
Municipal Waste	Per year/per capita/in kg	Environment	Politico
Ecological Footprint	gha/per capita	Environment	Footprintnetwork
Bought a remanufactured product	Percentage of participants	People	European Commission Survey
Eco-industry revenue	Percentage of total Revenue	Economy	UNU-Merit Plastics Circularity Index
Number of patents related to recycling and secondary raw materials	Absolute value	Economy	Eurostat

Eco Innovation Index	Score	Economy	Eurostat
Employment in Circular Economy	Percentage of National Employment	Economy	Eurostat
Gross investment in tangible goods	Percentage of GDP	Government	Eurostat
Publications		Publications	Web of Science

Figure 9: Circular Economy Indicators



Source: Another New Bike Sharing App in Sidney

COLLABORATIVE ECONOMY SNAPSHOT

For the collaborative indicators, it was decided to focus on different economic and governmental aspects of this economy. On the basis of a study about the economic development of the collaborative economy in Europe, it was possible to gather information on revenue, investment and employment in the economy. However, a lack of data for Latin American countries made it difficult to evaluate the collaborative economy's real impact and prominence in that region.

The number of online collaborative platforms, available for both regions, will however be displayed as the interaction indicator between collaborative and digital.

COLLABORATIVE ECONOMY INDICATORS

Name	Unit	Category	Source
Revenue of the Collaborative Economy	Percentage of GDP	Economy	EU Report[6]
Employment in Collaborative Economy	Percentage in National Employment	Economy	EU Report
Investment in Collaborative Economy	Million Euros	Government	EU Report
Publications		Publications	Web of Science

[6] Technopolis, Study to Monitor the Economic Development of the Collaborative Economy at sector level in the 28 EU Member States, 2018

Figure 10: Collaborative Economy Indicators

Source: The Future of Digital

DIGITAL ECONOMY SNAPSHOT

The main components of the digital economy are getting continuously more intertwined with the economy as a whole, since it encompasses core technologies, as well as technological infrastructure and the wide set of digitalizing sectors (UN, 2019). Measuring the digital economy and its spillover effects is complex, since outcomes vary from intangible services to quickly changing dynamics within the sector. Therefore, one way of understanding the set of indicators chosen for the digital economy, is a broad approach encompassing all the ways in which digital technologies impact the economy, institutions and citizens. This approach ranges from digital skills, over digital equipment/infrastructure, to the integration of digital technologies in business operations.

The digital economy is represented by only three out of the four main categories, since no sufficient data was found in terms of Environment, as for example the Digital Carbon Footprint. Since the lack of data did not allow to evaluate the environmental impact of the digital economy, it was decided to not draw any conclusions due to insufficiently developed indicators in this area.

As outlined in the other categories, it is important to distinguish several of the indicators for a better comprehension of the digital economy. To begin with, the diversification index is based on counting how many activities, out of a list of overall 12[7], have been realized at least once in the previous months.

[7] EU Open Data Portal: The 12 activities included in the index are: sending/receiving emails, information about goods and services, reading online newspapers/news, information on travel/accommodation services, posting

According to the Digital Agenda, the Diversification Index is computed at individual level for those individuals having used the internet in the last 3 months. On the other hand, the "Digital Skills" among the populations provides an indicator to what extent the population possesses sufficient digital skills within a country, ranging from 1 (no skills) to 7 (great extent). These digital skills include for example, computer skills, basic coding or digital reading. In terms of digital integration in the field of education, the Indicator "computers used for educational purposes", as the title indicates, gives insights into the number of students per computer at ISCED 1 Level. ISCED is the reference international classification of education programs, for which Level 1 refers to primary education, evaluating the integration of digital technologies at early stages of education. As will be seen in the further analysis this figure clearly presents large country differences, but takes only into consideration comparisons among EU countries. As well the results indicate that the number drops at higher ISCED levels.

In general, there is a huge availability of indicators for performance evaluation in terms of digital economy. Though, one of the indicators that has gained large recognition is the IMD World Digital Competitiveness Ranking. This ranking measures the capacity and readiness of 63 economies "to adopt and explore digital technologies as a key driver for economic transformation in business, government and wider society" (IMD, 2020). The IMD Ranking establishes clear trends and a detailed reflection on country level among criteria such as internet bandwidth speed, agility of companies and so on. A detailed description of the single indicators can be retrieved from the IMD World Digital Competitiveness Ranking 2020 Report.

Global eCommerce includes a wide range of multiple influencing factors such as, global logistics, shopper spending, shopping demand, cross-border operations etc. For the scope of this research, it was especially interesting to establish the connection between eCommerce and Individuals, to evaluate the dynamics and frequency of online shopping. The results are based on an annual survey by all EU member states and some non-EU countries (Iceland, Norway, Switzerland, Montenegro, North Macedonia, Serbia, Turkey, Kosovo and Bosnia and Herzegovina) with a total of 147,531 respondents.

Another important indicator is described as the Global Connectivity Index, which is assessed annually based on ICT investment, ICT maturity and digital economic performance. The GCI divides 79 nations into three clusters: Starters, Adopters and Frontrunners.

Finally, to evaluate the effectiveness in the delivery of public services, the e-Government Development Index incorporates data on dimensions that allow people to benefit from online services: "the adequacy of telecommunication infrastructure, the ability of human resources to promote and use ICTs, and the availability of online services and content." (UN, 2019) As a composite indicator, the e-Government

messages to social media, interaction with public authorities, internet banking, telephoning or video calls, selling goods or services, purchases of content (films,music,software,etc), purchase of goods, purchase of services.

Development Index measures the "readiness and capacity of national institutions to use ICTs to deliver public services" and is mainly directed and beneficial for policy makers, researches and representatives of civil society and the private sector to evaluate the status quo and derive potential actions of improvement.

DIGITAL ECONOMY INDICATORS

Name	Unit	Category	Source
Diversification index for the activities realised online by internet users	Absolute value	People	Digital Agenda EU
Digital skills set among populations (2019)	Score between 1 (no skills) - 7 (great extend of skills)	People	World Bank
Computers used for educational purposes ISCED level 1	Number of students per computer - desktop, computers, laptops, notebooks, tables	People	European Union Open Data Portal
Standard fixed broadband coverage/availability	as a percentage of households	People	Digital Agenda EU
Number of fixed Broadband subscriptions	number per 100 inhabitants	People	OECD
Individuals using the Internet	Percentage of population	People	World Bank
Digital Competitiveness Ranking	Score Ranking 0-100	Economy	IMD World Digital Competitiveness Ranking
eCommerce: Individuals ordering goods or services online	Percentage of individuals aged between 16 - 74	Economy	Eurostat
Global Connectivity Index	Score Ranking 0 - 120	Government	Huawei GCI 2019
E-Government Development Index (EGDI)	4 EGDI groups with 16 rating class breakdowns	Government	United Nations
Publications		Publications	Web of Science

Figure 11: Digital Economy Indicators

Source: Womens Equity Strategy

FEMINIST ECONOMY SNAPSHOT

For the feminist indicators, the choice of indicators was made using the five key components in the general definition of feminist economics. An indicator about well being can be found in the People's category, while differences in incomes and time spent on unpaid work are found in the economic category. In the government indicators, women in parliaments and legal frameworks to enforce gender equality scores are reported, the latter being based on 4 categories found in the SDG's: marriage, public life, violence, employment. Female participation to the GDP was also one of our chosen indicators, but had to be deleted considering the lack of data on this issue.

FEMINIST ECONOMY INDICATORS

Name	Unit	Category	Source
World Happiness Report	Score on 10	People	WHR
Percentage of women in managerial positions	Percentage	Economy	
Difference of time spent on unpaid work	Percentage difference between genders	Economy	OECD + CEPAL
Gender pay gap	Percentage difference between genders	Economy	UNDP

Percentage of seats held by women in national parliaments	Percentage	Government	SDGs
Legal Framework score to enforce gender equality in 4 areas	Score on 100	Government	SDGs
Publications		Publications	Web of Science

Figure 12: Feminist Economy Indicators

Source: Projects bring together Young & Old

SOCIAL ECONOMY SNAPSHOT

As pictured in the indicator selection, the social economy evolves all around the "People" Category at its center. Social economy refers to economic activities which are driven by values of solidarity and according to the OECD "driven by the primacy of people over capital, and democratic and participative governance". Both keywords "Government" as well as "People" are therefore the core of the social indicators which were selected for this X-Economy. Social economy is interlinked with the development approach and, for which it can be considered difficult selecting a set of indicators to measure the X-Economy, since there is no single measure of development that completely captures every dimension. Undoubtedly, the social economy is a concept which contributes significantly to a more sustainable world in dimensions such as environmental resilience (proportion of population with access to renewable electricity), socio-economic development & equality (Gini coefficient, growth rate of real GDP per capita, government spending on essential services), employment (unemployment rate), health (under-5 mortality rate) and many more. One indicator that might not specifically be self-explanatory within this set of indicators is the agricultural export subsidies indicator. This indicator forms part of the corresponding SDG indicators, specifically it is included in the second SDG goal "Zero Hunger" (Indicator 2.b.1). Respectively, this indicator attributes important weight to preventing trade restrictions and distortions in agricultural markets.

Due to the scope of this research and in order to reflect the spillover and interaction effects of social economy with the other X-Economies it has been considered important to highlight the most representative indicators of each category in this set of indicators for the social economy. Nonetheless,

as this research demonstrates, especially the social economy can be highlighted in further research by enforcing the inclusion of more dimensions, since it spreads from environmental impacts to socio-economic factors. This paper acknowledges the importance of this X-Economy in contributing to a more sustainable world and invites researchers to investigate the potential and plurality of its actors and impacts.

SOCIAL ECONOMY INDICATORS

Name	Unit	Category	Source
Proportion of population with access to (renewable) electricity	Percentage	Environment	UN Statistics
Proportion of population below international poverty line	Percentage	People	ILO
Under-5 mortality rate	Number of deaths per 1,000 live births	People	World Bank
Gini Coefficient	Percentage	People	World Bank
Annual growth rate of real GDP per capita	Percentage	Economy	World Bank
Unemployment rate, by sex, age, occupation and persons with disabilities	Percentage	Economy	World Bank
Proportion of total government spending on essential services, education	Percentage	Government	SDG Open Dataset
Agricultural export subsidies	Millions of US$	Government	SDG Open Dataset
Publications		Publications	Web of Science

Figure 13: Social Economy Indicators

INTERACTION SNAPSHOT

For the different interactions gathered from the literature, we decided to find one indicator per economy. These indicators were chosen by looking at the matching key words and the potential of the interactions. These indicators present the potential for sustainability that can arise from the interaction between two economies. Based on available data, we tried to gather relevant interactions indicators.

Feminist & Digital was an easy interaction, with the Women in Digital indicator. However, data about this wasn't available for Latin America. The other interactions were less straightforward, and a few indicators were proposed, but we had to limit our choice to the ones with available data.

For circular and social, we decided to focus on the percentage of energy produced in a country which is renewable. Affordable green housing within a country was another indicator we had in mind but was only available for a few of our countries of interest.

For blue and circular, we first thought about finding the percentage of fishing materials which are recycled but weren't able to find any convincing data. We therefore decided to focus on energy produced with hydropower.

For collaborative and digital, we took the number of available collaborative online platforms per country. Finally, our collaborative and circular indicator is the percentage of people that used or rented a product instead of buying it.

The publications indicator was computed for each interaction, with the keywords matching strategy used in our literature review.

INTERACTION INDICATORS

Name	Unit	Category	Source

Percentage of renewable energy in total energy production	Percentage	Environment	EIA
Hydroelectricity net generation by total electricity produced	Percentage	Environment	EIA
Number of collaborative platforms	Ratio per 1 million population	People	IDB publication for LA + EU report
Leased or rented a product instead of buying it	Percentage	People	European Commission Survey[8]
Employed ICT specialists by sex	Percentage	Economy	
Interaction Publications		Publications	Web of Science

Figure 14: Interactions Indicators

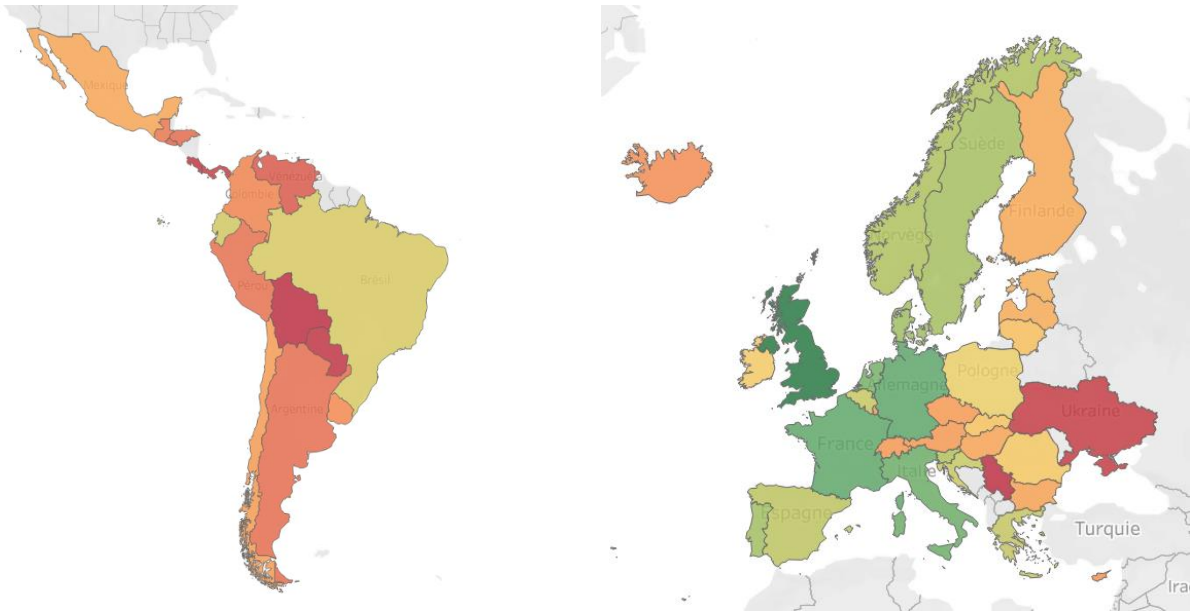
[8] carried out by TNS Political & Social network in the 28 Member States of the European Union on behalf of the European Commission, DG Environment

Chapter 4:
Results & Implications

Results & Implications

1. Score by Economy

Blue Economy



Blue economy is a holistic concept which encompasses all sector activities related to oceans, seas and coasts. While there exists some sort of successful consensus on European level, Latin America clearly underperforms marine-related activities. Logically, countries with no sea access perform badly in these dimensions. On the other hand, the “greenest”, best performing countries, can be characterized as those with largest sea access, with the exceptions of Ireland, Iceland, Argentina, and on medium level of performance as well Brazil. In this perspective it is important to point out that the first three countries mentioned perform badly in protected areas, since less than 4% of marine areas are protected. In terms of European geographical scope, all countries in Europe achieved a degree of 5 out of 10 of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing. Norway for instance invests relatively much in national ocean science, but still doesn't spend and protect sufficiently enough its marine area, which is reflected in the light green shade.

A positive general observation can be made at geographic level in Europe. The Blue Economy is embedded in the overall EU economy and UK. Especially the EU coastal zones will be severely affected by the consequences of climate change. Only with sustained collaborative efforts it will be possible to

confront the rising sea levels in Europe. Some examples that emerged as initiatives to mitigate the disastrous effects of sea-pollution are for example the Great Bubble Barrer, CLAIM or Clean Ocean Initiatives (European Commission, 2020).

The Great Bubble Barrier

This initiative is about a Dutch startup which developed an innovative bubble barrier to tackle the removal of plastics from rivers and canals. It is about a new technology which by air pumping redirects micro and macro debris to a point where it can be removed from. [9]

CLAIM

The "Cleaning Litter by Developing and Applying Innovative Methods in European Seas" is another initiative aiming at addressing plastics and micro-plastics pollution by using a inexpensive method which can harness sunlight to degrade micro-plastics. Other technologies within the project include filtration, a floating boom, a mobile pyrolyzer and a plastic debris monitoring service (European Commission, 2020).

The Clean Oceans Initiative

In 2018, the European Investment Bank together with the German development bank Kfw group and the Agence Française de Développement (AFD), committed to give out up to €2 billion for the period of 2018-2023 to both public and private sectors in funding projects which aim to reduce pollution in the oceans, with a special focus directed towards (micro)plastics.

Other notable examples of best practices in the context of Blue Economy can be considered Portugal and its first Satellite Account for the Sea, the improvements of water services in Bulgaria or as well the fund for seafront flood defense structures of the Netherlands. The largest performance increase of the Blue Economy during the last several years has been observed for the UK, the Netherlands and France (in terms of gross value added, gross investment, turnover, persons employed).

Finally, for a better overview of the different country efforts, the Blue Economy Report of the European Commission provides a summary of the member states participating in different sea basins. According to the Commission, a sea basin strategy can be defined as "an integrated framework to address common marine and maritime challenges faced by Member States in a sea basin or in one or more sub-sea basins.

[9] The complete description of the Great Bubble Barrier can be found in the Blue Economy Report of the European Commission (2020) on p.43 Box 3.2

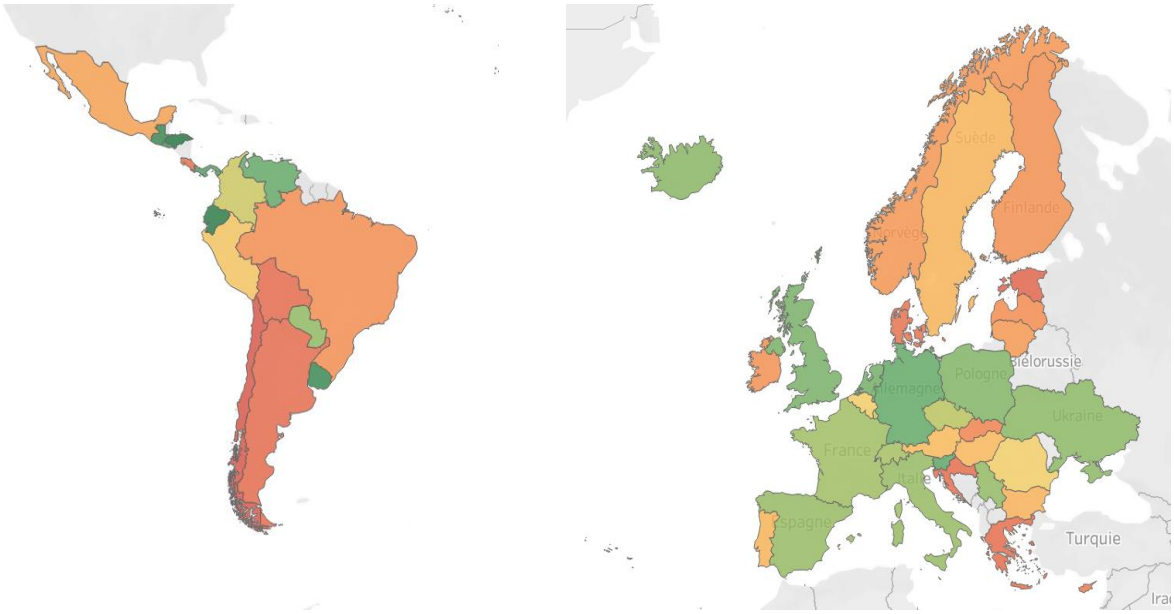
Sea basin strategies also promote cooperation and coordination in order to achieve economic, social and territorial cohesion" (2020, p.158)[10].

Member States participating in the different sea basins

Northern Waters			Mediterranean				Black Sea
Atlantic	North Sea	Baltic Sea	Mediterranean	West MED	East MED	Adriatic-Ionian	
Strategy	*Sea basin*	*Strategy*	*Sea basin*	*Strategy*	*Sea (sub)-basin*	*Strategy*	*Sea basin*
ES	BE	DE	CY	ES	CY	EL	BG
FR	DE	DK	EL	FR	EL	HR	RO
IE	NL	EE	ES	IT		IT	
PT	UK	FI	FR	MT		SI	
UK	DK	LT	HR	PT			
	SE	LV	IT				
	FR	PL	MT				
		SE	SI				

Source: Commission Services.

Circular Economy



As evident from the country map, the top performing countries of the Circular Economy are constituted mostly by European countries. The very bottom of the country map, in turn, is occupied by South America. It should be highlighted though that the Latin American region overall presents a lower ecological footprint per capita than the European countries as possibly expected. Surprisingly, northern countries underperform in the context of the Circular Economy, which may be due to lower recycling

[10] Source: European Commission. (2020). Blue Economy Report 2020. Publications Office of the European Union. Luxembourg.

rates and especially high ecological footprints. In the geographical scope of Europe, Germany can be considered as “best performer” in this region. Overall, the Circular Economy has gained particular attention over the last few years, especially throughout countries in Europe. Several member states have foreseen the growing importance of building a future-oriented green agenda and are actively taking efforts in defining measures to become climate-neutral, resource-efficient and sustainably competitive. Germany for instance has developed a Circular Economy Roadmap for Germany or Spain where has been defined a strategy plan “Circular Spain 2030”. Whereas some European countries address a national framework, other countries such as the UK, the Netherlands, Belgium, France, Portugal, Finland and Slovenia only developed local and regional strategies.

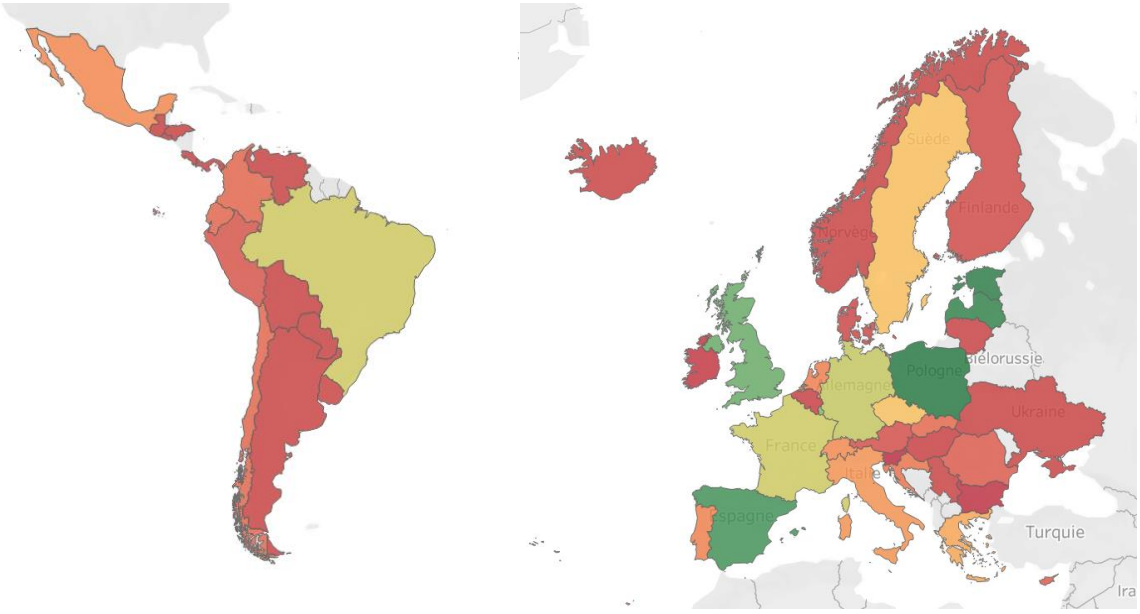
It should be noted that, the highest scores are located in Latin America and the Latin American average of our Index in the context of Circular Economy is only one point lower than in Europe - this is due to the fact that countries Ecuador, El Salvador, Guatemala or Honduras are lacking many indicators in the index but overperform in the ecological footprint, with especially low scores between 1.3-2. Since data was not available for several indicators, their Circular score is based almost entirely on their ecological footprint. Another observation can be drawn from the Index and the country map: Interestingly, countries with a high population overall do not perform well.

Considering the specific factors, it can evidently conclude that there is a clear circularity gap between the Latin American and European regions. This argumentation can be supported by the low average score of publications on the topic of Circularity published in Latin America compared to Europe. In general, countries with the highest scores in Circular Economy - German, the UK and France have implemented sound recycling systems and large innovation investments in sectors related to the Circular Economy. Ironically, it should not be taken for granted, that the greenest countries of Europe are really the best performing in circularity. In this perspective it should be considered that the countries with the best recycling systems, innovation ratios and financial funds are those which perform worst on waste levels. Western and Northern European countries rank thereby fairly high in waste creation. Their significant Ecological Footprint and low scores in Waste Management are partly explanations why, despite meticulously elaborated Action Plans in the region, their scores are dragged into the light green shades.

On the other hand, Latin America, rich in natural resources, biodiversity and social innovation, still hasn't achieved significant steps towards a regenerative Circular Economy. According to the Ellen MacArthur Foundation, Latin America requires a multi-stakeholder approach to bring the region to scale. The Foundation is convinced that Latin America could greatly benefit from a circular development path. The significant lack of statistical data prevents policymakers and other stakeholders in these

countries to prepare adequately for the shift towards circularity. [11] Especially in regards to the Circular Economy, there exists no one-size-fits-all, the different degree of transition in each single country has to be taken into consideration when defining Circular Agendas for a resource-intensive but resilient economy.

Collaborative Economy



For the results evaluation of the collaborative economy it has to be pointed out that the aggregated picture may be biased for Latin America due to the lack of sufficient data availability on for example revenue/investment and employment profiles. For countries within the Latin American region as well as for Iceland and Serbia, the collaborative economy scores are entirely based on the number of publications written. Due to this identification, Brazil seemingly achieved an overall higher score than the Latin American average. The overall ranking of the countries will present a better performance when evaluating the Interactions, since the indicator referred to the number of online platforms in the interaction is extremely relevant for the collaborative economy. In this country map, the well-performing countries in the collaborative economy are mostly driven by their publications scores.

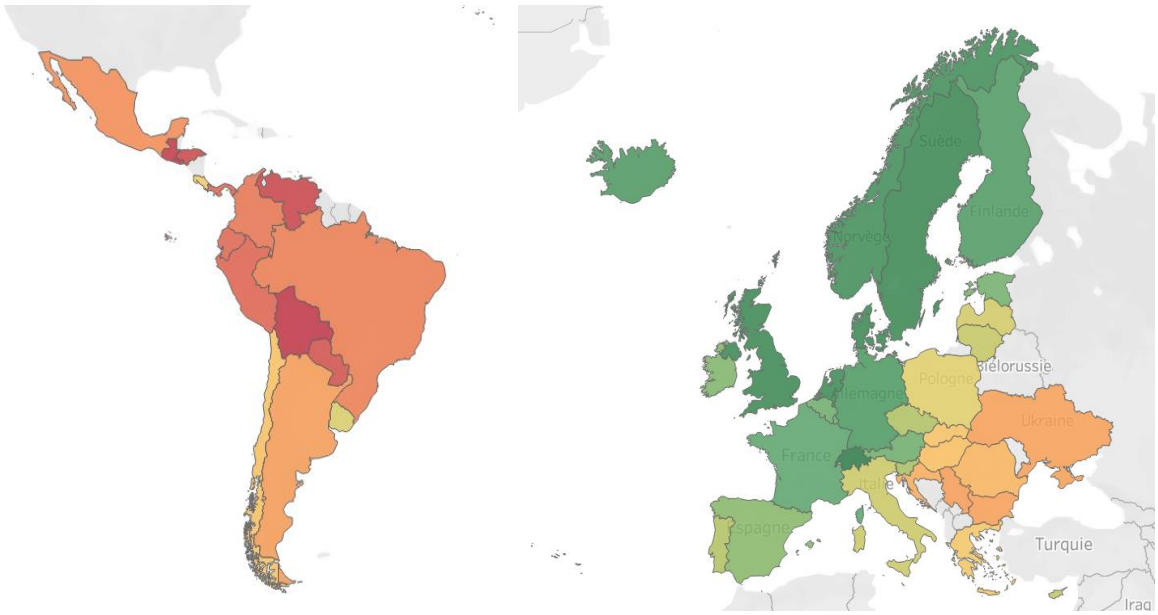
Generally, it should be remembered that the impact measurement in the scope of this research paper is only based on four indicators and three categories (Economy, Government, Publications).

The country maps and the data analysis show a high activity of collaborative economy in France, UK, Germany, Spain and Poland but rather modest level of activities in Italy and Northern Europe. Total

[11] Ellen MacArthur Foundation: Circular economy in Latin America (ellenmacarthurfoundation.org)

collaborative market revenues in EU member states have been highest for France (score: 6.9), the UK (4.7) and Poland (10). EU member states that outperformed in terms of % of collaborative economy jobs in national employment above the EU average in 2016 were Estonia, Luxembourg, Latvia and Poland. In particular, in the European context Ireland as well as Iceland scored low, both due to low Investment in collaborative platforms.

Digital Economy



Throughout the last years, Latin America has been undergoing processes of growth and catch-up. According to the CEPAL, as part of the development of this region, it will be critical that these countries address the challenge "of articulating and consolidating their digital economy" (CEPAL, 2013, p.8). The extremely low score of 2.71 for the Latin American regions stresses the urgency and need for designing new strategies to maximize the impact of the digital economy and foster innovation, social inclusion and structural change. The difference between the Digital economy average of Latin America and Europe represents the biggest difference compared with other economies: Europe 5.93 - Latin America 2.71.

The digital competitiveness ranking together with the global connectivity index comprises very high scores in northern countries in particular. On an individual economy basis, especially high growth rates have been observed during 2010 and 2017. The top 10 countries in 2019 with most growth in the share of the ICT sector´s value added in GDP include Cyprus on second place, Iceland (3rd), Ireland (5th), Serbia (6th), Poland (7th) and Germany (10th).

As can be observed, the geography of the digital economy is mainly concentrated in Europe, although it has to be pointed out that on the worldwide scope, which for this research has not been in the focus,

the best performing countries are undoubtedly China and the United States. The Latin American region´s market capitalization value of the world´s 70 largest digital platforms only accounts for 0.2%, which beyond many factors explains the low score of the digital economy in that region (C, 2019). Although, the growth rate of the population using the Internet increased on an annual rate of 15% in the region, it is expected that by 2025, the share of 5G is only expected to reach 8% in Latin America - Europe on the other hand is considered to becoming one of the global leaders in 5G adoption (CEPAL, 2019).

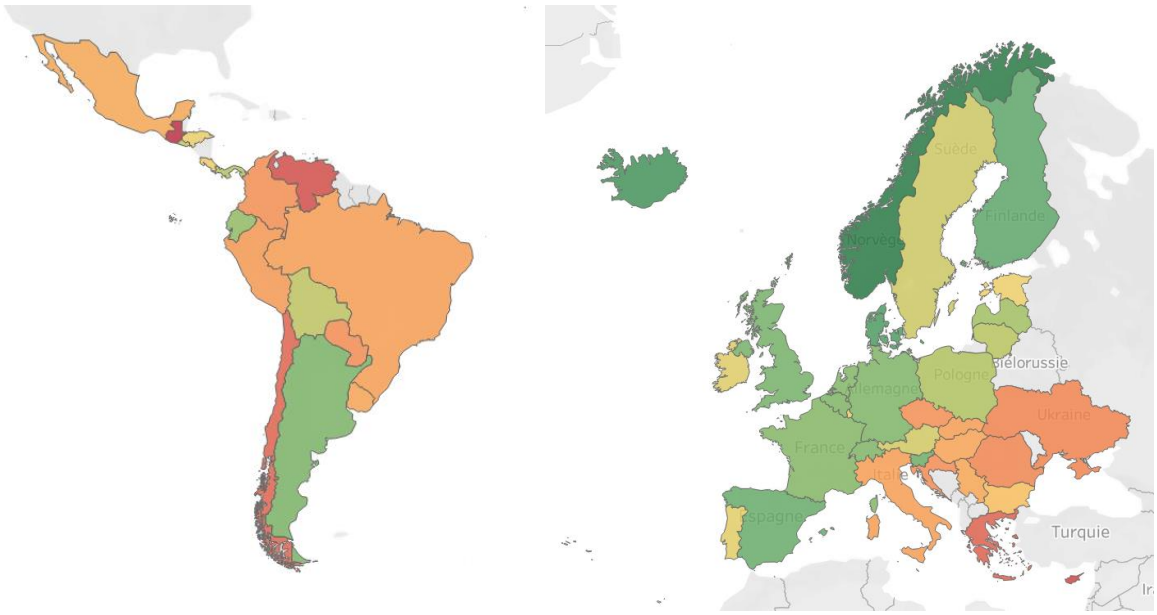
While the EU's digital economy has become increasingly adopted in the member states agendas, Latin America is still lagging behind, not only in terms of internet adoption but moreover in the measurement of data and ICTs. The region must therefore improve its statistical capacity to identify measures required to improve the impact of the new digital era and adequately prepare policymakers for challenges inherent to the digital economy. Regional initiatives that have boosted efficiency of implemented measures were for example the digital scoreboard of the EU which measures the performance of the member states in a range of different dimensions, from connectivity over digital skills and public services (UN, 2019). In addition, the EU has developed a holistic digital index, the Digital Economy and Society Index and its corresponding monitoring framework.

In the context of Latin America, one notable measure that has been introduced by the Development Bank of Latin America was the Observatory of the Digital Ecosystem in Latin America and the Caribbean. These frameworks are key to complement the digital ecosystem within these regions. Generally, the countries with the least amount of statistical data and information on digital economy are those who perform especially weak on the country map - Hence, governments need to make substantial progress in investing in impact measurement initiatives. In Latin America, access to financial resources directed to digital entrepreneurship is particularly limited in this region, however, the flow of venture capital funds to Latin America have doubled in 2018 (UN, 2019). Noticeably, the Latin American region has demonstrated great potential and strong dynamism during the recent years and consolidated several innovation and entrepreneurship hubs. Leading start-up incubators, which have been vital in fostering this ecosystem can be found in Buenos Aires, Bogotá, México City, Lima, Santiago de Chile and São Paulo (UN, 2019).

Additionally, there has been a significant rise of so-called “Tecnolatinas”. The newest report of the Inter-American Development Bank recognizes the speed and scope of the transforming digital business landscape within the Latin American region. Tecnolatinas refer to technology-based private companies which have emerged and “were born” in Latin America. The flourishing tecnolatinas that have emerged in that particular geographical context are spreading into sectors like “biotechnology, digital medicine, renewable energy, software security, space tech, fintech and agtech” (IDB, 2017, p.4). Brazil and Argentina are front-runners in the ecosystem. Overall, more than 5000 tecnolatinas have been identified with an ecosystem value of about US$37.7b.

As can be identified, there is a lot of movement and a strong dynamism of the digital economy within both regions. Europe has been able to identify crucial steps in adapting to the speed of the digital economy. Latin America for instance demonstrates an impressive potential but is still struggling to coordinate adequate forces of the government, private sector, entrepreneurs and other actors to catch-up and foster their development.

Feminist Economy



In terms of feminist economy indicators, some countries stand out in their performances.

In Latin America, Argentina is scoring very well, with a higher score than France. They even achieve equal scores as Norway in some indicators, such as the percentage of seats occupied by women in national parliaments. In their study about Women's Activism in Latin America and the Caribbean, Maier and Lebon (2010) outline the positive changes that occurred in the region in the last fifty years.

With the emergence of the feminist movement, women started striving for equality and better living conditions. They also analyze the increasing public policies and the political involvement of women in governments. As can be seen in Argentina's indicators, those areas have had great improvements. The country has an overall good performance in gender equality, and also shows some special interest for Feminist Economics. Concerning the number of publications written about this X economy, Argentina is the best Latin American country. They even have a collective organization, called "La Economia Femini(s)ta", whose aim is to denounce gender inequality on the basis of statistics and academic reports.

However, the country still needs to address important problems, such as a very high rate of femicides, and an important devotion to their family and gender role conformance (Harper, 2017). This is reflected

partly in the high difference in time spent on unpaid labor: Argentinian women spend on average 60% more time than their partners on care or housework.

In Europe, Norway is the best scorer. In 2002, they introduced the Norwegian Gender Equality Act, which aimed to promote equality and reduce discrimination in the country. With 41% of seats occupied by women in their parliament, the smallest gender pay gap, and the happiest population in the World Happiness report, they indeed accomplished impressive steps towards gender equality.

Some countries could definitely learn from Argentina's and Norway's positive achievements. Guatemala, Cyprus and Greece are the worst performers, with scores as low as 2.

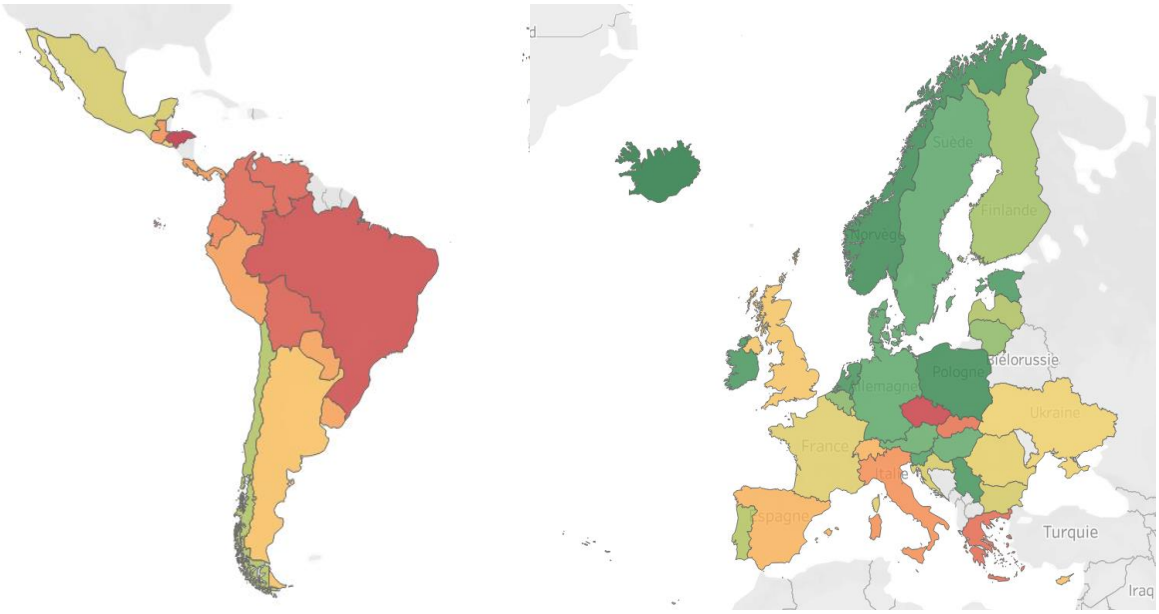
Cyprus and Greece are ranked very badly in the EU's Gender Equality Index, Cyprus being 21st and Greece 27th on 27th. They perform especially badly in terms of access to power. Cyprus has 16% of women in managerial positions, while Greece has less than a fifth of its parliament's seats occupied by women. Greek women spend 64% more time on unpaid work, and the gender pay gap is as high as 34%. People are less happy there than the European average, therefore not contributing to a society focused on well-being.

Good initiatives that can be underlined for gender equality are arising around the globe. Gender Budgeting, for example, is a strategy of collecting and allocating public resources in a way that it participates to gender equality. An interesting indicator that we couldn't include because of lack of data, was the female contribution to GDP. Most countries don't collect these statistics, even though it can be very interesting to acquire better knowledge and therefore implement better policies. We know for example that the average contribution of Women to GDP in Latin America is 8% lower than the average for eastern Europe, with respective shares of 33% and 41% (Statista).

Feminist Economics present a great potential for sustainability. UN Women presents key factors in which gender equality has to be reached in order to achieve sustainable development. Empowering women and closing gender pay gaps are the main aims, but other things such as the accounting of unpaid work in GDP can also be of importance. In fact, UNwomen state that "It is estimated that if women's unpaid work were assigned a monetary value, it would constitute between 10 per cent and 39 per cent of GDP" In his article about Unpaid Work and the Governance of GDP Measurement, Daniel e Rock explains that "since unpaid labor is disproportionately carried out by women, failing to measure it introduces a gender bias into economic data"[12].

[12] https://www.e-ir.info/2019/01/11/unpaid-work-and-the-governance-of-gdp-measurement/

Social Economy



Given the complexity of dimensions included in the Social economy, the geographic panorama results appear to be more diversified. At first sight, Czech Republic, Brazil and Bolivia seemingly constitute the worst performers. Additionally, compared to the Latin American average, Chile performs really well due to relatively low poverty, under 5 mortality rates and unemployment rates.

Considering a more detailed perspective, the Czech Republic performs relatively well in terms of the categories, Environment and People. Despite achieving good scores in these categories, the country scores particularly low in terms of government expenditures related to Social economy activities. Interestingly, the Czech Republic only spends 9% of government spending on social services, compared to 14% in Austria for example.

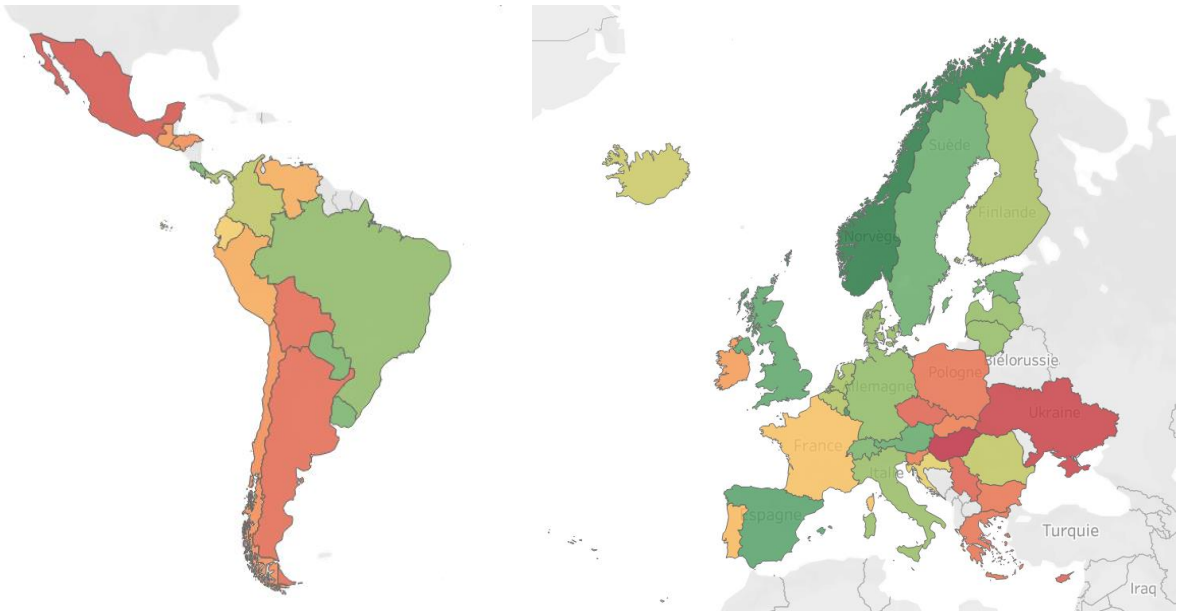
One of the main challenges in the European context has to do with the struggle against social and labor-market exclusion according to the European Commission (2008). Generally, the social economy reveals great potential for "activating endogenous development in rural areas" (p.89) which is especially important in the context of Latin America, since social exclusion is the main driver of bad performance in these dimensions.

Critical advancements are needed not only in the level of activities but firstly in the development of active social policies. Without an established policy framework to encourage inclusion, investments in social pillars, education, training, the creation of labor market opportunities and improvement of living standards, concrete actions will not follow. One EU institution that has been a crucial institutional body to reenforce structural changes in regards with the social economy was the European Economic and Social Committee (CIRIEC, n/a).

By looking on the geographic map, it can be clearly observed that neither Europe nor Latin America are homogeneous in the context of the Social economy. This identification highlights the difficulty to establish cooperatives and bridge the gap not only between Europe and Latin America but also within the regions. Social imbalances are large primarily in countries like Honduras or Brazil. Institutional voids, informal economy and the absence of social protection constitute serious problems within Latin America. High unemployment rates, poor education quality, high inequality, high mortality rates and human rights violations will not be solved within a proximate time frame for which social development will continue to be essentially hampered in the near future. According to the European Economic and Social Committee, the presence of European states has been decreasing in Latin America and measures towards the Social economy in that region have been shortened. One assumption in which the authors of this research primarily agree with is the consideration of the Committee that "International cooperation must not simply have the objective of transplanting a particular social model, but rather it should promote a form of development based on existing favorable conditions" (2012).

The Social economy has undeniably vast potential to achieve social stability, social resilience, sustainable economic growth and the closure of the poverty trap but will remain one of the greatest challenges to overcome for policymakers. Therefore, it is indispensable that governments seek to address these elements to reduce social marginalities and inherently work out policies directed towards a more equal and sustainable world.

Interactions



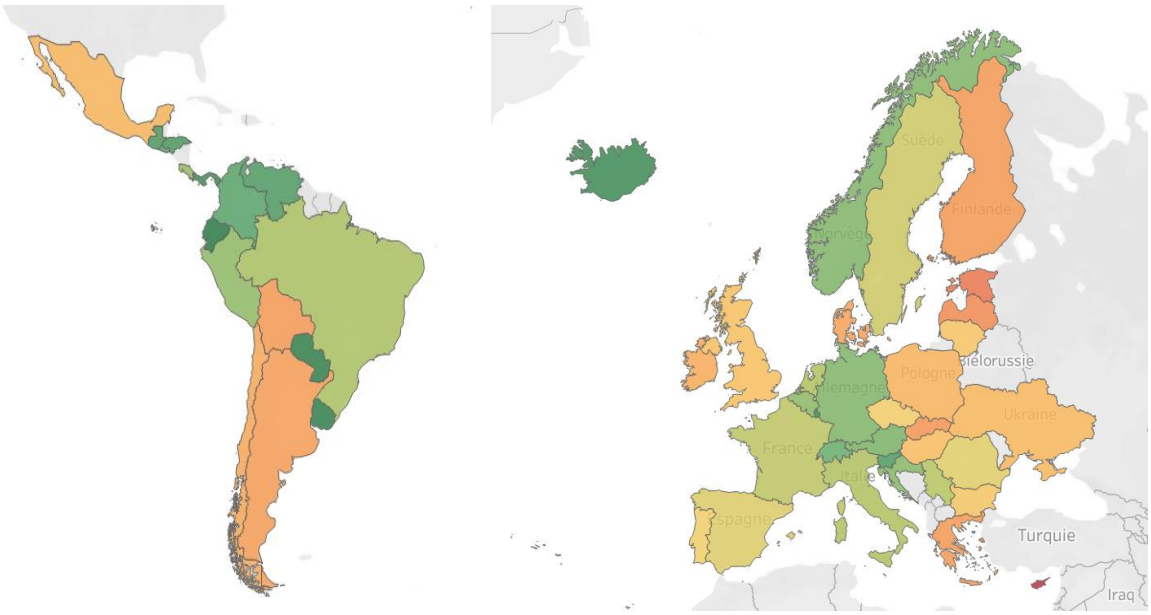
As previously outlined, one important indicator of the Interactions is the number of collaborative platforms and publications written, based on the keywords matching analysis and which account for

large weight. In terms of publication, Germany, Italy, Spain and the UK present the highest score in publications, as well as Brazil in the Latin American region. With regards to collaborative platforms, Estonia accounts for the highest score, with a ratio of 22 platforms per 100,000 inhabitants.

The “women in ICT” indicator and the number of people who bought or rented a product instead of buying it couldn’t be computed for Latin America. Finally, the last two indicators show that a lot of Latin American countries are increasingly relying on renewable sources of energy, scoring especially high in hydroelectricity in comparison to Europe.

2. Score by category

Environment

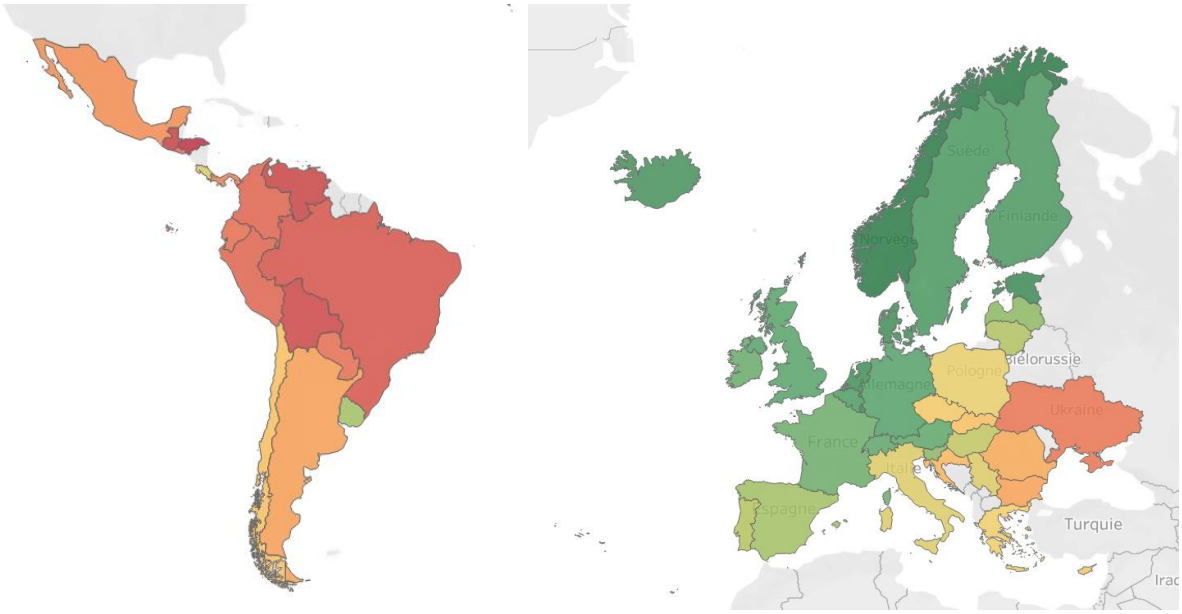


The first category of our index, accounting for ⅕ of its total weight, concerns the environmental indicators. Latin American countries are scoring surprisingly well, but this is mostly due to their low ecological print per capita and the percentage of renewable energy used in total energy production. The environmental category is a bit biased for Latin America considering that most indicators are circular economy indicators which weren’t available for the region.

The worst performing country is Cyprus, which produces 640kg of waste per capita per year. Cyprus' circular economy score was one of the lowest in Europe. Hydroelectricity isn’t used to produce electricity in the country and 90% of the total energy produced comes from nonrenewable sources.

Finland and the United Kingdom show a worse performance than usual. Finland indeed has a high ecological footprint per capita, and a really low circularity rate. The United Kingdom, on the other hand, performs well in those two indicators but has low levels of renewable electricity.

People

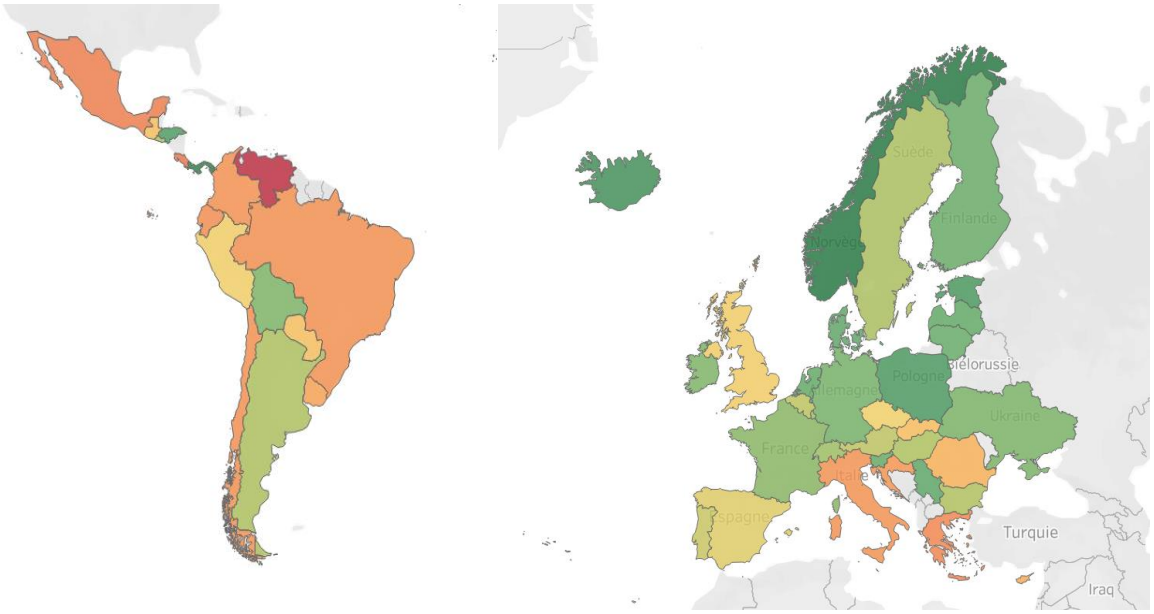


In the People category, scores are as diverse as the subcategories included, such as inclusion, creativity, equality and behavior. In the Latin American context, most countries in the northern part are red. Uruguay, however, seems to often be the exception in this regional context. As opposed to its northern neighbors, Uruguay has a low Gini coefficient, the lowest level of under 5 mortality rate, and a proportion of population under the poverty line almost non-existent (0.1). They also perform really well in terms of digital indicators, creativity or inclusively speaking. Uruguay has the highest ratio of collaborative platforms per million population, even performing better than most European countries.

However, Central and Northern European countries definitely remain the front runners in this category. Those countries have happier people, less poverty, less mortality, and put more emphasis on the development of their digital skills and access to the internet. The number of collaborative platforms has the greatest importance in this category, which explains why Estonia gets such a high score. As seen before, Estonia has a ratio of 22 platforms per million population, tenfold the average of all countries.

Because the subcategories are very diverse, this category can't be looked at as a whole to make policy decisions. Even though we see a clear smaller score on average for Latin American and Southeastern European countries, some do manage to perform better in some parts, and any decision should therefore be taken by looking at the different indicators.

Economy

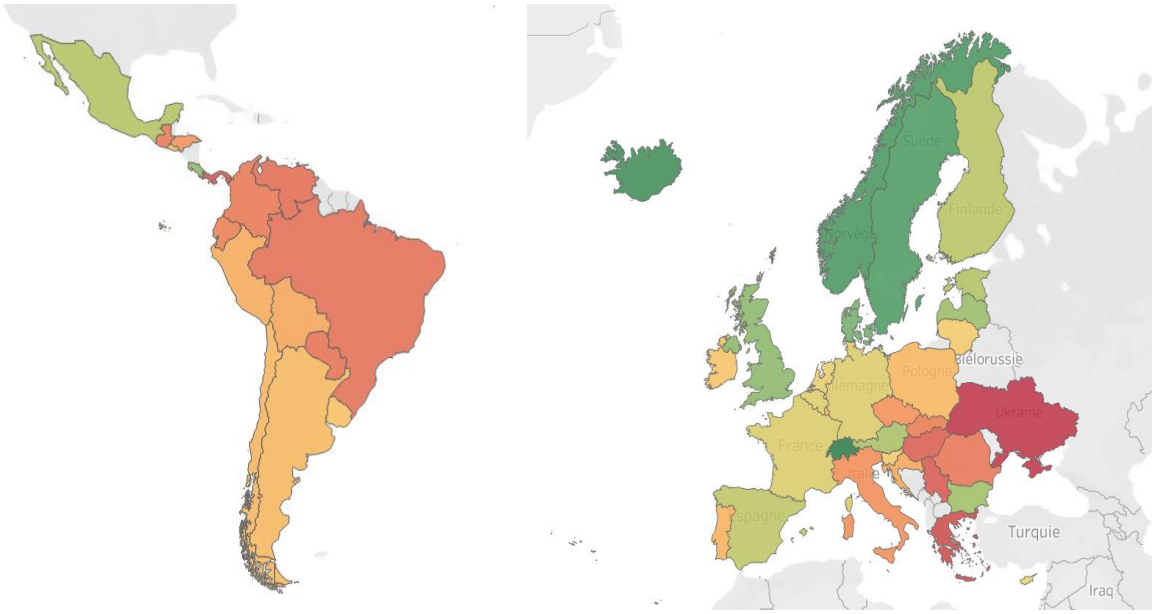


In the context of the economic category, we directly observe a very diverse panorama. Europe as a whole is performing quite well, with the exception of Italy, Croatia, and Greece, which get the same scores as the Latin American average. These countries tend to have larger gender pay gaps, with more defined gender roles, less people employed in the X economies' different sectors, and less innovation.

In Latin America, Argentina is performing well, driven mostly by their good scores in feminist economy indicators. Panama, Honduras and Bolivia, have the highest results and show very low unemployment rates and good annual growth rates. However, a lot of data is lacking for those economies, probably driving their scores up.

Venezuela is the worst performer. It is the country with the most missing values, but there are 4 indicators available, which were all important composites of our Index. Their negative annual growth rate of GDP per capita, the high gender pay gap and unemployment, and the low ranking in the Digital Competitiveness Score don't allow this country to get a higher score than 1.41.

Government

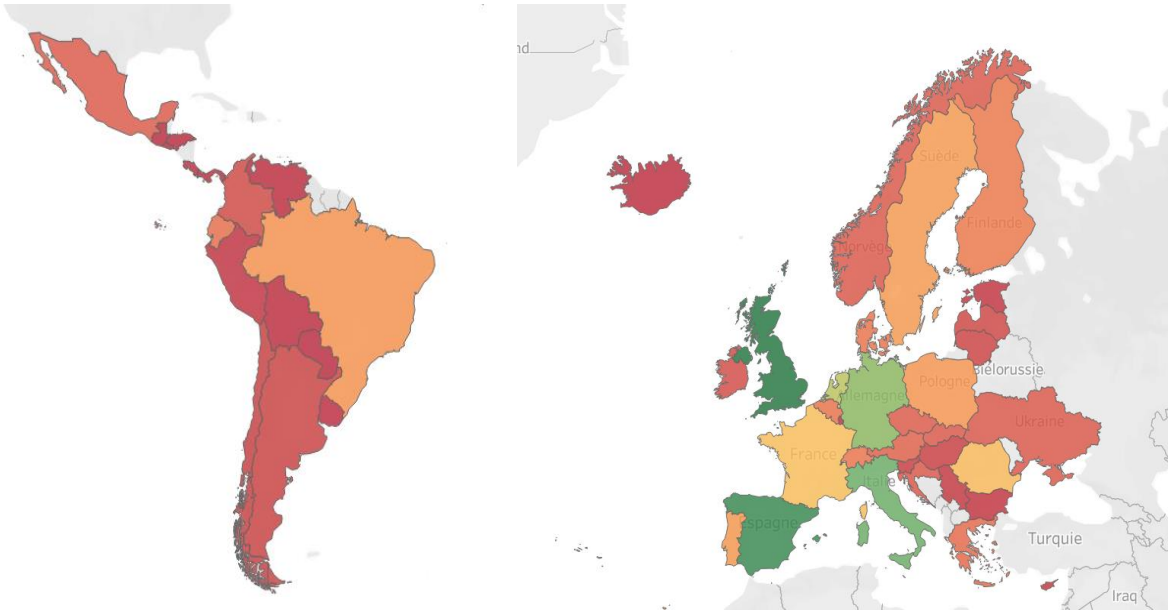


The government category scheme confirms the other categories. Latin American countries perform the same as South Eastern Europe. In Europe, northern countries are greener.

The worst performers are however located in Europe, with Greece and Ukraine. These governments have a lower proportion of their spending allocated to social services, and invest less in the economies studied in this report.

The Latin American panorama is impacted by governance and institutional voids. As a general trend in Latin America it can be observed that governments spend fewer resources on welfare and social protection. According to the OECD (2018), despite scoring low on our country map in this category, Brazil constitutes for the largest expenditures in social benefits, reaching 31.3% of total expenditures, compared to the Latin American average of 24.6%.

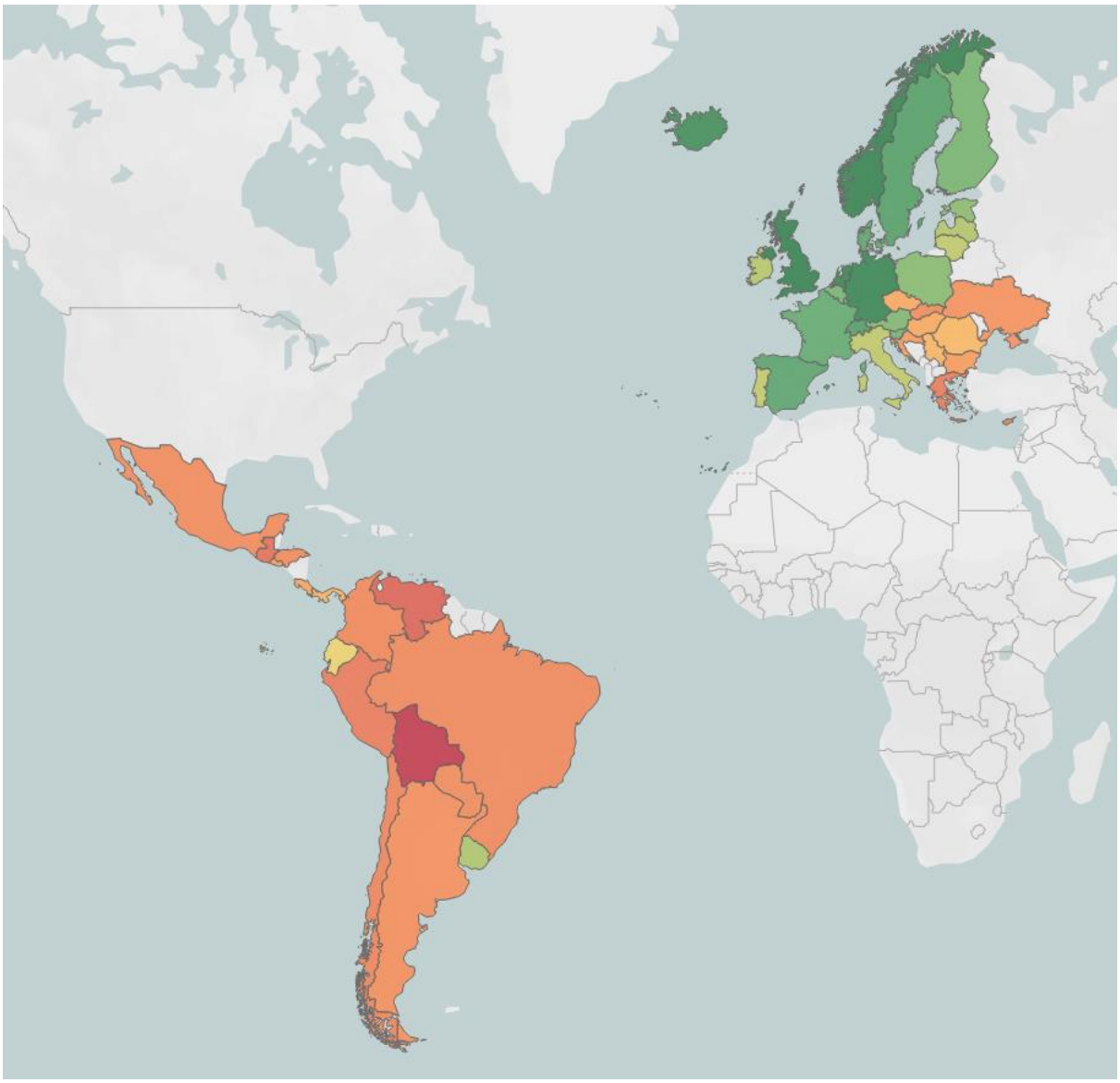
Publications



In terms of publications, it is not surprising to notice that Brazil is the only moderately well performing country in Latin America, considering that they have the highest number of universities (201). The most publishing countries in Europe are all ranked in the top 20 countries publishing the most scholarly articles in the world. The United Kingdom (#3), Spain (#12), Italy (#7) and Germany (#5) are all. Two interesting countries however are France and Denmark. France, on the one hand, is ranked very well (#8) but publishing way less about the different economies and interaction studied in our index. Denmark, on the other hand, is ranked 25th, but manages to get in the top 5 in our index, proving that the country shows great interest in those alternative and new X economies.[13]

[13] https://www.scimagojr.com/countryrank.php?year=2019 International Science Ranking

3. Overall Score



As evident from the previously discussed economy and category dimensions of the X-Economies Index, the top countries can be found on the geographical scope of Europe, with best performers being countries like Germany, the UK, the Netherlands as well as the Northern European countries scoring especially high in the Social and Digital Economy. The very bottom of the scorecard, in turn, is occupied by the majority of Latin American countries, with Uruguay performing exceptionally well in comparison to its neighbors. It should be remembered that the greenest countries with scores close to "10" in the different pillars of the index do not indicate impeccable performance but rather accentuate an exceptional status quo and potential in this respect relative to other countries.

Overall, despite losing several scores due to the amount of publications, countries like Norway and Iceland are ranked at the top of the Index in each of the four categories. The UK on the other hand scores

relatively low in the environment category but achieved an overall high score, thanks to its exceptional high score in the number of publications.

4. Implications and Recommendations

The proliferation of the new economies in recent years is a direct response to the greatest challenges of the 21st century. As Earth is reaching the limits of the planetary boundaries, the global community struggles with achieving its Sustainable Development Goals, particularly concerning climate action. While the X-economies studied throughout this report are very diverse concepts aiming at different economic spheres, they still share a similar goal: building a pathway towards a more resilient and sustainable world.

This research paper presents an overview of six X-economies and their interactions in different parts of the world. The results of this report can be used versatile by entrepreneurs as well as governments and policymakers to identify the greatest sustainability challenges and possible solutions. Businesses, and in particular social businesses, can benefit from our framework by identifying the weak spots (in terms of sustainability) of the current economic order of a country and act on them accordingly. Similarly, businesses would be able to compare their home country with countries with better scores and similar characteristics to identify new sustainable business opportunities or initiatives that have proven successful in the past.

The implications of this report are particularly of interest for governments and policymakers as it can spark increased collaboration across countries. First of all, the results of our index can be used by the authorities in Latin America and Europe to determine their current standing concerning the different X-economies and analyze how they can improve to become more sustainable. Secondly, as countries identify their strengths and weaknesses and those of other countries, governments will be able to collaborate more easily to adopt projects or initiatives that have been successful before. Third, as the policymakers learn about the new economies, their interactions, and how to improve their new economy index score, they will be able to implement the policies necessary to reach a more sustainable and resilient world.

In order to facilitate the collaboration and learning process across countries, we recommend the establishment of a digital new economy platform, in which not only the results of our research paper are presented but with more detailed information about existing policies, ongoing projects, or thriving businesses in the field of new economies in each country. Such a platform would enable regions to learn

from each other and form partnerships in combating the social, ecological, and economic challenges of this century.

5. Limitations and Potential for Future Research

We acknowledge that our findings and their interpretation are heavily influenced by our assumptions and the data analyzed throughout this report and that further research is needed to capture the relation between the new economies and society across the globe. This research paper can, thus, serve as a framework for future research on the development of new economies.

The limitations we encountered can be divided into four major categories: (1) The set of new economies and the countries scrutinized, (2) the choice of indicators used to measure the development of the economies, (3) the availability of measurable data necessary to evaluate the new economies, (4) the dimensions chosen to categorize our indicators, and (5) the weighting we decided to give to each indicator, category, and new economy.

First, it could be argued that the analysis of six new economies and their interactions is insufficient to illustrate the complexity of the emerging X-economies and their contribution to a more sustainable and resilient economy. While we tried to identify the most material topics to capture the landscape of new economies, there are still many dimensions and interconnections that could be included in subsequent research, such as the impact of green economy or youth economy. Furthermore, the scope of this paper is limited to Europe and Latin America enabling further investigations of this topic in other regions of the world.

Second, our results are heavily influenced by the set of indicators used to analyze the state of each X-economy. As we had to rely on quantifiable, widely available indicators that reflect the development of our economies. While we managed to gather a satisfying set of indicators for every economy, it must be considered that the inclusion of additional data on further, relevant indicators, could impact the results of this paper.

Third, the availability of data represented a challenge during our research as numerous international databases were incomplete. This was particularly the case for many Latin American countries. To find the relevant information, we thus intended to gather data from country-specific sources in an attempt to complete our dataset. We also excluded those indicators and countries, for which the available data was insufficient. As databases improve and countries become more transparent with data on societal issues, our dataset can be updated, and new indicators can be included.

Fourth, our results are influenced by the assumptions we made on the categories to which our different indicators can be associated. While we attempted to give a solid argumentation for our decision, a different allocation might influence the results of this analysis. Future research could redefine the categories if sufficient data is available.

Lastly, the decision-making process on the weightings of each indicator, category, and X-economy was heavily influenced by the availability of data and our assumptions made regarding the impact of the factors on a society. As new data sources and quantifiable indicators emerge, the weightings can be modified accordingly to provide a more resilient overview of the state of the X-economies in different countries.

These limitations call for further research on the interactions and impact of the emerging new economies. Our framework could be optimized by adding more relevant economies for more countries to get a complete overview of X-economies around the globe. Furthermore, as data availability increases, the categorization and the weighting of each indicator can be modified. One possibility to better justify the weighting and categorization would be to formally test the empirical impact of the indicators on specific societal issues in different categories. By doing so, it would be possible to validate the importance of each indicator and set the weighting accordingly.

While this framework can be the starting point for further research on the presence of all new economies in all countries in the world, our index also offers vast opportunities for more specific investigations. Our X-economy index could, for example, be used to establish the relations between a new economy and a specific sustainability issue, hence giving implications for policymakers and businesses.

Concluding Remarks

Concluding Remark

In view of the significant potential of the new economies or X Economies to contribute towards a more sustainable world, Europe and Latin America should embrace the opportunities offered by these new sustainable economic models. The regions should proactively support the creation and implementation of these new models to ensure sustainable growth opportunities for their countries. For this to happen, governments need to ensure the required legal frameworks and conditions to lead the way. Through the process of researching, gathering data, identifying individual performances and analyzing regional best practices as well as weaknesses, the results highlight a very diversified panorama of successes and challenges. While the circular and digital economy have been widely encouraged through efforts in including these new concepts in the countries agendas on especially European level, the feminist, collaborative, blue and social economies are still relatively young, and existing databases far from elaborated.

Some of the X economies are still small but undeniably growing rapidly, gaining important market shares and expanding geographically. At the same time, the X Economies yet often raise issues with regard to existing legal frameworks and blurred lines of institutional efforts or applied policies. There is a high potential for countries to capture not only fast growing markets, but rather engage in sustainable concepts of growth, undoubtedly needed especially in Latin America where levels of poverty, ecological degradation and socio-economic instability are high.

The results of the comparative analysis in this research show variation between X Economies, categories and individual indicators, but the analysis of the results is not trivial. Recommendations for countries to address low scores in the distinctive categories require a meticulous individual assessment of its performance to address societal, environmental, political and economic challenges within each country setting. The X Economies are still in early stages and their development will remain in the hands of not only governments, but rather every key actor, including the private sector and society. Though this may be a challenge to achieve, transnational cooperation could be one recommendation and solution to encourage policy makers and governments to perform together, work collaboratively on the design of sustainable strategies and to achieve targets. In order to lead the path towards a more sustainable world, a multi-faceted approach will be needed to ensure sustainable growth, socio economic development and a more resilient world.

In accordance with the model by Geels (2004), this paper analysis provides evidence that every system transition and change needs to be accompanied by concrete measurable actions. Transformative social and economic innovations prove to only be successful and aligned with the framework of the SDGs if supportive institutions are in place and if the transition process takes into account all economic, cultural, technological, ecological and institutional dimensions, hence actors.

Appendices

Appendix 1: Interactions Keywords Matching Example

= Number of articles addressing the Collaborative and Digital economies, per keyword and per country

	Collaborative economy x Digital economy				
Country	Keyword				
	peer-to-peer	e-commerce	innovation	platform	access
Europe					
Austria		2	13	3	2
Belgium		2	3	7	3
Bulgaria				1	1
Croatia	2	3	5	3	3
Republic of Cyprus		1		1	2
Czech Republic		2	5	2	
Denmark	1		4	5	3
England	8	4	44	32	22
Estonia	3			1	
Finland	1	2	11	8	1
France	2	5	10	11	3
Germany	2	3	15	17	3
Greece	1	1	3	3	4
Hungary			1	2	
Iceland					
Ireland		1	2	4	2
Italy	1	4	17	15	2
Latvia	1	1	3	2	1
Lithuania	1			1	1
Luxembourg			2		
Malta					
Monaco					
Netherlands	4	2	7	8	3
North Ireland					
Norway	3		1	4	
Poland	1	3	14	4	1
Portugal	1	1	7	7	3

Romania		6	17	10	15
Scotland		1	4	1	3
Slovakia		1	8	6	2
Slovenia			5	1	1
Spain	11	4	32	41	18
Sweden	5	2	4	8	3
Switzerland	1	1	6	8	4
Wales			2	2	2
Latin America					
Argentina			1		
Bolivia					
Brazil		2	5	3	1
Chile					
Colombia		1	1	1	2
Costa Rica					
Cuba					
Dominican Republic					
Ecuador			2		
El Salvador					
Guatemala					
Guyana					
Haiti					
Honduras					
Martinique*					
Mexico	1	1	4	1	2
Nicaragua					
Panama					
Paraguay					
Peru			1		
Suriname					
Uruguay					
Venezuela					

Appendix 2: Index Methodology

Steps	Calculation	Explanation
1. Data gathering	Adding sorted data per country into excel	
2. Create descriptive statistics	Average Standard Deviation Standard Deviation*3 High = Average + Standard deviation*3 Low = Average - Standard Deviation*3 3rd Quartile 1st Quartile	In order to get a better understanding and prepare the data for further analysis descriptive methods were applied.
3. Normalize Data by calculating the Z-Score	Calculate the Z-Score: (Observation - Average) / Standard Deviation. Then calculate the final score by dividing the value by 4, adding 0.5 and multiplying by 10. = ((Z-score/4)+0.5)*10	By calculating the Z-Score the data values get normalized to enable further comparability. By multiplying the resulting number by 10 the range is expanded. This allows the scorecard to have values between 1 and 10
4. Restrict Data	Establish maximum z-score of 2 and minimum z-score of -2 Adjust outliers	In order to restrict the range of the data to values between 0 and 10 the maximum and minimum z-scores must be established to deal with outliers.
5. Invert scores if necessary	Subtract the value calculated in the previous steps of 10 when necessary	As for some indicators high values are negative, this needs to be reflected in the score. We established the indicators for which this was the case and inverted their score.
6. Apply the allocated weighting	Apply the corresponding weighting / subweighting from the Economy and Categories	The scored results of each indicator are grouped into sub-categories (Environment, People, Economy, Government). Afterwards the weight of each sub-category is taken. This gives every country a score in the respective sub-category.

7. Calculate final Score	Apply the Economy weighting and the Category weighting to each country	The weighting of the individual scores of each sub-category is taken resulting in the final overall score for each country. We take an individually allocated weight of each sub indicator (previously defined and displayed in the following table)
8. Determine External Validity	1) Calculate the Pearson correlation coefficient in Excel 2) Use it to calculate the t statistic (based on the number of pairs in the test) 3) Use the TDIST function to calculate the p value based on the degrees of freedom and the t statistic	By correlating our scorecard with established indicators we can check for external validity. The correlation is calculated at 1% significance.

Appendix 3: Weighting

			Indicator	Sub Weight	Total weight
Blue	Environment	Coverage of protected areas in relation to marine areas (Exclusive Economic Zones) (%)	1	1	5
	Government	Degree of implementation of international instruments aiming to combat illegal, unreported and unregulated	1	2	
		National ocean science expenditure as a share of total research and development funding (%)	1		
	Publications	Number of Publications written - Web Of Science	2	2	
Circular	Environment	Circular material use (Circularity rate)	1	12	20
		National recycling rate	5		
		Municipal Waste per year per capita in kg(EU 2018)	1		
		Ecological Footprint per person gha	5		
	People	Bought a remanufactured product	1	1	
	Economy	Eco-industry revenue, in % of total revenue	1	4	
		Number of patents related to recycling and secondary raw materials (2015)	1		
		Eco Innovation Index (2019)	1		
		% of circular jobs in employment of total employment (2017)	1		
	Government	Gross investment in tangible goods (percentage of gross domestic product) related to circular economy	1	1	
	Publications	Number of Publications written - Web Of Science	2	2	
Collaborative	Economy	Revenue collaborative (share of GDP)	1	2	5
		% of collaborative economy jobs in national employment	1		
	Government	Investment in collaboarative platforms	1	1	
	Publications	Number of Publications written - Web Of Science	2	2	
Digital	People	Diversification index for the activities realised online by internet users (Data Year 2014)	1	9	19
		Digital skills set among populations (2019)	2		
		Computers used for educational purposes ISCED level 1 (Number of students per computer - desktop, comput	1		
		Standard fixed broadband coverage/availability (as a % of households) 2019	1		
		Number of fixed Broadband subscriptions per 100 inhabitants(LA: 2018 Europe: 2019)	2		
		Individuals using the Internet (% of population) (2017/2018/2019)	2		
	Economy	Digital Competitiveness ranking score 2020	3	4	
		eCommerce: Individuals ordering goods or services online (% of individuals aged 16-74) 2019	1		
	Government	Global Connectivity Index (Score 2019)	2	4	
		E-Government - Development Index (EGDI) Rating Classes given in Details	2		
	Publications	Number of Publications written - Web Of Science	2	2	
Feminist	People	World Happiness Report	2	2	14
	Economy	Access to power : % women in managerial positions	2	6	
		Difference of time spent on unpaid work (% of difference between men and women)	2		
		Gender pay gap (% difference of average income between men and women)	2		
	Government	Legal Framework to enforce gender equality in 4 areas (Marriage, Public Life, Violence, Employment)	2	4	
		% of seats held by women in national parliaments	2		
	Publications	Number of Publications written - Web Of Science	2	2	
Social	Environment	Proportion of population with access to (renewable) electricity	2	2	20
	People	Proportion of population below international poverty line	3	7	
		Under-5 mortality rate	2		
		Gini Coefficient	2		
	Economy	Annual growth rate of real GDP per capita	2	5	
		Unemployment rate, by sex, age, occupation and persons with disabiities	3		
	Government	Proportion of total government spending on essential services, education (%)	3	4	
		Agricultural export subsidies	1		
	Publications	Number of Publications written - Web Of Science	2	2	
Interactions	Environment	Social x Circular Percentage of renewable energy in total energy production	3	5	17
		Blue x Circular Hydroelectricity net generation by total electricity produced	2		
	People	Digital x Collaborative Number of collaborative platforms (per 1 million population)	5	6	
		Circular x Collaborative Leased or rented a product instead of buying it	1		
	Economy	Feminist x Digital - Employed ICT specialists by sex	1	1	
	Publications	Social x Circular - Number of Publications by Key Words Matching	1	5	
		Blue x Circular - Number of Publications by Key Words Matching	1		
		Digital x Collaborative - Number of Publications by Key Words Matching	1		
		Circular x Collaborative - Number of Publications by Key Words Matching	1		
		Feminist x Digital - Number of Publications by Key Words Matching	1		

Appendix 4: Scorecard by Economy

	Blue	Circular	Collaborative	Digital	Feminist	Social	Interactions
LA Average	4,68	4,84	4,91	2,71	4,13	4,20	4,74
Argentina	3,60	3,75	3,95	3,55	6,04	4,80	3,85
Bolivia	2,40	3,76	3,95	1,15	5,27	3,81	3,85
Brazil	5,52	4,29	5,71	2,83	4,16	3,67	5,46
Chile	4,56	3,43	4,39	4,31	3,08	5,21	4,25
Colombia	4,10	5,27	4,39	2,64	3,95	3,90	5,13
Costa Rica	2,57	3,87	3,95	4,48	4,83	4,49	5,66
Ecuador	5,55	7,17	4,39	2,29	5,78	4,23	4,85
El Salvador	3,46	6,70	3,95	1,09	5,24	4,88	4,58
Guatemala	3,83	6,93	3,95	1,23	2,16	4,41	4,37
Honduras	3,58	7,27	3,95	1,58	4,91	3,43	4,26
Mexico	4,76	4,57	4,83	3,20	4,35	5,01	3,61
Panama	2,72	6,48	3,95	2,28	5,36	4,46	5,27
Paraguay	2,54	5,79	3,95	1,74	3,89	4,53	5,61
Peru	3,68	4,97	4,17	2,14	4,11	4,50	4,57
Uruguay	4,18	6,93	3,95	4,75	4,29	4,52	5,62
Venezuela	3,20	6,25	3,95	1,47	2,69	3,87	4,60
EU average	6,07	5,62	5,45	5,93	5,32	5,14	5,01
Austria	4,55	4,88	4,10	6,28	5,08	5,68	5,77
Belgium	5,65	5,04	3,92	6,28	5,98	5,47	5,20
Bulgaria	4,66	4,76	3,77	3,66	4,67	5,01	3,99
Croatia	5,65	3,79	4,55	3,96	3,88	5,01	4,93
Cyprus	4,39	3,98	4,23	5,02	2,60	4,81	3,75
Czech Republic	4,55	5,42	5,43	5,31	3,93	3,59	3,77
Denmark	6,13	3,85	4,01	7,58	6,74	5,80	5,39
Estonia	4,91	3,66	7,27	6,19	4,90	5,98	5,65
Finland	4,79	4,35	4,06	6,98	6,42	5,30	5,27
France	6,98	5,68	5,71	6,64	5,93	4,97	4,77
Germany	7,01	6,27	5,78	7,07	5,99	5,77	5,44

Greece	5,68	3,79	5,19	4,41	3,03	3,99	3,95
Hungary	4,70	4,83	3,94	4,27	4,28	5,72	3,26
Iceland	4,28	5,90	3,95	7,10	6,96	6,38	5,05
Ireland	5,26	4,34	3,84	6,01	4,98	6,01	4,42
Italy	6,78	5,76	4,97	4,89	4,19	4,38	5,38
Latvia	4,82	4,28	7,20	4,82	5,60	5,23	5,42
Lithuania	5,11	4,43	3,94	5,01	5,35	5,44	5,43
Luxembourg	4,55	5,35	6,22	6,46	4,92	5,03	6,17
Malta	4,60	2,86	4,67	5,37	3,41	4,08	4,05
Netherlands	6,66	6,09	4,70	7,54	5,96	6,05	5,29
Norway	5,96	4,42	3,95	7,43	7,59	6,14	6,50
Poland	5,38	5,96	7,38	4,69	5,45	6,15	3,95
Portugal	6,12	4,80	4,74	5,25	4,97	5,19	4,70
Romania	5,21	5,06	4,23	4,07	3,73	4,95	5,10
Serbia	2,40	5,77	3,95	3,62	4,30	6,02	3,77
Slovakia	5,15	4,16	4,41	4,35	4,20	4,05	4,09
Slovenia	5,91	6,31	3,72	5,42	6,18	5,87	4,06
Spain	5,78	5,75	6,97	5,91	6,30	4,70	5,93
Sweden	6,04	4,78	5,42	7,61	5,14	5,78	5,74
Switzerland	4,52	5,62	4,83	8,01	5,99	4,71	5,60
Ukraine	2,66	5,86	3,95	3,65	3,72	4,92	3,44
United Kingdom	8,26	6,04	6,49	7,58	6,11	4,84	5,85

RELATIVE WEIGHT	5	20	5	19	14	20	17

Appendix 5: Scorecard by Category

	Environment	People	Economy	Government	Publications
LA Average	4,62	2,93	3,47	4,45	4,76
Argentina	3,40	3,91	5,07	4,98	4,05
Bolivia	3,36	2,32	5,65	4,72	3,66
Brazil	4,57	2,52	3,42	3,80	5,74
Chile	3,55	4,43	3,41	4,94	3,99
Colombia	5,47	2,83	3,43	3,95	4,20
Costa Rica	4,72	4,76	2,91	6,10	3,69
Ecuador	6,36	3,05	3,39	4,09	4,97
El Salvador	5,53	2,96	5,15	5,37	3,61
Guatemala	5,69	2,22	4,20	3,96	3,61
Honduras	5,70	1,92	6,38	4,45	3,61
Mexico	3,71	3,62	3,04	5,72	4,54
Panama	5,94	3,39	7,16	3,33	3,65
Paraguay	6,21	3,03	4,21	3,85	3,62
Peru	4,83	2,84	4,40	4,81	3,77
Uruguay	6,25	5,34	3,73	5,08	3,63
Venezuela	5,64	2,27	1,41	3,77	3,66
EU Average	4,24	5,45	5,06	5,08	6,85
Austria	5,03	6,19	4,86	5,83	4,65
Belgium	4,84	6,46	4,87	5,37	5,02
Bulgaria	3,91	3,99	5,02	5,92	3,79
Croatia	4,91	4,31	3,52	4,76	4,44
Cyprus	1,67	4,52	3,89	5,26	3,82
Czech Republic	3,98	4,54	4,41	4,41	4,49
Denmark	3,47	6,82	6,11	6,44	5,06
Estonia	2,75	6,88	6,53	5,76	3,81
Finland	3,34	6,54	5,93	5,67	5,19
France	4,38	5,98	5,55	5,40	6,48
Germany	4,98	6,35	5,77	5,39	7,78

Greece	3,34	4,61	3,22	3,21	4,86
Hungary	3,81	4,99	5,03	3,48	4,00
Iceland	5,99	6,74	6,77	7,28	3,67
Ireland	3,59	6,05	5,66	5,12	4,25
Italy	4,49	4,76	3,45	4,33	8,21
Latvia	3,11	5,57	6,04	6,00	4,16
Lithuania	3,90	5,16	5,99	5,17	4,07
Luxembourg	6,02	6,90	5,26	4,87	3,73
Malta	2,06	5,40	3,80	5,44	3,70
Netherlands	4,47	6,77	6,04	5,31	7,17
Norway	5,00	7,31	7,41	7,08	4,47
Poland	3,70	4,68	6,52	4,95	5,79
Portugal	4,00	5,11	4,75	4,90	5,85
Romania	4,11	4,11	3,98	3,89	6,39
Serbia	4,44	4,76	6,14	3,40	3,85
Slovakia	3,28	4,43	4,17	4,01	4,46
Slovenia	5,62	5,61	5,95	5,20	4,00
Spain	4,13	5,34	4,54	5,63	9,26
Sweden	4,24	6,58	5,10	7,00	5,88
Switzerland	5,24	6,20	5,26	7,66	5,04
Ukraine	3,75	3,14	5,72	2,85	4,45
United Kingdom	3,85	6,30	4,37	6,18	9,78

RELATIVE WEIGHT	**20**	**25**	**22**	**16**	**17**

Appendix 6: Impacts of Digital Economy on different Actors (Individuals, Economy, Government)

Table II.2. Potential impacts on value creation and capture from an expanding digital economy, by its components and actors

DIGITAL ECONOMY COMPONENT	ACTORS				ECONOMY-WIDE IMPLICATIONS
	Individuals (as users / consumers and workers)	MSMEs	Multinational enterprises / digital platforms	Governments	
Core, digital sector	• New jobs for building and installing ICT infrastructure. • New jobs in telecom and ICT sector, especially ICT services.	• Greater inclusion under suitable circumstances or spillovers/domestic linkages. • Increased competition from cloud-service providers.	• Investment opportunities for companies that meet high capital, technological and skills requirements.	• Attracting investment. • Tax revenues from the economic activity created.	• Increased growth, productivity and value added. • Employment creation. • Investment and diffusion of technologies; R&D likely located in high-income countries. • Mixed trade impacts.
Digital economy	• New jobs in digital services, especially for highly skilled people. • New forms of digital work, including for the less skilled.	• New opportunities in digital ecosystems. • Increased competition from foreign digital firms.	• Enhanced productivity from data-driven business models. • Greater control of value chains using platform-based business models. • New opportunities in the sharing economy.	• More tax revenue resulting from increased economic activity and formalization of enterprises. • Lost customs revenue from digitalization of products.	• Higher growth, productivity and value added. • Employment creation/losses. • Higher investment. • Aggregation of digital firms in some locations. • Mixed trade impacts. • Market concentration.
Digitalized economy	• New jobs in ICT occupations across industries. • Need for new skills as higher-value roles are redesigned using digital tools. • Greater efficiency of services received. • Job losses or transformation due to digitalization. • Risk of worsened working conditions. • Improved connectivity. • More choice, convenience, customization of products for users and consumers. • Lower consumer prices.	• Platform-enabled market access. • Reduced transaction costs. • Risk of "race to the bottom" in markets vs. ability to find a niche. • Lost opportunities due to automation (e.g. logistics, business processes). • New roles in service provision. • New business opportunities for digitalized enterprises.	• Emergence of platform firms with data-driven models. • Gains from efficiency, productivity and quality. • Opportunities for the monetization of data. • Increased competitive advantage to digital platforms. • Increased market power and control of data value chain. • Leading digitalization in different sectors.	• Increased efficiency of services through e-government. • Increased revenue from customs automation. • Unclear impact on tax revenue: increases from higher economic activity; losses from tax optimization practices by digital platforms and MNEs. • Data-driven opportunities to meet various SDGs.	• Growth through improved efficiency in sectors and value chains. • Productivity improvements. • Innovation impacts. • Potential crowding out of local firms in digitally disrupted sectors. • Potential automation in low- and medium-skill jobs. • Wider inequality. • Mixed trade impacts. • Impacts on structural change.

Source: UNCTAD.

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