4TH REPORT ON CIRCULAR ECONOMY IN ITALY

SYNTHESIS

2022

CIRCULAR ECONOMY NETWORK

ENEA
Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile

IN PARTNERSHIP WITH

MINISTERO DELLA TRANSIZIONE ECOLOGICA

The challenge is **decoupling economic growth and resources consumption:** where do we stand?

The reasons behind the crisis

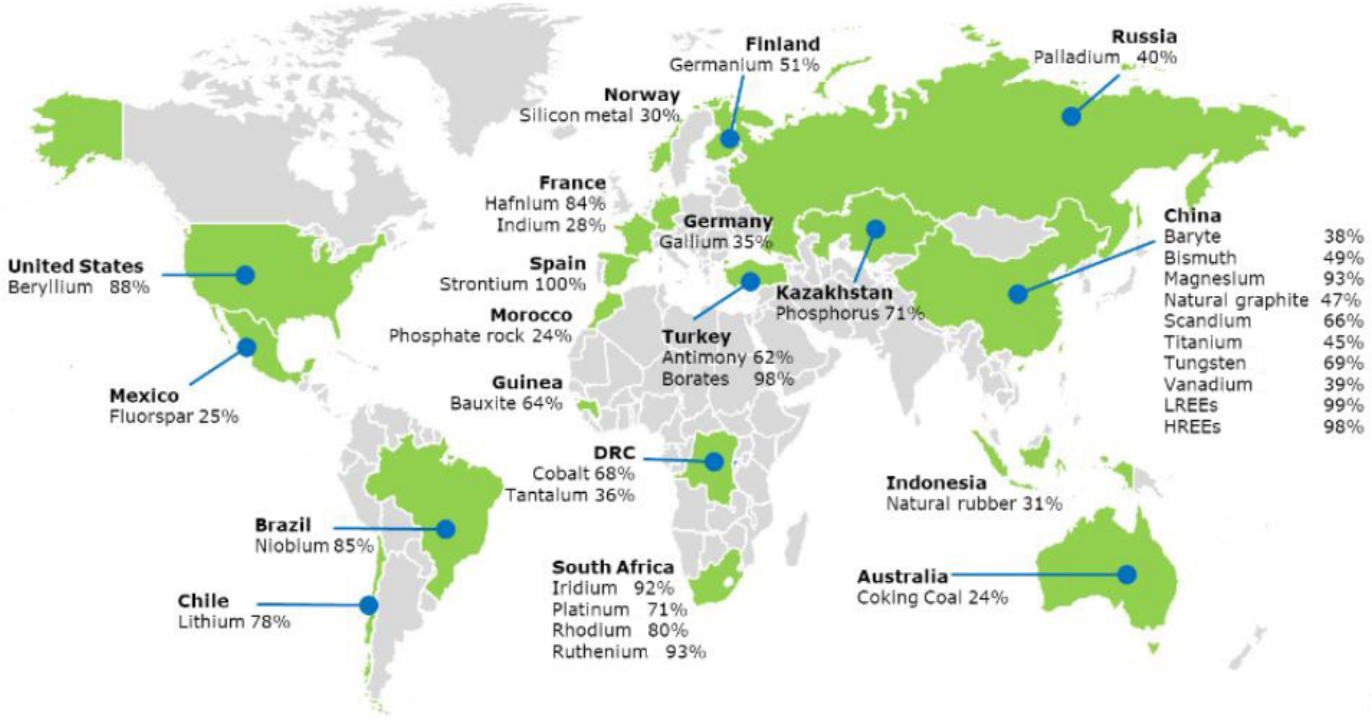
The 2022 Report by the Circular Economy Network comes at a unique time. A dramatic time, due to the events that characterized the last two years and are still making us hold our breath in the final days of the elaboration of this study. The seriousness of the events – at first the pandemic, then the invasion in Ukraine – had a significant economic impact.

Reports show us a rise in the prices of a number of raw materials – and for some of them there are difficulties and delays in supplies – resulting in serious obstacles to the activities of many companies. For sure, problems derived from Covid-19 and the Ukrainian crisis are an important cause of such situation, though not the only one: this is the point that many governments did not stress.

The economic difficulties that we are facing do not relate only to the current situation: they represent a signal of a structural underlying trend,

Biggest supplier countries of critical raw materials to the EU

SOURCE: EUROPEAN COMMISSION



that should not be overlooked in the context of a globalized development, characterized by a growing demand of materials that are available in a limited amount on our planet. The dynamic of the economic events proves it.

After the most severe time of the pandemic, the global economy tried to restart according to the old linear model. Thus, the sudden peak in the demand of materials unnerved the markets, caused uncertainty, and pushed markets operators to stockpile. A vitious circle was thus generated between the un-met demand and the increasing new demand: the lack of supply further boosted the demand, thus increasing the distance between supply and demand. The result, given an extractive system that is often already beyond the physical limit of the ecosystems, was a difficulty in the supply, that resulted in an inflationary spiral.

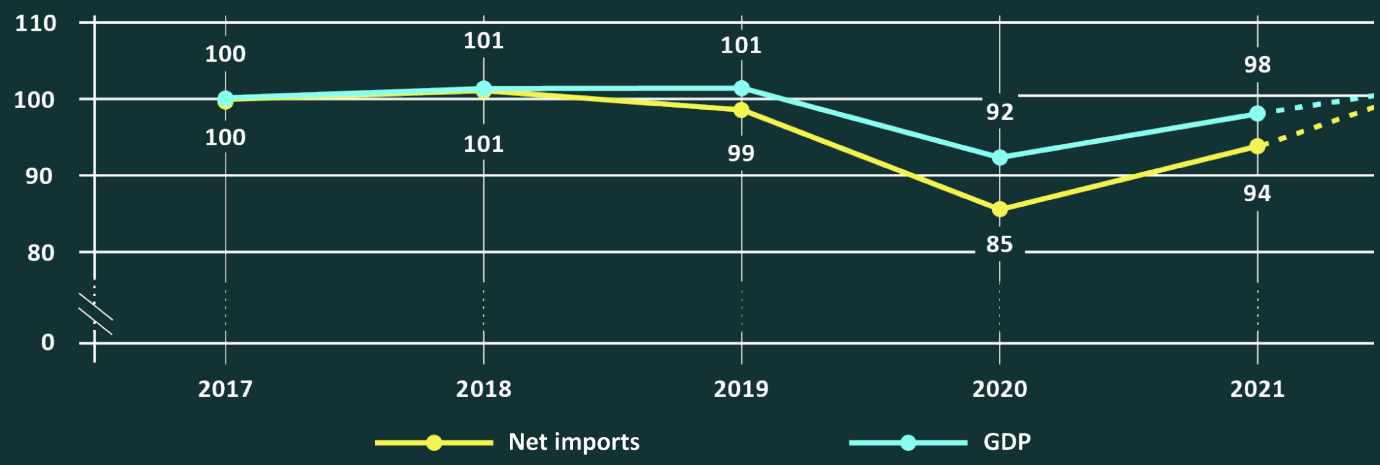
The problem that characterized the growth in 2021 was not the quantity, but rather the quality. The data contained in this Report show that the most relevant difficulties in the economy in Italy (as well as in other countries) are related to policies that underestimated the potential and the strategic need for a robust reinforcement of circular economy in the country. In 2021, the economic rebound was significantly more positive than expected, with a 6.6% growth in the Italian GDP, as compared to 2020. Such growth, however, in the old liner economy model, crashed against the lack of raw materials.

Ultimately, the decoupling between GDP growth and raw material use was missing. A substantial and technologically mature impulse towards a circular economy could have created a second, wide market for the materials needed for the recovery, thus avoiding the crisis that we are facing and that risks to continue.

This is why today it is essential to stress the importance of the decoupling of the economic growth and the consumption of virgin raw materials, as the strategic key objective of circular economy and of the European Green Deal. The transition towards circular consumption and production patterns is an increasing need, not only to ensure ecological sustainability, but also to ensure the robustness of the recovery, the stability of the development, and the competitiveness of companies.

Net material imports and GDP trend in Italy, 2017 – 2021 (2017=100)

SOURCE: ISTAT-Coeweb



The global circularity rate decreases

As mentioned, this is not an Italian problem. Global data are very clear. We are on the wrong path and we stepped back. Between 2018 and 2020, the circularity rate decreased from 9.1% to 8.6% (Circularity Gap Report). Such negative trend is caused by the increase in consumption, that increased by more than 8% over the last five years (from 92.8 to 100.6 billion tons), while reuse increased by only 3% (from 8.4 to 8.6 billion tons). More than 100 billion tons of raw materials were thus employed in one year to produce goods and services and over half of this enormous quantity of materials was employed to produce goods with a short lifespan. We recover less than 9% of the ocean of resources we take away every year from the Earth.

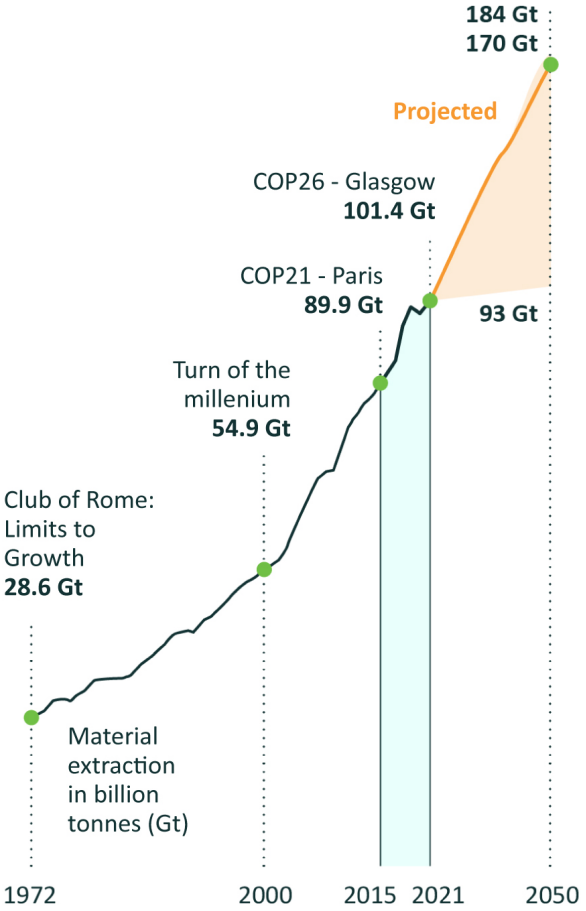
Beyond this, material use is increasing faster than the population: at the global level, we are thus going in the opposite direction to the one set by the Green Deal.

The contribution of this Report

This is the general picture. This Report moves from these considerations to focus on the Italian contribution to circular economy: the strengths, weaknesses, and possible solutions. Where do we stand in the transition towards the circular economy? What is our position in Europe from this point of view? How can we improve?

In order to answer these questions, we employed the Bellagio Declaration, the European basis for the elaboration of indicators to measure circularity. It is a new instrument, adopted in December 2020, to assess circular economy with an innovative and more communicative approach, measuring the advancements and interconnections between circularity and climate neutrality. This innovation in methodology is needed to provide a better

The material extraction in billion tonnes (Gt) from 1972 to its projected rates in 2050 if business-as-usual prevails



contribution to the debate on the National Strategy on Circular Economy, that will enter into force in 2022. Now more than ever, we need participation, information, and communication to feed the pressure for a cultural leap towards the green innovation the Country needs.

In order to measure the level of circular economy in Italy and to compare it at the European level, a summary indicator on circularity performances was created employing Eurostat, ISTAT, and ISPRA data. Each indicator considered was compared with the other major European countries (Germany, France, Spain, and Poland). The Report is closed with an analysis by ENEA and SUN (Symbiosis Users Network) on industrial symbiosis with an early sample survey.

Italy contains the damages

Here are the main outcomes. The critical issue to be solved, that requires a significant acceleration in policies for the ecological transition, is that, over the last five years, the decoupling between GDP and materials consumption, that would indicate good circularity performances in the economy, was nowhere to be seen. Given a 100 figure in 2017, GDP in 2019 is 101, while net materials import is 99, and the figures are then aligned in 2021.

Then came the crisis derived from the pandemic, resulting in a decrease in the consumption of raw materials more or less substantial in the various countries. Over the year, 13 tons per capita of materials were consumed on average in Europe. Among the five major economies that are at the center of this Report (Italy, France, Germany, Poland, and Spain), significant differences are recorded: ranging from 7.4 tons per capita in Italy to 17.5 in Poland. Germany is at 13.4 tons, France at 10.3, and Spain at 8.1.

In such negative context in terms of circular economy, Italy managed to contain the damage and to improve a number of circularity indexes better than its competitors. In addition, over the last decade, also due to the relocation of certain productions, Europe recorded a decrease in the use of raw materials and in Italy the per capita reduction was the highest among the considered countries, amounting to 36%, followed by Spain at 27%. The other three countries considered recorder a per capita reduction in material consumption between 16% and 17%.

The trend in resources productivity was also positive in Italy over the last decade. With a European average of 17%, Italy reaches 42%. However, and this is the guiding principle of this Report, Italian results appear to be good only if compared to the competitors. The target of securing the country by means of an intelligent employment of resources (materials and energy) available in the national territory is still dramatically far away. And such weakness is extremely clear when a crisis unfolds at Europe's doorstep.

The crisis derived from the pandemic did not result in a greater wisdom, or a serious reflection on the causes of the fragility of some aspects of the Italian economic system: in particular, on energy and raw materials, that are the resources that put Italy in a state of dependence and uncertainty that can only be overcome by boosting circular economy in all its aspects.

Resources productivity

That said, Italy performed better than others. In 2020, none of the five major European economies recorded an increase in resources productivity. In Europe, in 2020, in purchasing power parity terms, 2.1 euros of GDP were generated for each euro of resources employed. Italy reached 3.5 euros of GDP (60% more than the EU average).

	Score (Latest available year: 2020)	Circularity trend (2020-2016)
Italy	5	↑
France	3	↑
Germany	2	↑
Spain	1	=
Poland	0	↑

Material circular use rate

Such trend is further confirmed by the material circular use rate, representing the relationship between the circular use of materials and the overall consumption of materials (i.e., the consumption of both raw and recycled materials).

In 2020, the year with the latest available data, in the European Union the material circular use rate was 12.8%. Such figure reached 21.6% in Italy, only behind France (22.6%) and almost ten percentage points over Germany (13.4%). Spain (11.2%) and Poland (9.9%) rank fourth and fifth, respectively.

Interestingly enough, for this specific indicator Italy ranks fourth among all 27 EU countries, behind traditionally virtuous countries such as Netherland (30.9%) and Belgium (23%), and France as mentioned above. Moreover, Italy saw an almost uninterrupted increase in the rate of recycled materials use, from 11.5% in 2011 to 21.6% in 2020. It is also worth mentioning that the increase in Italy over the last year of the analysis accounted for 2.1%, as compared to a European average of 0.8%.

	Score (Latest available year: 2020)	Circularity trend (2020-2016)
France	5	↑
Italy	3	↑
Germany	2	↑
Spain	1	↑
Poland	0	=

Renewable energy consumption

As regards the share of renewable energy consumed in relationship to the total gross consumption of energy, Europe showed a positive trend, increasing by approximately 5% between 2010 and 2019, reaching 19.7% in the last year of the analysis. Among the five assessed countries, Spain records the highest share of renewable energy, compared to the total gross consumption of energy (18.4%), followed by Italy with 18.3%. With similar figures, Germany (17.4%) and France (17.2%) rank third and fourth, respectively. Poland is more distanced from the countries just mentioned, with a share of renewable energy, compared to the total gross consumption, of 12.2%.

	Score (Latest available year: 2019)	Circularity trend (2019-2015)
Spain	5	↑
Italy	3	=
Germany	2	↑
France	1	↑
Poland	0	=

Waste management and material consumption

In the European Union, the total production of waste accounted for 2.3 billion tons (Gt) in 2018. In the same year, 173 million tons (Mt) of waste were produced in Italy; 405 Mt in Germany, 343 Mt in France, 175 Mt in Poland, and 137 Mt in Spain.

In Europe, the overall waste recycling rate in 2018 was 35.2% (822 Mt). the remaining part was employed in energy recovery (130 Mt) or landfill disposal (970 Mt).

In Italy, the overall recycling rate almost reached 68%: this is the highest rate in the European Union, increasing by 6 percentage points over the eight years assessed, as compared to an almost unchanged European average. France performed better than us with a +8%, while Poland and Spain lost points: -4% and -20% respectively. The rate in Germany remained unchanged.

	Score (Latest available year: 2018)	Circularity trend (2018-2014)
Italy	5	↑
France	3	↑
Poland	2	↓
Germany	1	=
Spain	0	=

In the area of special waste (produced by industries and companies), 2018 data show that, at the EU level, 710 kg of special waste were produced per 1.000 euros of GDP. While Italy is at 380 kg, Germany is at 400 kg, and Spain is at 490 kg, Poland and France are above the European average, with 1.120 kg and 770 kg per 1.000 euros of GDP, respectively.

Among the five economies, Italy has the highest rate of special waste recycling, amounting to approximately 75%.

In the area of urban waste (10% of the overall amount of waste produced in the EU), the recycling target is 55% in 2025, 60% in 2030, and 65% in 2035. In 2020, 47.8% of urban waste was recycled in the EU-27, 54.4% in Italy.

Also in 2020, the landfill disposal of urban waste accounted for 22.8%. Behind Germany (0.7% of landfill disposal), France (18%) and Italy (20.1%) have the best performances. However, if we take into account the entire European Union, Denmark, Germany, Finland, and Sweden perform below 1%. In addition to the countries just mentioned, the 2035 target of 10% has already been met by Slovenia (6.7%), Luxembourg (3.8%), Netherland (1.4%), and Belgium (1.1%); 2020 data are not available for Austria, but the country had already reached 2.2% of landfill disposal in 2019.

Land Use and eco-innovation

Italy shows great difficulty on these topics. In 2018, 4.2% of the EU-27 total surface was covered by artificial surfaces; 3.6% in Poland, 3.7% in Spain, 5.6% in France, 7.1% in Italy, and 7.6% in Germany.

	Score (Latest available year: 2018)	Circularity trend (2018-2015)
Poland	5	↓
Spain	3	↓
France	2	↓
Italy	1	=
Germany	0	↓

As regards eco-innovation, Italy ranks low, ranking 13th in the EU in investments, with a 79 rate. Leading countries are Germany (154), Finland (143), Sweden (139), Slovenia (133), and Luxembourg (131). The EU average for this indicator is 113. As per the results obtained, Italy has a score of 102, well below the European average for 2021 (140). The leading countries are Denmark (210), Finland (194), Sweden (190), Luxembourg (184), and Germany (177).

Repair of goods

A negative trend is recorded in this field as well. The Report assesses three indicators: the number of companies, the turnover, and the number of employees. In 2019, In Italy 23,000 companies were active in the repair of goods, both electronic and of other types (cloths, shoes, watches, jewelry, furniture, etc.). We are behind France (over 33,700 companies) and Spain (little over 28,300). We lost almost 5,000 companies in this sector (approximately 20%), as compared to 2010. Poland and France also recorded a reduction, of 105 and 1,500 companies, respectively. Opposite results are recoded by Spain (+8,800) and Germany (+1,700).

Focusing on the employment aspect, the number of operators employed by repair companies were over 12,000, decreasing by about a thousand as compared to the previous year and by about two thousand as compared to 2010, while Germany and Spain employ a number of operators double than Italy (employment rate is more than double in France).

	Score (Latest available year: 2019)	Circularity trend (2019-2015)
France	5	↓
Spain	3	↑
Germany	2	↑
Italy	1	↑
Poland	0	↑

The ranking of the five major EU economies

The ranking of the five major EU economies is based on seven indicators: the overall waste recycling rate, both urban and special; the rate of employment of recycled materials; the productivity of resources; the relationship between waste production and material consumption; the share of renewable energy employed, in relationship with the total gross energy consumption; repairing; land use.

Italy and France show the best circularity performances, with 19 points each. Spain ranks second with 16 points. Significantly lower is the circularity performance index for Poland and Germany, with 12 and 11 points, respectively.

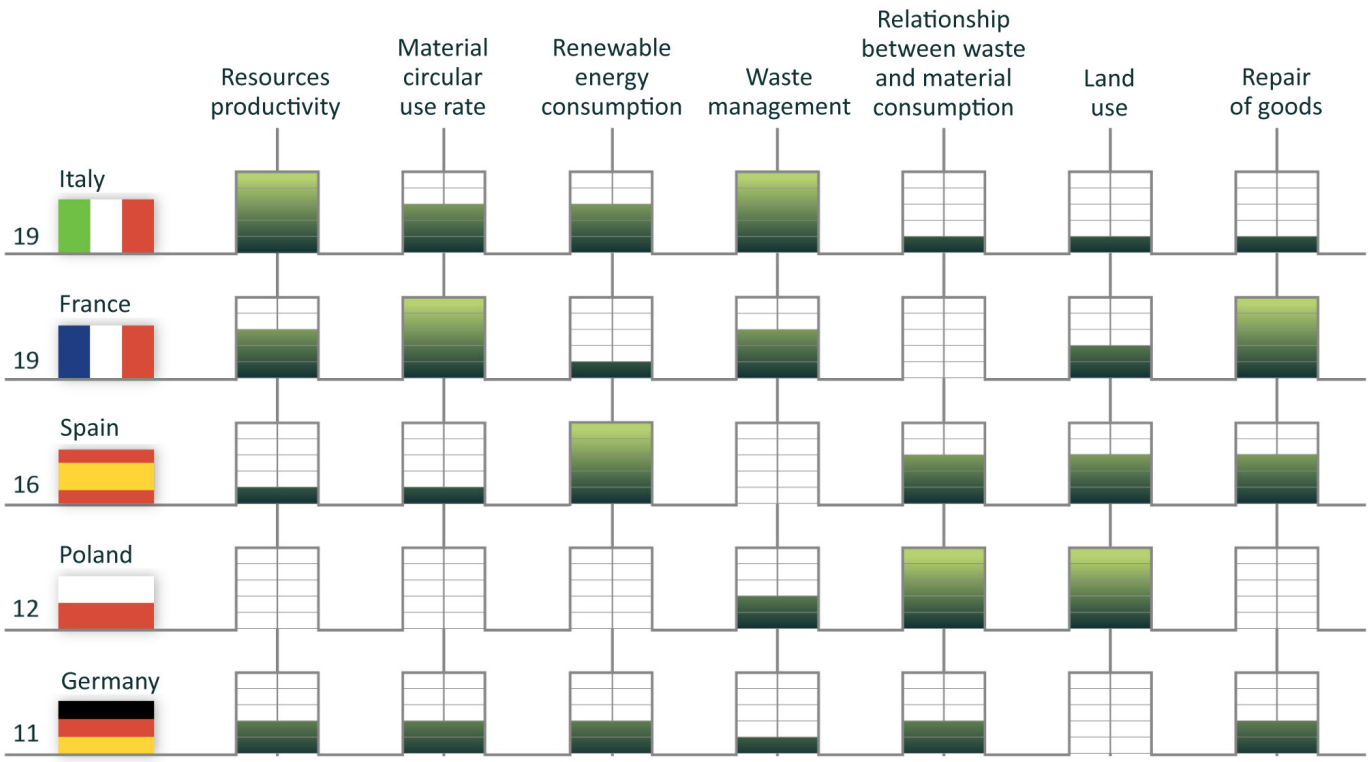
Circularity trends

The circularity trend is also very interesting to monitor, allowing to assess which countries recorded the highest increase in the performances over the last five years. The indicators used are the same as the previous ranking.

Italy is at the top in circularity trends among the five major European economies: it scores 20 points, 4 points above Germany and Poland, that rank second. Spain and France score only 14 points.

By doubling the current circularity rate, no less than 22.8 billion tons of GHG could be cut at the global level. Below are some examples. The impact of recycling ferrous metals is estimated between 10% and 38% of the impact of the production of iron and steel from raw materials and between 3.5% and 20% of the impact of the production of aluminum from primary raw material. Most types of plastic are recyclable and a proper recycling could bring a reduction in emissions up to 90%, as compared to

Overall ranking with key circularity indicators in the major five economies in the EU in the latest available year



the production of new plastic. The emissions from the sector of electrical and electronic equipment could be reduced to a half by increasing the reuse rate.

After all, recycled packaging waste allowed to avoid the consumption of approximately 4.6 Mt of raw materials, as well as the emission of 4.4 Mt of CO2eq.

The ranking of the five major EU economies

	Score (last five years)
Italy	**20**
Germany	**16**
Poland	**16**
Spain	**14**
France	**14**

Improving policies for circular economy

While Italy is in a good position in Europe on circular economy, its performances do not allow to meet the targets that the current economic scenario requires, in the light of the significant rise in prices or raw materials and the uncertainty about supplies. The new EU Circular Economy Action Plan, adopted in February 2021, aims at accelerating the transition towards a circular and regenerative economy, with a special focus on the design of sustainable products, on circularity in production processes, as well as in sectors with high resource intensity and environmental impact (including plastics, textiles, buildings, electronics, food, batteries, vehicles).

Among the initiatives aimed at developing the circularity of production processes, two sectors are of paramount importance. The first one is the eco-design of products: broadening the Directive on design; expanding eco-design criteria; focusing on durability and reuse of products, on the increase in the employment of recycled materials, and on the limitation of disposable products. The second one is the circularity of production processes: facilitating the industrial symbiosis; developing regenerative bioeconomy; promoting the employment of digital technologies for the traceability of resources; increasing the use of green technologies; supporting circularity with a change in the Directive on industrial emissions and the definition of BAT; promoting circularity in SMEs.

On the consumption side, consumers should be provided with reliable information the lifespan and the reparability of products. We speak of a new “right to reparability”, in order to limit the early obsolescence of products and to implement minimum mandatory requirements in Green Public Procurement (GPP).

The Ecological Transition Plan sets, among others, the following targets: reaching 30% in the rate of circular material use; reducing by 50% waste production by 2040.

The measures indicated in the National Recovery and Resilience Plan need to be fully and rapidly implemented: defining an effective National Strategy for circular economy, achieving investments in plants, streamlining end of waste procedures, strengthening the industrial policy tools to support investments by companies towards circularity, promoting the technology transfer especially in favor of SMEs, developing the production of biomethane and circular bioeconomy.

An initiative by

FONDAZIONE PER LO SVILUPPO SOSTENIBILE
Sustainable Development Foundation

Promoted by

2022 SYNTHESIS

4TH REPORT ON CIRCULAR ECONOMY IN ITALY

www.circulareconomynetwork.it
www.fondazionesvilupposostenibile.org