

# ENVIRONMENTAL

## DIMENSION

### Environmental performance 103-1, 103-2, 103-3

In GRI Renewable Industries we operate in an efficient and responsible way and we show our interest in the preservation of the environment. Our work is done under the umbrella of an Integrated System and a Quality, Environment and Health and Safety Policy.

Through these, consumption, emissions, waste and discharges among other environmental parameters are monitored to contribute to the minimization of its environmental impact without

affecting the quality of our products whilst working on the continuous improvement. At present, the GRI Towers Galicia, GRI Towers Turkey, GRI Towers India, GRI Towers South Africa, GRI Towers Brazil, GRI Towers Sevilla, GRI Flanges Brazil, GRI Towers China I, II and III hold ISO 14001:2008 certification.

Using and handling hazardous materials is done in accordance with procedures and instructions in place, while complying with the applicable regulations and using the appropriate PPEs.

### Environmental Performance Indicators

GRI Renewable Industries monitors the environmental impacts that derive from its activity through different indicators that measure its environmental performance, allowing it to measure its evolution and identify opportunities for improvement. The main indicators are summarized throughout this section.

#### Water and discharges

Water is a resource little used in our activity, reason why it presents low consumptions. However, as it is an essential and increasingly scarce natural resource, it is monitored with the aim of achieving its sustainable use.

In 2018, the total consumption amounted to 59,987 m<sup>3</sup>. 88% of the water consumed came from the water network and the remaining 22% came from groundwater sources. Consumption was mostly industrial (54%), followed by sanitary use (34%) and irrigation of green areas (11%).

It should be noted that no water source was significantly impacted by the company's water collection.

With regard to discharges, it is estimated that there was a total of 32,245 m<sup>3</sup> in discharges, of which 96% was discharged in the sewage network, 2% in watercourses (river, sea, etc.) and 2% in septic tanks. Its distribution is shown below:

#### Residues

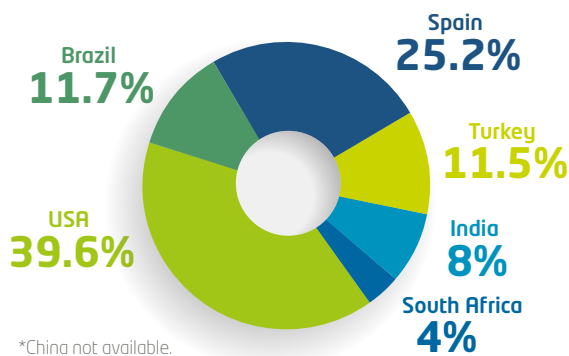
Residues produced in our facilities are appropriately segregated, tracked, identified, stored and managed by authorized agents, as is set out in the environmental instructions and procedures.

In our processes, most of the waste produced is non-hazardous (more than 90%). In this scope scrap accounts for 69% of the total, amounting to 89,706 tons.

The remaining is hazardous waste, which consists mainly of paint sludge in tower plants, taladrine in flange plants and oil in all of our plants.

With respect to waste disposal, almost 100% is handled through authorized recycling managers.

In addition, in 2018 there has been no spill or damage to the environment.



# Life-Cycle Focus: Circular Economy

## Part 1: the role of our products in the circular economy

Steel is a fundamental material in our society and the main component for all GRI Renewable Industries processes, totalling around 98% of its total consumption.

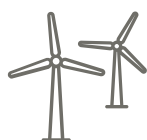
In addition, we believe in the crucial contribution of steel to global socio-economic growth and the development of more sustainable production models, as well as to the Circular Economy, a concept that is set to gain importance in the coming years. This is reaffirmed by the latest signals sent by international institutions, and in particular by the European Union.

The transition toward a Circular Economy is the answer to the appearance of risks deriving from global trends such as the exponential growth of the middle class, the volatility of raw

material prices, the increasing pressure from environmental regulations or the worrying increase in the amount of waste generated.

The economic system needs to move from the current linear model, in which products are manufactured from raw materials and discarded after being used, to circular models in which products have the capacity to be repaired, reutilized, returned and recycled.

The steel industry has been working towards this model for some time, and steel therefore represents great advantages over other materials:



### Reducing the weight and quantity of the material used

Wind Towers and Flanges

Through innovation we have accomplished significant weight reductions of our structures, which leads to substantial savings on raw materials.



### The steel may be reutilized or reconverted in different ways

The reutilization ratios have a great potential for growth due to the eco-design, recycling and the increase in efficiency. The wind parks can be restored, thus maintaining their original value. **1 ton of recycled steel gives rise to an average saving of: 1,400 kg iron mineral / 740 kg of carbon / 120 kg of limestone**



### Steel is the most recycled material in the world

It does not lose properties during the process.

The high value of scrap, its magnetic properties and its cost-effective recovery facilitate recycling.



### A large part of steel products can be remanufactured for reuse thanks to the enormous durability of this material.

Wind farms can be restored, thus maintaining their original value.

Consumptions (tons)	GRI Spain	GRI Brazil	GRI Turkey	GRI India	GRI South Africa	GRI USA	GRI China
Steel	77,518	31,909	13,500	5,370	21,505	74,439	219,308
Flux	442	62	85	34	34	118	0
Painting	450	158	135	23	33	1,903	0
Grit	132	22	8	8	6	131	0
Welding Wire	586	87	71	36	33	118	0

## Part 2: A transition based on 5 transversal elements

In addition to developing and spreading the circular vision throughout the organization, 5 specific elements have been identified on which GRI Renewable Industries tries to support its progressive transition towards the circular economy.



### Systemic thinking and design

Design processes need to be based on circular concepts, integrating the whole lifecycle of the materials and products in order to extend their useful life and to facilitate their future reuse.



### Prioritizing the use of renewable energies and resources

Encourage the efficient use of renewable and non-toxic materials and energies



### Exploit the full potential of the generated waste and extend useful life

Maximize the useful life of resources and try to take advantage of waste as a source to generate secondary products.



### Rely on digital technology

Incorporate new technologies that allow the measurement, monitoring and optimization of the use of resources and connectivity between the different parts of the organization and the different actors in the value chain.



### Collaborate

Identify possible synergies and collaborations with other companies or institutions that allow us to find solutions to foster economic growth while also reducing environmental impacts.

## Part 3: circularity at GRI Renewable Industries

At GRI Renewable Industries, instead of focussing on the Circular Economy as a final goal, we want to use this concept as a tool to guide us towards a continuous improvement of our productive processes and a greater environmental responsibility.

### 1. Integrated waste management

GRI Renewable Industries has an integrated system in all the plants of the group for the collection, retrieval and centralised recovery of steel discarded in production. The amount of discarded steel is very low.

Thanks to an efficient centralized system, 100% of the scrap discarded in production is collected and valued, which is later reintroduced into the value chain, thus promoting the production of steel from recycled material, which means significant savings in raw materials and emissions.

In 2018, 89,706 tons of scrap were managed. 76% of it comes from China.

### 2. Steel: Our raw material

The steel industry is undergoing major changes over the last years. The expected future scarcity of raw material and the growing availability of scrap, among other economic reasons, are encouraging greater use of electric ovens to manufacture steel from old steel.

A substantial part of the steel used in our processes comes from recycled material. The percentage of recycled material varies depending on the supplier and the country of origin.

This fact, together with the efficient management of our scrap, favours the development of an increasingly circular steel value chain.

The steel used in our processes partially composes of recycled steel, its composition depends on the product. The results are shown next.

Product	Tons consumed 301-1	% recycled	Steel recycled tons
Towers	78,318	18%	14,097
Flanges	246,211	18%	44,318
Castings	5,892	60%	3,535

# Conflict Minerals

Since the year 2010, following the approval of the Dodd-Frank Wall Street Reform, governments, companies and consumers request to know the origin of conflict materials, which has, therefore, become significant within GRI Renewable Industries. The corresponding homologation of providers, with those previously calibrated in the market, is done within the purchasing process. In this process we have identified steel and the electric and electronic materials as materials that may contain these minerals.

During the homologation process it is requested that the origin of the materials is accredited, thus assuring that these do not originate from foundries that use conflict materials (coltan, cassiterite, wolframite, gold, tantalum, tin, or any other conflict mineral or its derivatives) which contribute to funding of conflicts in the Democratic Republic of the Congo or any neighbouring country.

# Energy

Energy consumption within the company is high due to the industrial processes, and for this reason measures to improve energy efficiency are being incorporated, as well as measures to reduce the environmental impact and the carbon footprint. With our commitment to the Sustainable Development Goals

(SDG), in particular to climate change, we are continuously trying to further reduce our environmental impact through different actions such as reforestation, measures to increase energy efficiency and by favouring renewable energy production.

## Energy efficiency 302-4

In accordance with the Royal Decree 56/2017, GRI Towers Galicia carried out its corresponding energy audit.

In addition, it was decided to establish a monitoring system that allows us to sample and know in detail the consumption of the main processes, to have real information on the matter and define the efficiency measures appropriate for each case.

In this context, in 2018, we implemented the energy consumption monitoring and control system "PRO-EFFICIENCY".

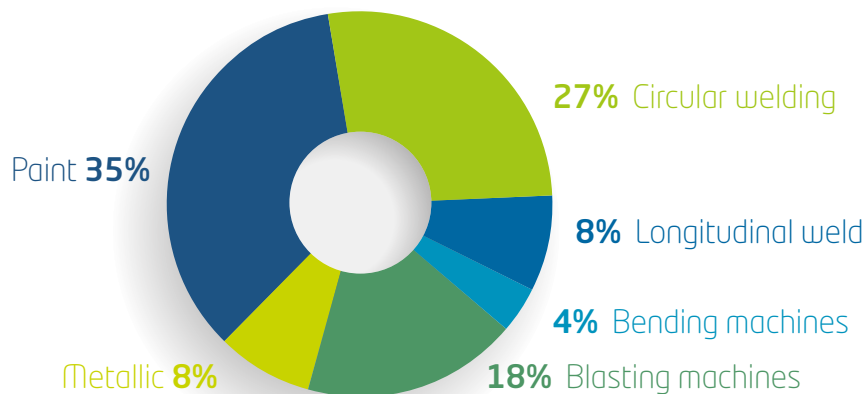
With the first results, some improvement projects (MAEs) have been defined, such as, for example, changing the current lighting fixtures for more efficient LED lights, with which will give rise to annual savings of an estimated 35,573 KWh/year.

It should be noted that some improvement projects were carried out in 2015 and 2016, such as:

- Separation of compressed 10-bar air network to two lines, one of 7 bar and the other of 9,5 bar. Savings are estimated to be 20,750 KWh/year.
- Regulation of the 9.5-bar line to 9.3 bar. Savings are estimated to be 9,400 KWh/year.
- Using the heat coming from the compressor process to heat the plating cabin. Saving are estimated to be 199,516 KWh/year.

With all the measures carried out, a total saving of 265,256 KWh is estimated. In 2019, when sufficient operational records are available through the PRO-EFFICIENCY system, we will be able to establish the real savings on all new projects.

### Energy distribution model



## Internal energy consumption 302-1

This year we consumed a total of 1,035,110 GJ, of which 41% came from electricity consumption and the remaining 59% came from fuels such as LPG, natural gas, propane and diesel.

Internal Consumption (GJ)	Electricity	LPG	Natural Gas	Propane	Diesel
GRI Spain	78,594	0	81,999	2,186	4,585
GRI Brazil	15,252	45	5,169	0	574
GRI Turkey	9,954	0	3,757	1,034	0
GRI India	3,469	296	0	0	273
GRI South Africa	4,763	63	0	0	150
GRI USA	24,195	0	7,380	1,033	2,368
GRI China	283,049	0	504,922	0	0
<b>TOTAL</b>	<b>419,276</b>	<b>404</b>	<b>603,227</b>	<b>4,253</b>	<b>7,950</b>

With regard to the distribution of energy consumption, 65% of the energy consumed is for production, 2% for heating and the remaining 33% for both uses.

As for external energy consumption, no available data is available related to this indicator. Information is expected to be available by the year 2030 (302-2).

## Energy intensity

302-3

Measuring energy intensity is a good way to measure the efficiency and impact of our processes. The calculation takes electricity and fuel, corresponding to internal use, into consideration.

The resulting annual ratio is calculated by dividing energy consumption by the total weight of products sold in each country.

The results obtained in the different tower plants are shown next:

Energy Intensity "Towers"	GJ consumed/tons of sold product
Brazil (Towers)	0.56
Spain (Galicia+Sevilla)	4.40
India	42.69
South Africa	1.36
Turkey	0.79
USA	1.41
<b>TOTAL</b>	<b>1.56</b>



# Emissions and climate change

201-2



## 7 AFFORDABLE AND CLEAN ENERGY

**GOAL 7**  
Ensure access to affordable, reliable, sustainable and modern energy for all

Energy is key to almost all big challenges and opportunities that the world is currently facing. Whether it is for employment, safety, climate change, food production or to increase incomes, universal access to energy is essential.



## 13 CLIMATE ACTION

**GOAL 13**  
Take urgent action to combat climate change and its impacts

Climate change affects all countries on all continents. It has a negative impact on the economy and on the lives of people, communities and countries. In the future its consequences will be even worse.

People are feeling the consequences of climate change first-hand, which include changes in weather patterns, increasing sea levels and more extreme weather events. Greenhouse gas emissions caused by human activity increase this threat. In fact, emissions never have been this high.

The impacts forecasted by scientists in the past have already become evident. 2015, 2016 and 2017 have been confirmed as the three warmest years for which data are available.

Globally, carbon emissions are expected to increase by 2.7 percent by 2018, according to new studies published by the Global Carbon Project.

Following the Paris agreement, COP 24 was held in Poland this year coinciding with the publication of the Report of the Intergovernmental Panel on Climate Change (IPCC).

This report is clearly worrying and warns that emissions are increasing at a rate that will lead to widespread problems such as food shortages, forest fires, coastal floods and population displacement by 2040.

The Intergovernmental Panel on Climate Change (IPCC) reflects that the extent of the effects of climate change in different regions will vary over time and with the capacity of different socio-economic and environmental systems to mitigate or adapt to change.

It describes different ways to limit global warming to 1.5 degrees Celsius. These solutions will require unprecedented global efforts to reduce the use of fossil fuels by 50 percent in less than 15 years, and eliminate their use, almost completely, in 30 years.

Although COP 24 did not show a firm commitment to reductions, mainly due to the opposition of some countries led by the United States and Saudi Arabia, 160 countries presented their reduction objectives and verification rules and mechanisms were established.

GRI Renewable Industries carries out different actions that contribute to minimizing our impact; in our processes and products through innovation and in our activity, focused on the development of renewable energy.

We also support the achievement of the Sustainable Development Goals, as summarised throughout the Report.

# Greenhouse gas emissions

GRI Renewable Industries we measure and communicate our carbon dioxide emissions (CO<sub>2</sub>) to be able to establish improvement objectives. The following standards have been taken into account for the calculation of CO<sub>2</sub> emissions: Green House Gas Protocol (GHG Protocol) and the Emissions Factors from Cross-Sectors Tools (GHG Protocol 2014) to calculate the fuel

emission factors, the IPCC Fourth Assessment Report: Climate Change 2007 for electricity consumption, and the average emission factors of the national electricity mix of each country for the period 2009-2011 as reported by the IEA (International Energy Agency).

## Direct Emissions

305-1

These emissions refer to those emitted by the production process of the company. In 2018, 34,724 tons of CO<sub>2</sub> were produced. The distribution of these emissions is shown below:

Country	Emissions (tons CO <sub>2</sub> )
Brazil	335
Spain	5,078
India	39
Turkey	276
South Africa	15
USA	655
China	28,326
<b>TOTAL</b>	<b>34,724</b>

## Indirect Emissions

305-2

Indirect emissions are those produced by third parties and are consumed in our plants and offices, they amount to 73,371 tons of CO<sub>2</sub>. The emissions by country are given next:

Country	Emissions (tons CO <sub>2</sub> )
Brazil	288
Spain	6,353
India	825
Turkey	1,305
South Africa	1,150
USA	3,381
China	60,069
<b>TOTAL</b>	<b>73,371</b>

## Other emissions

305-3

These emissions correspond to corporate trips made by plane, train and rental cars. Additionally, the estimation of emissions deriving from employees' commutes is also included. Scope 3 emissions are outlined next:

Type	Emissions concept (tons CO <sub>2</sub> )
Corporate Trips	2,702
Transportation employees	24,781
<b>SCOPE 3 TOTAL</b>	<b>27,483</b>

## Intensity of Emissions

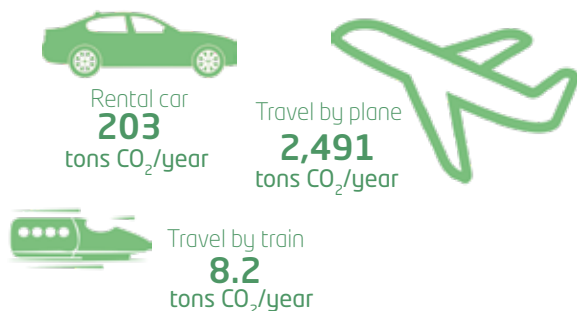
305-4

The intensity of the emissions is considered to measure efficiency and the impact of our processes.

The yearly ratio is calculated by dividing the sum of all direct and indirect emissions by the total weight of all products sold in each country. In the following table the obtained results are detailed for each production process:

Country	tons CO <sub>2</sub> / t sold product
Brazil (Towers)	0.01
Spain (Galicia+Sevilla)	0.33
India	9.13
South Africa	0.32
Turkey	0.09
USA	0.16
<b>TOTAL</b>	<b>0.15</b>

### Corporate Trips



## Avoided emissions

The main activity of GRI Renewable Industries is the manufacture of components for wind turbines (towers and flanges), which are designated to the generation of wind energy. This renewable and sustainable energy does not emit greenhouse gasses into the atmosphere, contributing to mitigate climate change.

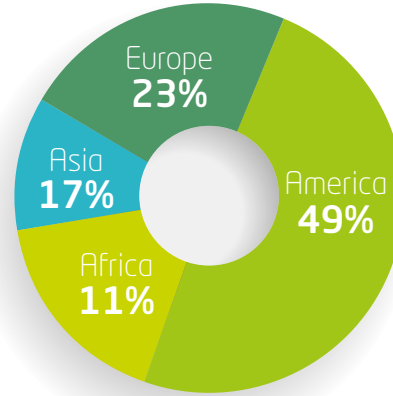
Moreover, we are committed to the achievement of the Sustainable Development Goals (SDG), and, in particular, to those that contribute to the fight against climate change (SDG 7.3 and SDG 13.2).

Next, we highlight our contribution, through tower production and reforestations, in 2018.



## Tower Production

In 2018, the company manufactured a total of 768 wind towers, the final destination of which is shown below:



The proportional weighing represented by the cost of the wind tower manufactured by GRI Renewable Industries out of the total cost of the tower is deemed to be 16.4%.

If one estimates the annual net operational hours of the turbines in the countries where they are present, the installed power, the conversion rate applicable to each country and the percentage of the cost of the tower out of the total structure, we estimate that our contribution to combating climate change amounts to 245,472 tons of avoided CO<sub>2</sub> emissions in 2018.

With respect to the reduction of energy requirements for products and services, the innovation section summarizes the improvements made in products and processes. We will be able to determine the real savings in 2019.

CO<sub>2</sub> Produced  
**135,578** tons CO<sub>2</sub>/year

SCOPE 1  
**34,724** tons CO<sub>2</sub>/year  
SCOPE 2  
**73,371** tons CO<sub>2</sub>/year  
SCOPE 3  
**27,483** tons CO<sub>2</sub>/year

**BALANCE**  
CO<sub>2</sub> Avoided  
**109,907**  
tons CO<sub>2</sub>/year

CO<sub>2</sub> Avoided  
**245,485** tons CO<sub>2</sub>/year

TOWERS PRODUCTION  
**245,472** tons CO<sub>2</sub>/year  
REFORESTATION  
**13** tons CO<sub>2</sub>/year



## Reforestation

Trees and woodlands have a direct relation to climate change and they contribute to curbing its impact, functioning as a drain by trapping and storing CO<sub>2</sub>.

Therefore, GRI Renewable Industries committed in 2015 to minimize these impacts through reforestation, with the aim of matching, as far as possible, the number of trees planted to the number of towers built.

In 2018, we have done four reforestations, totalling 2,710 trees, in which our staff and their families participated.

As a result of these plantings and based on the species that were planted, it is estimated that a total of 525 tons of CO<sub>2</sub> will be absorbed over the next 40 years, which is equal to 13 tons per year. If we include the estimated absorptions of reforestations done in previous years (38 t/year in 2016 and 15 t/year in 2017), we reach a total of 66 tons of CO<sub>2</sub> avoided per year because of the reforestation scheme.



### GRI Towers Galicia

The team in Galicia and their families planted, in the town of As Neves, 410 trees of four typical species in the region (*Betula alba*, *Quercus robur*, *Quercus suber* and *Castanea sativa*). This planting is estimated to allow for the total absorption of 87.2 tons of CO<sub>2</sub> over 40 years.



### GRI Flanges Iraeta and GRI Casting Zestoa

The team in the Basque Country planted a total of 500 trees of three species typical to the region (*Quercus robur*, *Fraxinus excelsior* and *Fagus sylvatica*) in Mendara. This planting is estimated to allow for the total absorption of 136 tCO<sub>2</sub> over 40 years.



### GRI Towers Sevilla

The team in Sevilla and their families planted a total of 1000 trees in Sevilla of nine species typical to the region. This planting is estimated to allow for the total absorption of 165 tCO<sub>2</sub> over 40 years.



### GRI Madrid. Headquarters

The team in Madrid and their families planted a total of 800 trees of three typical species (*Pinus sylvestris*, *Betula alba* y *Sorbus aucuparia*) of the region in San Martín del Pimpollar (Avila). With this plantation a total absorption of 137 tCO<sub>2</sub> is estimated at 40 years.