

Just Transition
Report
2021



Just Transition
Report
2021

Index

01

About
this report

| 8 |

02

Energy
transition
at Naturgy

| 14 |

03

Closure
of coal-fired
plants

| 20 |

04

Naturgy Foundation:
Enhancing vocational
training to boost
employability
in just transition
zones

| 42 |

05

The value
of renewable
gases

| 48 |



Letter from the Chairman

Dear reader:

We are living through a time of profound transformation. Society is demanding drastic reductions in emissions of greenhouse gases over the next few decades, and we are grappling with the enormous challenge of transitioning to a decarbonised economy to reach our common climatic objectives.

Companies like ours understand this challenge as a unique opportunity to transform our productive model and turn this process into an engine for investment and job creation, at an especially critical moment due to the economic and social crisis prompted by the Covid-19 pandemic. This need for a green reactivation has been embodied in Spain's Recovery, Transformation and Resilience Plan, which prioritises investments directed at accomplishing energy transition.

Naturgy is immersed in this transformation process, focussing its investments on renewable energies and innovating through new technologies to make its operations more efficient. For this work, and in the context of the Expressions of Interest requested by the Government to furnish projects for the Recovery Plan, the company has submitted initiatives for no less than 14 000 million euros, all of them aimed at supporting the decarbonisation process, stimulating the economy and creating jobs.

In 2020 alone, the company added 151 MW of renewables to its installed capacity in Spain and began construction on projects amounting to another 300 MW. Moreover, this year, the company ceased activity at all its thermal generation plants in the country, and dismantling processes for these are currently under way, although at different stages.

Nevertheless, in the short term, this transformation process is producing collateral effects in some autonomous regions, with changes in the economy and employability in these territories. The impact of the power station closure is an example of this. To address this, Naturgy is putting in place accompaniment plans seeking to foment economic activity in those places, in harmony with the historical connection the company has there.

In addition, in the context of the Recovery Plan, Naturgy has been a driver of technologies enabling productive activity in the zones affected to be reinvented, such as the development of hydrogen projects. To date, the company is engaged in four initiatives which will support this just transition process, among which are the projects at La Robla, in León, and Meirama, in A Coruña, of 30 MW and 50 MW, respectively, as well as renewable electricity generation projects. One clear example of this forward thinking is at Meirama, where Naturgy has projects totalling nearly 120 MW, and La Robla, where the figure exceeds 700 MW.

Another line of action as part of our commitment to people is the support for training we are giving, in collaboration with the Naturgy Foundation. We have signed agreements with the regional authorities in Galicia, Asturias and Castilla y León to develop Vocational Training modules in relation to, among other fields, vehicular natural gas, renewable gas and sustainable construction, activities for which there will be growing demands to meet the energy targets.

In short, we are engaged in an unprecedented transformation which will bring about a change in our production model and the green economy, creating jobs in rural areas and where population is falling. This transition requires time, pursuing ambitious but realistic objectives, and assurances that the investments and measures put in place in these zones are sustainable over time. The objective of all this is for nobody to be left behind; neither people, companies nor the planet itself.

This report I invite you to read sets out Naturgy's understanding of just transition, the measures the company is taking around the different sites where thermal plants have been closed, and its endeavours to undertake projects which help settle population and employment in these territories and create value for society and the company.

I hope you find it interesting.



Francisco Reynés
Executive Chairman

Madrid, July 2021.



We are grappling
with the tremendous
challenge
of transitioning
to a decarbonised
economy to meet
the common
climatic objectives.

JustTransition
Report
2021

01

About this report

01. About this report

1.1 Context and concept of Just Transition

The Paris Agreement of 2015 and the United Nations Sustainable Development Agenda 2030 marked the launch of a global sustainability agenda entailing transformation of the economic model⁽¹⁾ which must necessarily mean decarbonisation of the economy.

The energy transition is the most urgent and critical transformation that must be taken on. Society's aspiration is that the inertia of over two hundred years relying on the consumption of fossil fuels to produce energy should be overcome at an unprecedented pace.

This transition requires large investments to develop the technological advances necessary to reach the climate targets sought, a regulatory framework offering assurances and fostering these developments, and realistic and ambitious objectives, but without forgetting that great transformations require time and intermediate stages.

In summary, the collaboration of companies, regulators, workers, consumers and other stakeholders is necessary, as such a far-reaching metamorphosis which is so urgent could lead to short-term undesirable impacts in communities or on workers affected by these changes, as in the case of the closure of thermal power stations based on fossil fuels like coal.

In 2018, in its World Employment and Social Outlook report, the International Labour Organisation estimated that the changes in the use and production of energy to meet the objectives of the Paris Agreement could generate a total of 18 million jobs around the world. While 24 million jobs could be created, some 6 million would also be lost, meaning it is necessary to have accompaniment policies to protect workers and guarantee just transition and decent jobs⁽²⁾.

To maximise the benefits of transition to a low-carbon economy **and minimise the harmful impacts on activity, workers and their communities**, the International Labour Organisation proposed a working framework under the concept of **Just Transition**, which was agreed by governments, companies and trade unions all over the world.

This is why dealing with a transition that leaves nobody behind requires all the social agents involved to work together to propose measures to reduce the loss of jobs and minimise depopulation and decapitalisation in territories affected by the closure of installations.

On this point, one important step is the signature of the **'Agreement on a Just Energy Transition for closing thermal plants'** by the Spanish Government, companies including Naturgy and trade unions, to ensure employment and economic reactivation in the zones affected by the closure of thermal plants in Aragon, Andalusia, Asturias, Castilla y León and Galicia. The priorities of this agreement are the maintenance of employment and economic and industrial invigoration in these territories.

⁽¹⁾ Just Transition Strategy, Ministry for Ecological Transition and Demographic Challenge.

⁽²⁾ International Labour Organisation.

1.2 Why a Just Transition Report?

Throughout its more than 175 years of history, Naturgy has lived through many moments of change, each with its own specific circumstances, but with a society in constant evolution as common denominator. The company has known how to emerge stronger from each of these transformations, displaying a capacity for learning and continuous adaptation.

The present transition is driven by a completely different motivation from the earlier ones, as it is demanded that the energy sector change, but that it continue offering the same, namely a reliable, safe, economical and environmentally respectful supply of energy, but whose impact on the climate is neutral. In this process, due to the profundity and sense of urgency surrounding the environmental crisis we are undergoing, the number of parties involved is greater than ever, meaning that effective communication is of particular importance.

The purpose of this report, apart from addressing the need to inform our stakeholders about how we are taking on this transformation, is to point out the key issues of Naturgy's transformation strategy, for the company to contribute to a socially just and equitable transition. The key issues we have identified are:



01 | **Proper identification** of the impact on communities.



02 | **Definition of the principles** underlying the taking of decisions which affect the persons and organisations forming part of the company's activities, in this process.



03 | **Highlight the socially responsible actions taken by Naturgy** in its transition to low-carbon activity.

In addition, this exercise in transparency seeks to underline and draw lessons from the experience accumulated so far, which will help to continue the company's transformation process while simultaneously supporting the generation of employment, invigorating the productive activity of the zones affected and sharing value with society.

Following this introduction, in chapter 2, we set out the context of Just Transition at Naturgy, what this represents, the main numbers and the approach taken by the company, thus setting the scene for the remaining chapters.

Chapter 3 describes the sites affected by Just Transition processes from a broad perspective over time. The report describes the company's actions as part of the dismantlement processes currently under way there. It also looks at the impact on economic and local development of both the dismantling processes and the projects the company envisages carrying out over the next few years.

Chapter 4 centres on the activity of the Naturgy Foundation under the auspices of its Vocational Training Programme for employability, in place in the zones affected by the closure of the coal-fired plants.

Finally, chapter 5 assesses the viability of renewable gases as a key energy vector for the success of just transition processes, given, among other things, their potential capacity to settle employment in these territories in the short and medium term.

In summary, this report is Naturgy's response, in harmony with its firm commitment to energy transition, and in line with the commitments undertaken with its stakeholders through the demands of its Corporate Responsibility Policy for accountability and transparency.





We are focussing
investments
on renewable
energies and
innovating through
technologies to
make operations
more efficient.

Just Transition
Report
2021

02

Energy transition at Naturgy

02. Energy transition at Naturgy

What sets Naturgy's business model apart is that it is a leader in integrating the gas and electricity sectors throughout the value chain. The continuity of supply, energetic efficiency, offering energy that is environmentally respectful and promoting the circular economy through the emphasis placed on renewable gases are the key factors underlying the business model.

For Naturgy, climate change and the energy transition necessary to combat it are strategic priorities and fundamental engines to accomplishing the transformation of the company towards a sustainable and inclusive development model, where we leave nobody behind.

In this context of transition, one of the main ambitions of Naturgy is to become a company with **net zero emissions in 2050**, and the Strategic Plan recently approved for the period 2021-2025 envisages a path to reducing emissions aligned with science-based targets for temperature scenarios of 1.5°C or below 2°C as established by the Paris Agreement.

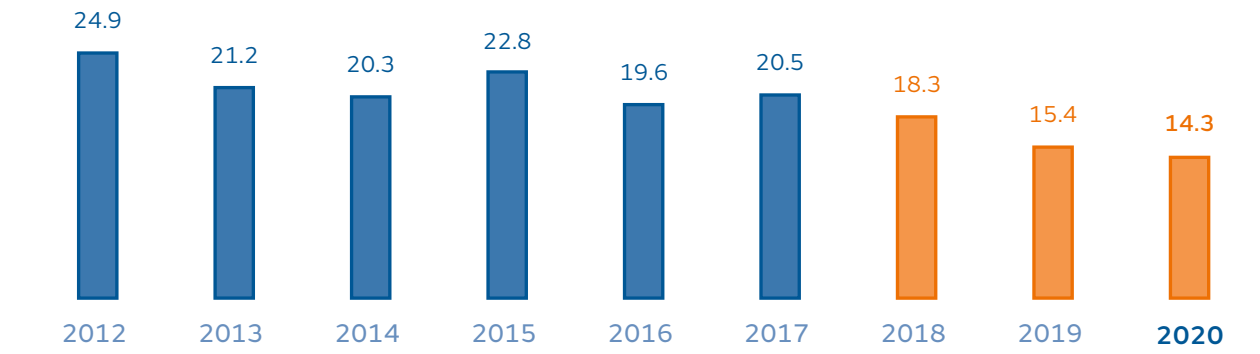
The strategy for getting there is driven by the conviction that energy transition is an opportunity that will enable us to substantially increase the installed capacity of **renewable generation**, expand **electrification** for the uses where this makes sense, **harness the potential of natural gas** to reduce emissions of greenhouse gases by using it as a transition energy, drive **renewable gases** and improve **energy efficiency** throughout the value chain.

Solid evidence of this is the progress achieved over 2018-2020:

- In 2020, direct emissions of greenhouse gases had fallen by **30%** compared with 2017.

For Naturgy, climate change and the energy transition necessary to combat it are strategic priorities and fundamental engines to accomplishing the transformation of the company **towards a sustainable and inclusive development model**, where we leave nobody behind.

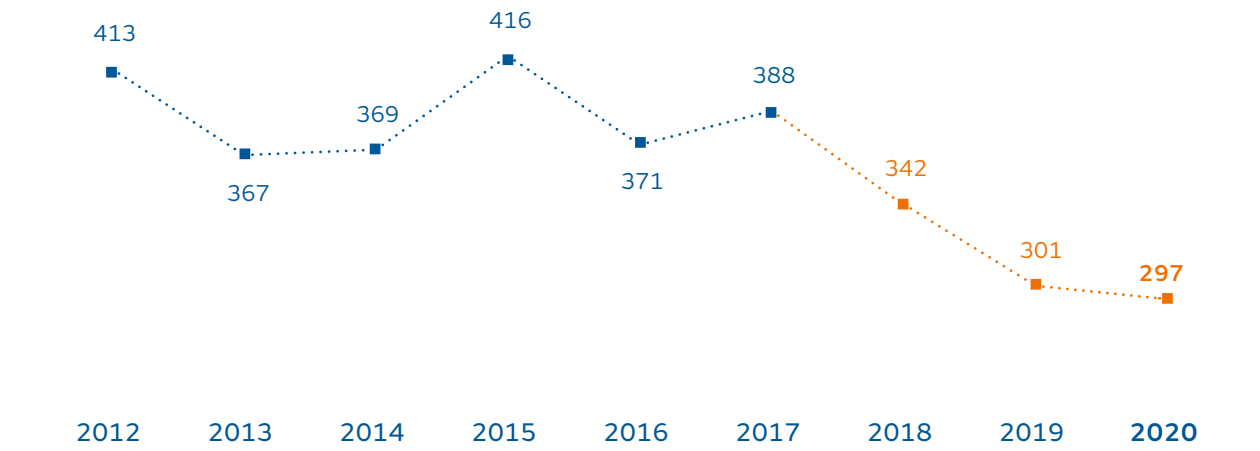
■ GHG Emissions Scope 1 (MtCO₂eq)



■ Naturgy's Strategic Plan 2018-2022.

- The emission factor for electricity generation declined by **23%** with respect to 2017.

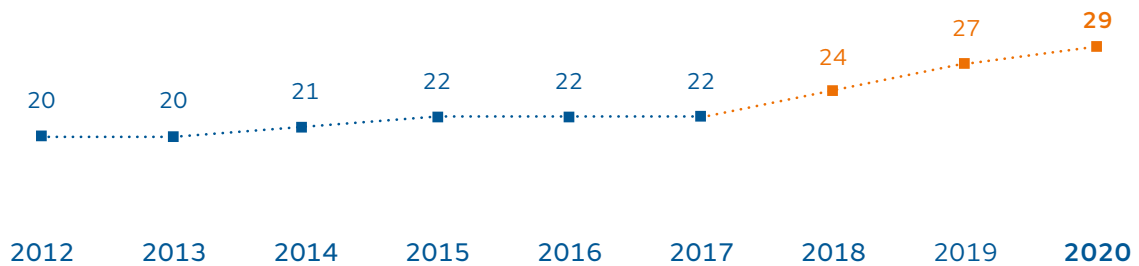
■ Carbon intensity for electricity generation (tCO₂/GWh)



■ Naturgy's Strategic Plan 2018-2022.

- Our total carbon footprint (Scopes 1, 2 and 3) fell by **16%**. With a fall of our Scope 3 emissions of almost 26 MtCO₂ eq.
- The installed renewable capacity passed from 22% in 2017 to 29% in 2020, to reach **4 609 MW**. The objective set for 2025 is to reach about 60%.

■ Renewable power (%)



■ Naturgy's Strategic Plan 2018-2022.

It is also noteworthy that **72%** of the investment committed in the period 2020 is **aligned** with the **European taxonomy**⁽³⁾.

The results obtained over the last three years were made possible by the closure of the coal-fired power stations and the firm commitment to renewable energies, and along the way Naturgy has borne very much in mind that the energy transition it is undertaking must be just, so as to mitigate the negative impacts of abandoning an economic activity by making the most of the opportunities thrown up by the development of renewables.

⁽³⁾ Environmentally sustainable economic activities according to the Regulation 2020/852.





We understand this challenge as a unique opportunity to transform our production model and turn this process into an engine for investment and generating employment.

Just Transition
Report
2021

03

Closure of coal-fired plants

03. Closure of coal-fired plants

At the end of 2018, under the auspices of this new, more demanding and efficient, regulatory framework, Naturgy submitted an application to the Ministry for Ecological Transition to close the three coal plants that remained in operation: La Robla (Castilla y León), Meirama (Galicia) and Narcea (Asturias), on top of the already-authorized closure for the Anllares plant (Castilla y León).

Following the successive administrative authorisations, the closure process culminated in June 2020 and the company drew a line under a history of 55 years linked to generating power with coal-fired plants.

The different power stations were built in mining areas like Narcea in the southwest of Asturias, La Robla in the central basin in León, Anllares in the El Bierzo area, also in León, and Meirama close to the Limeisa mine in A Coruña, enabling industrial growth in the country and bringing wealth and technology to the regions formerly housing them.

3.1 Agreement on a Just Energy Transition for closing thermal plants

Naturgy maintains this commitment to the territories and areas affected by the closure of the facilities intact, and this can be seen in the signature in April 2020, with the Ministry for Ecological Transition and Demographic Challenge, and the Ministry for Labour and the Social Economy and trade unions, of the **Agreement on a Just Energy Transition for closing thermal plants**. This Agreement sets out the commitment of the parties to accompany occupational transition and the economic reactivation of the zones affected by the closure of thermal plants, where:

- At Naturgy, an accompaniment plan is devised for each plant to be closed, and this sets out the commitments that are realised through new investments in the same territories, redeployment plans for own staff, prioritisation for workers from auxiliary companies, searching for investors, and collaboration on support plans for improving employability in the new activities.
- A framework is created to track the workers involved, as well as specific training plans aimed at redeploying them.

This Agreement represents the **public commitment** acquired by Naturgy in **relation to social dialogue** with workers, Spanish central government ("AGE") and the company itself with regard to the closure of the coal-fired plants and its repercussions for employment, industry and territories.

The Agreement includes the creation of a **Tracking Committee** which will ensure compliance with the Agreement and which is comprised of equal numbers of representatives from the AGE, companies and trade union organisations. It holds an ordinary meeting every 6 months to review how the Agreement implementation is going, or extraordinary meetings whenever any of the parties so requests.

Under the Agreement, the parties commit to working on devising **Just Transition Covenants** to anticipate and mitigate the negative impacts of the closure of coal-fired plants, as definitive schedules become available.

The Covenants include a **participation process** for mobilisation and consultation to compile them; **characterisation, diagnosis and socioeconomic analysis** and **infrastructure analysis** in the zones affected by the closures; and, after closure has taken place, assessment of plans and initiatives, guaranteeing the centralisation of communication and information among all those involved in the projects as well as identifying the possible investments, actions and projects to reinvigorate these zones, viability analysis and a proposed action plan.

■ Phases of the Just Transition Covenants in the Urgent Action Plan



3.2 Just Transition Sites

The coal-fired plants were built in areas hosting mining or extractive industries:



Anlles thermal plant

The thermal power station of Anlles is in Anlles del Sil, in the municipality of Páramo del Sil, province of León, with the most important urban centre being Ponferrada, about 40 km south of the plant.

The plant is the property of the companies Naturgy Generación, S.L.U. and Endesa Generación, holding two thirds and one third, respectively. For commercial operation, an enterprise grouping called “Central Térmica de Anlles - Comunidad de bienes” was founded, with Naturgy being responsible for management.



La Robla thermal plant

The La Robla thermal plant is located in the municipality of La Robla, province of León, 25 km north of the city of the same name.

The plant site is a strategic one with good road and rail communications, minimising the transport costs of goods, raw materials and products.



Meirama thermal plant

The Meirama thermal plant is situated in the municipality of Cerceda, 31 km southwest of the city of A Coruña.

The plant site is a strategic one with good road and rail communications, minimising the transport costs of goods, raw materials and products. The installations have electrical power, water from the Cosmade and Villagudín reservoirs and piped natural gas.



Narcea thermal plant

The Narcea thermal plant is in Soto de la Barca, belonging to the municipality of Tineo in Asturias. It stands at an altitude of 213 m above sea level, on the banks of the River Narcea.



3.3 Dismantlement process



Dismantlement

	Start date	End date (scheduled)
Anllares	01/07/2019	29 months' duration
Merirama	10/12/2020	36 months' duration
Narcea	Pending	41 months' duration
La Robla	25/01/2021	41 months' duration

In defining the dismantlement work, in all cases and at all plants, **environmental** measures and **safety** procedures have been considered as priorities for accomplishing dismantlement properly and without affecting third parties or the environment.

The plant buildings and installations present different types and combinations of structural elements, so that the disassembly and demolition methodology involves a combination of both manual and mechanical means, or in some cases combined with the use of explosives for controlled blasting.

The following is the sequence of activities:

- Cleaning of equipment and installations.
- Emptying and cleaning of tanks and lines.
- Manual work to empty and dismantle assets, segregating them by types.
- Removal of thermal insulation.
- Removal of hazardous materials.
- Combined demolition:
 - Manual demolition.
 - Demolition by machinery.
 - Demolition by pushing or traction.
 - Demolition with cutters fitted to backhoe loaders, pulling the structure down from the top.
 - Demolition with jackhammers mounted on mobile equipment.
 - Demolition by controlled blasting to cause a structure or building to collapse.
- Segregation of demolished materials by typologies. Following segregation, they are revalorised or recycled wherever possible.
- Transport of the leftover materials from the demolition (the fraction that cannot be revalorised or recycled) to the different collection zones within the plant. For the specific case of concretes, a crushing plant will be erected, installed within the site, to transform the demolished and clean concrete into material suitable for filling.
- Subsequent management of waste for the different material types:
 - Inert.
 - Non-hazardous.
 - Hazardous.

- Refurbishment of the site with finish appropriate to industrial use.
 - Chipping of ridges and shoes above level 0.
 - Filling holes with appropriate materials (crushed clean concrete).
 - Levelling of the zone.

Safety

Safety is considered a basic element in dismantling the plants, applying the safety principles of Naturgy: “Nothing is more important than safety” and “Any accident can be avoided”. Application of continuous improvement methodologies.

Priority is given to demolition techniques that minimise risks: blasting versus conventional dismantlement. using cutting/crushing machinery versus manual dismantlement.

As an example put into practice at the Anllares thermal plant, controlled blasting was used to demolish the ash pits, chimney, cooling tower and boiler.

Below, we detail the accident rates with and without lost time, and the days lost, used for calculating the frequency and seriousness rates of the main contractor for the Anllares and La Robla dismantlements.



■ Safety ratios

Anlles

Lezama Demoliciones S.L.

Accumulated hours to December 2020	71 256.50
No. hours January 2021	3 826.00
No. hours February 2021	5 109.00
No. hours March 2021	6 075.50
No. hours April 2021	4 726.50
No. hours May 2021	5 996.50
Accidents with lost time	0
Accidents without lost time	0
Days lost	0
Accumulated hours	96 990.00

The frequency, seriousness and incident rates for this project are all 0.



La Robla

Lezama Demoliciones S.L.

Accumulated hours up to May 2021	6 265.50
No. hours May 2021	6 391.00
Accidents with lost time	0
Accidents without lost time	0
Days lost	0
Accumulated hours	12 656.50

The frequency, seriousness and incident rates for this project are all 0.

Circular economy

In line with the foregoing, it should be highlighted that the closure and dismantlement process envisages, as the initial measure, the reuse of components and equipment at other company production centres and, where this is not possible, reuse by third parties. Thus, components and equipment that can be revalorised at other installations are earmarked for that, with the rest sent for recycling so their materials can enter the production cycle anew, in accordance with the waste management hierarchy. Indeed, for the dismantling of Anllares, **revalorisation and/or recycling rates above 98% have been achieved.**

In addition, and in partnership with cement sector companies, the valorisation of waste deposited in landfill (ash from the centre combustion process) as raw material for manufacturing cements has been promoted, thus meeting a triple objective: valorisation of a waste, reduced consumption of raw materials and minimisation of the carbon footprint in the cement-making process. This kind of project will permit the creation of an economic activity, fomenting the creation and maintenance of jobs in the municipalities and zones affected, in line with the stipulations in the Covenants set out in the Joint Transition Strategy.

Reduction of environmental impact

The cessation of activity at Naturgy Group's coal-fired plants has meant a reduction in greenhouse gases and local atmospheric contaminants, in addition to reduced consumption of water and lower production of hazardous and non-hazardous waste. Therefore, the area around the plants will be enhanced by this reduction in pollution and resource consumption, leading directly to improved health for the ecosystems and biodiversity associated. Moreover, those living around the plants will also improve their quality of life because the noise and traffic associated to the industrial activity will decline.

The environmental indicator table for these plants for financial years 2018, 2019 and 2020 is as follows:



	Total volume of water consumed (m ³)			Total direct emissions of Greenhouse Gases (tCO ₂ e)		
	2020	2019	2018	2020	2019	2018
Spanish Coal- Fired Plants	Anllares		503 003			258 151
	Meirama	854 816	383 432	4 222 480	532 675	2 247 905
	Narcea	397 830	637 446	762 076	199 042	373 572
	La Robla	1 094 110	749 950	2 797 449	333 807	861 829
Total	2 346 756	1 770 828	8 285 008	1 065 525	718 586	3 741 457



Emissions of NOx (t)			Emissions of SO ₂ (t)			Sum Hazardous and Non-Hazardous Wastes (t)		
2020	2019	2018	2020	2019	2018	2020	2019	2018
		1 301			2 238			45 080
972	304	3 286	1 422	591	7 009	30 127	8 900	123 094
307	456	463	156	267	329	17 553	33 672	38 463
819	424	1 665	347	216	1 110	42 011	18 486	90 102
2 098	1 184	6 715	1 924	1 073	10 686	89 691	61 058	296 738

Major environmental actions

Anllarinos Reservoir

In the case of Anllares, and because it lies in a zone with environmental protection (Red Natura 2000), priority has been given at the site to restoring its original condition. The demolition of the Anllarinos Reservoir and subsequent restoration of the watercourse to its original condition is an example of Naturgy's commitment to the environment.

To accomplish this:

1. All the sediments and sludge within the 100-year flood event area will be removed and the part of the reservoir outside this will be replanted to prevent entrainment.
2. Demolition of the main dam and the back dam. Excavations in the watercourse to make the stream continuous.
3. Replanting treatment within the 100-year flood event area. Sediment retention barriers will also be installed.



The demolition of the Anllarinos Reservoir and the subsequent restoration of the watercourse **is an example of Naturgy's commitment to the environment.**

Restoration of courses of Narcea and Bernesga rivers (Anllares)

Other examples of environmental restoration near the plants are the courses of the Bernesga and Narcea where they pass the La Robla and Narcea plants, respectively.

For Narcea, the following actions have been submitted to the Cantabrian Sea Basin Authority for approval:

- Demolition of the existing wall and sloping of the left margin where it passes the plant (green, yellow and red sections in the image).
- Filling of the cooling water discharge channel where it passes through a trench and creation of a green route (blue sections in the image).
- Partial demolition of the right bank of the cooling channel (blue section in the image).



Lake Meirama

The creation of Lake Meirama in the As Encobras valley at Cerceda (A Coruña) is one of the largest **environmental rehabilitation** projects in Spain. The transformation of the **former open-air brown lignite mine** into an artificial lake has generated a large space with **protected biodiversity** which will boost the economical and tourist development of the zone. Lake Meirama is the **first artificial lake in the world** which can be used as a **reservoir** for a large population without prior intensive treatment thanks to the good quality of its water, in particular for the city of A Coruña and its hinterland. In May 2020, the rehabilitation project culminated with the **formal transfer of Lake Meirama – As Encobras to the Public Water Supply**.

The transformation project consisted of the creation of a huge artificial lake, 2.2 km long and 1 km wide, in the pit of a former mine, together with reforestation of the terrain and the rubble pits, where we have planted nearly 500 000 trees and a tree-covered zone of great environmental value, where almost 900 species, 5% of them endemic, have been detected, with an investment of 60 million euros.

The case of the Meirama mineral-thermal complex is a clear example of sustainable exploitation of natural resources, which renders operation compatible and integrates it with protecting the environment and the creation of value throughout the process, before, during and after exploitation of the resource.

https://www.naturgy.com/sostenibilidad/medio_ambiente/capital_natural_y_biodiversidad_/lago_meirama

3.4 New projects at the sites

Linked to dismantlement process at each plant, Naturgy has devised an alternative plan which entails new investments in the zones affected, giving priority to technologies which make generation more efficient, with lower emissions and more environmentally respectful. These alternative plans are embodied specifically in renewable generation projects; sustainable mobility initiatives, with a determined push to implement natural gas for land, rail and sea transport; as well as the viability of renewable gas and hydrogen projects. In collaboration with the authorities, it is analysing the possibilities for attracting investment, new companies and projects to the area of the plants.

Against this backdrop, and to ensure the transparency of the process, contribute to learning, make the projects undertaken visible and offer evidence of the investment effort and commitment of all the parties, it is indispensable to convey the advances made to stakeholders and the need to ensure the viability over time of projects undertaken, through coherent regulation and the support and collaboration of all the actors engaged in the just transition processes.

3.4.1. La Robla (León)

The coal-fired plant

- Start of commercial operation in 1971.
- 655 MW (2 generators).

- Dump for gypsum, ash and slag.
- Closure documentation obtained.
- Dismantlement initiated.
- On the date of the closure application, direct jobs data: 78 (own) 42 (contractors).
 - Severances / Resignations: 41.
 - Redeployments: 27.
 - Destination units: Mainly renewable and hydroelectricity cycles.
- Current workforce at 31/07/2021 (dismantlement work): 10.

Accompaniment plan

- Green hydrogen production plant (electrolysis 60 MW) fed by an associated photovoltaic solar farm (400 MW), aimed at use by land transport, injection of hydrogen into the gas network and large-scale export to northern Europe. Project developed jointly with Enagás.
- In a second phase, the project could be expanded to 750 MW of photovoltaic solar power, 200 MW of electrolysis and 50 tH₂/day export capacity, subject to the growth of international demand.
- Also at La Robla, the installation of a storage plant (hydrogenation) with initial capacity of 12 tH₂/day is envisaged in a first phase.
- The installation of a hydrogen pipeline 3.5 km long so some of the green hydrogen produced can be injected into the national gas network is also envisaged.
- Installation of an electricity storage system with Li-ion batteries in stand-alone mode, connected directly to the grid, whose objective is to make the grid stable, allowing generation, which is more and more renewable, to be matched to consumption.
- On the basis of our own data and external references about general job creation ratios, the overall impact of phase I of the accompaniment plan is estimated at **3 736 jobs**. The impact on local employment and the local industrial value chain due to the construction of a solar photovoltaic plant of 400 MW is estimated at 2 872 posts (direct, indirect and induced) in the construction phase and subsequent operation, while with regard to building and operation of the 60 MW electrolyser, the impact on employment is of about 864 jobs (direct, indirect and induced).
- From the local perspective, proximity to a major hub of renewable hydrogen will allow nearby municipalities to benefit from the production of this gas at a highly competitive price thanks to economies of scale. This will give rise to great opportunities in relation to sustainable and decarbonised development based on renewable hydrogen. With regard to mobility, work is under way with neighbouring councils to develop filling stations for this gas to refuel municipal vehicles (buses, waste collection, distribution, etc.).

The Just Transition Covenant

At this moment, the status of the covenant documentation is as follows:

Autonomous Region	JT Covenant	Area / Plant	Protocol		Diagnosis		Participation process		
			Signature date	Preliminary diagnosis and delimitation.	Final diagnosis	End date	No. agents particip.	No. of proposals and ideas submitted	Participation report
Castilla y León	La Robla	La Robla	20/11/20	Yes	Yes	31/07/20	41	147	Yes

All the latest information about the Covenant can be found at:

https://www.transicionjusta.gob.es/Convenios_transicion_justa/procesos_en_marcha-ides-idweb.asp

3.4.2. Meirama (Galicia)

The coal-fired station

- Start of commercial operation in 1980.
- 550 MW.
- 2 reservoirs, 1 ash and slag dump.
- Dismantlement preliminary work.
- Closure certificate obtained.
- On the date of the closure application, direct jobs data: 77 (own) 35 (contractors).
 - Severances / Resignations: 41.
 - Redeployments: 27.
 - Destination units: Mainly renewable and hydroelectricity cycles.
- Current workforce at 31/07/2021 (dismantlement work): 9.

Accompaniment plan

Reconversion of the Meirama Thermal Plant into a major centre of the circular economy in Galicia, as a node integrating new solutions for the energy transition: renewables, biomethane and hydrogen. Development of green hydrogen production hub on the Meirama site for use in mobility and industry, as well as for injection into the gas network.

- Development of green hydrogen production hub on the Meirama site for mobility and industry, as well as for injection into the natural gas network and subsequent commercialisation.
- Electrolysis plant of 50 MW to produce 7500 tH₂/year of hydrogen from a newly developed renewable electricity resource, a 150 MW wind farm.
- In a second phase, the electrolyser capacity will be expanded to 200 MW.
- Under the auspices of the EU Next Generation programme and the Spanish Recovery, Transformation and Resilience Plan, the Galicia Regional Government has driven forward the creation of the Galicia Transformation Hub, a strategic project to encourage economic growth, the creation of jobs and the development of a competitive, sustainable and circular business community. Within this hub, one of the cornerstones is:
 - The treatment and valorisation of livestock waste from the whole of Galicia on the site, to produce biogas through anaerobic digestion. This biogas will be purified at an upgrading plant to give it the quality needed for injection into the national natural gas network. **It is estimated that this circular economy project will reach all areas of Galicia and could generate over 1 TWh/year of biomethane.**
- Naturgy is also working on installing a power storage system using Li-ion batteries in stand-alone configuration, connected directly to the network. The progressive reduction in generation from fossil fuels and their replacement by renewable technologies requires the inclusion of elements to help the system be more flexible and manageable, such as storage capacity.
- For the short term, the generation of employment related to the design, construction and commissioning of the investment project submitted has been identified. In the long term, this project will make it possible to generate new jobs which, due to their sector and its importance, are going to require highly qualified professionals who are also going to develop new and valuable knowledge and skills for the new technologies and processes that characterise the project. In general, jobs for technical profiles like engineers are envisaged, as well as research profiles such as physicists and chemists and posts related to business development and technical analysis.
- It should be mentioned that, apart from producing new jobs, this project brings personal development benefits too, as the workers will be trained with new knowledge and technical skills which will be highly necessary for this and future energy projects based on hydrogen to be successful.
- On the basis of own data and external references about general job creation ratios, the estimated impact is of about **2 731 posts** in phase I of the electrolyser and wind farm. The impact on local employment and the local industrial value chain due to the construction of the 150 MW wind farm is 2 011 jobs (direct, indirect and induced) in the construction phase and subsequent operation, while for the 50 MW electrolysis plant, the impact on jobs is some 720 posts created (direct, indirect and induced).

The Just Transition Covenant

At this moment, the status of the covenant documentation is as follows:

Autonomous Region	JT Covenant	Area / Plant	Protocol		Diagnosis		Participation process		
			Signature date	Preliminary diagnosis and delimitation	Final diagnosis	End date	No. agents particip.	No. of proposals and ideas submitted	Participation report
Galicia	Meirama	Meirama		Yes	Yes	31/07/20	28	65	Yes

All the latest information about the Covenant can be found at:

https://www.transicionjusta.gob.es/Convenios_transicion_justa/procesos_en_marcha-ides-idweb.asp

3.4.3. Narcea (Asturias)

The coal-fired station

- Start of commercial operation in 1969.
- 530 MW.
- Dumps (2): gypsum, ash and slag.
- Closure certificate obtained.
- Dismantlement not started.
- On the date of the closure application, direct jobs data: 81 (own) 48 (contractors).
 - Severances / Resignations: 41.
 - Redeployments: 32.
 - Destination units: Mainly renewable and hydroelectricity cycles.
- Current workforce at 31/07/2021 (dismantlement work): 8.

Accompaniment plan

The construction of a green hydrogen production plant for consumption by industry in Asturias is envisaged, based on the installation of onshore and offshore wind farms in the territory.



- The first deployment of the technology will be on a small scale, with installation of 50 MW of marine wind energy and another 100 MW wind farm onshore. The green hydrogen will be produced using a 100 MW onshore electrolyser and another offshore of 5 MW, enabling production of 15 000 tH₂/year. In a second phase, the project could be expanded to 250 MW offshore and an additional electrolyser on land of 100 MW.
- Hydrogen offers opportunities for Asturias in three areas: energy, industry and knowledge. Harnessing these would entail structural transformation of the region's economy. Optimising the generation of a raw material using native energy resources to increase added value is the main objective.
- In addition to decarbonising industry in Asturias, making it more competitive in a scenario where renewables become progressively more important, other benefits will also be seen, such as the generation of highly qualified jobs for this innovative project.
- The green hydrogen will be consumed locally, distributed over the gas network and exported around Europe, thus setting up the continent's first large-scale green hydrogen production and transport chains.
- An impact on local employment and the local, regional and national industrial value chain of over 1 500 direct and indirect jobs, between the construction phase and operation. Likewise, an expansion of human capital is anticipated in terms of quality and level of training, as well as in the productivity of the people involved in the processes, thanks to their employees' training and abilities.
- In conjunction with the authorities and entrepreneurs, work is under way on reusing the infrastructures and systems to enable economic activities to take place around the former plant. The possibilities include reusing its ash and slag dump, or using its diversion dam for fish farming or hydroelectricity.

The Just Transition Covenant

At this moment, the status of the covenant documentation is as follows:

Autonomous Region	JT Covenant	Area / Plant	Protocol		Diagnosis		Participation process		
			Signature date	Preliminary diagnosis and delimitation.	Final diagnosis	End date	No. agents particip.	No. of proposals and ideas submitted	Participation report
Asturias	Southwest	Narcea	25/03/20	Yes	Yes	13/12/19	33	78	Yes

All the latest information about the Covenant can be found at:

https://www.transicionjusta.gob.es/Convenios_transicion_justa/procesos_en_marcha-ides-idweb.asp

3.4.4. Anllares (Bierzo, León)

The coal-fired plant

- Start of commercial operation in 1982.
- Naturgy (66.6%) – Endesa (33.3%).
- 350 MW.
- Reservoir and ash and slag dump.
- Closure certificate obtained.
- Dismantlement work under way (70% complete).
- On the date of the closure application, direct jobs data: 15 (own) 12 (contractors).
 - Severances / Resignations: 6.
 - Redeployments: 5.
 - Destination units: Mainly renewable and hydroelectricity cycles.
- Current workforce at 31/07/2021 (dismantlement work): 4.

Accompaniment plan

Under assessment

The Just Transition Covenant

At this moment, the status of the covenant documentation is as follows:

Autonomous Region	JT Covenant	Area / Plant	Protocol		Diagnosis		Participation process			
			Signature date		Preliminary diagnosis and delimitation.	Final diagnosis	End date	No. agents particip.	No. of proposals and ideas submitted	Participation report
Castilla y León	Bierzo-Laciana (4 priority areas)	Priority area of Cubillos-Ponferrada/Anllares	25/11/20		Yes	Yes	31/07/20	43	127	Yes

All the latest information about the Covenant can be found at:

https://www.transicionjusta.gob.es/Convenios_transicion_justa/procesos_en_marcha-ides-idweb.asp



We are developing
Vocational Training
modules for
employability
in relation
to energy, to meet
the transition
objectives.

04

Naturgy Foundation: Enhancing vocational training to boost employability in just transition zones

04. Naturgy Foundation: Enhancing vocational training to boost employability in just transition zones

Under the auspices of the Just Transition Strategy driven by the Ministry for Ecological Transition and the Demographic Challenge ("MITECO") -which seeks to produce active employment and vocational training policies for coordinated work between the authorities and social agents-, and as part of the Vocational Training Alliance of the Ministry for Education and Vocational Training; Naturgy Foundation has put in place a line of **energy-related training actions** whose objective is to update syllabuses for them to match the real needs of companies and society, and thus train, capacitate and qualify professionals to improve their skills and enhance employability, meeting the needs of a future sector like energy.

This programme has a **specific action in the zones affected by the closure of thermal plants** and the process of decarbonisation of the Spanish economy thanks, in part to the agreements that are being entered into with the respective regional ministries for education in Asturias, Castilla y León and Galicia.

In the Vocational Training Programme for Employability, Naturgy Foundation is giving training to teachers and students on training cycles and the employed and unemployed of the sector. This training, some of which is certified by the respective education authorities, deals with **sustainable and efficient building and refurbishment, renewable gas, vehicular natural gas, energy advice in vulnerable settings** and the **digitalisation of power grids**. By conveying up-to-date technical knowledge about energy efficiency, renewable energy and new energy technologies, Naturgy Foundation wishes to help the development of the sector, encouraging training in emerging occupations, recycling and workforce insertion. **To date there have been more than 10 000 beneficiaries overall.**

The Naturgy Foundation Vocational Training Programme is part of the Vocational Training Alliance driven forward by the **Ministry for Education and Vocational Training**. Moreover, this training will also be recognised by the **National Employment Service ("SEPE")** thanks to an agreement reached; SEPE will use it as a reference for the ongoing updating of its Specialist Training Catalogue in relation to energy, sustainability and the environment, to satisfy the demands of emerging sectors and occupations.

Naturgy Foundation is part of a team working on professional certification and specialist courses. It holds periodic meetings with the National Qualifications Institute ("INCUAL") and the vocational training regulators at the Ministry for Education.

■ Summary table for the Vocational Training Programme for Employability in Just Transition zones

	No. hours	No. teachers	No. centres	Approx. no. students	Professional families
Galicia	247	51	29	1 530	9
Castilla y León	222	16	4	480	6
Asturias	222	24	8	720	8
Total 3 autonomous regions	247	91	41	2 730	9
Total autonomous regions	292	344	149	10 320	9

4.1 Common actions carried out in Galicia, Asturias and Castilla y León

Training trainers

One key factor to the success of the programme is training the trainers of the sector's future professionals.

5 certified training sessions were held in July 2019, July 2020 and July 2021.

Training, recycling

December 2020: **course for the unemployed and employees affected by the closure of the thermal plants** about the sector's new needs: renewable gas and sustainable building and refurbishment.

To assist the occupational reinsertion of those employed by Naturgy indirect contracts affected by the Closure Plan for the coal plants at La Robla (Castilla y León), Narcea, in Tineo (Asturias) and Cerceda (Galicia), Naturgy Foundation, in collaboration with Naturgy Generación Convencional, gave two vocational training courses in December 2020 to enhance employability in sustainable building and refurbishment and renewable gas.



Signature of general protocol with the National Employment Service (SEPE), between the director-general of Naturgy Foundation, María Eugenia Coronado, and the director-general of SEPE, Gerardo Gutiérrez Ardoy.

Donation of equipment and other materials

To complement the training received by teachers and so they can apply it in the classroom:

- Donation of teaching material used in the training, with contents and solved exercises, that can be applied directly in class.
- Donation of teaching equipment for the courses on vehicular natural gas, sustainable building and refurbishment and energy advisor in vulnerable settings.

In support of this and to complement the training, the Foundation has put two lines of action in place at the request of the vocational training authorities of the different autonomous regions.

- Theoretical-practical book. Collection of theory and practice books, with up-to-date contents, enabling work in the classroom or autonomously. Collection name: *Vocational Education and Training in Energy. Vol.1. Renewable gases.*
- Access to e-learning course. Courses lasting 15–30 hours in e-learning format. Update of syllabus. Continuous training. Those interested in the sector, students, teachers. Recycling of professional knowledge.

Guided visits

As a complement to the training, guided visits to buildings or construction work or biogas production plants are offered to trainers and centres, to reinforce the training content.

Efigy Education

Offering the entire regulated education training programme in environments affected by the closure of plants. Update of syllabuses, offering tools for learning and evaluation in the environment and sciences areas, boosting STEM vocations and attracting talent to the energy sector.

4.2 Galicia. Actions conducted

Covenant with the regional government

Signature of a covenant with the Galician Ministry for Culture, Education and Universities.

EducaEmprende

The EducaEmprende programme was created under the aegis of the Directorate-General for Education, Vocational Training and Educational Innovation. The objective of this plan is for Baccalaureate and vocational training students to visit technology centres in Galicia in order to create a first contact between students and companies, giving the students a satisfactory experience that helps them understand the professional profiles in each space, and foment the spirit of entrepreneurship among students.



Act of accession to the “Vocational Training Alliance: a national strategy”, from the Ministry for Education and Vocational Training. The photograph shows the Spanish Minister for Education and Vocational Training (2018-2021), Isabel Celaá.

Collaboration agreement to offer visits to different Naturgy power plants, such as the hydropower stations at Velle and Tambre and the Cabo Vilano wind farm, as well as others.

Next steps:

- Maintain and build on the relationship with the education and employment authorities. Direct relationship with the Education and Vocational Training Office.
- Collaboration plan and signature of agreement with Galicia employment authorities.
- New training action, in December 2021, for those affected by the closure. Selection of training and centres: Prioritisation of the training it is desired to give and the centres where it will take place.

Cerceda - Meirama

A plan to make the most of the environmental rehabilitation carried out by Naturgy in the zone, generating educational and outreach material for use by local schools which will end with a visit to the natural space of the lake, webinars to communicate the rehabilitation work carried out or courses for tourist guides, to transfer knowledge and enhance the actions in the zone.

In addition, there will be creation (Training and Insertion Programme) for young people, specifically environmental educators, to foment employment.

4.3 Asturias. Actions conducted

Covenant with the authorities

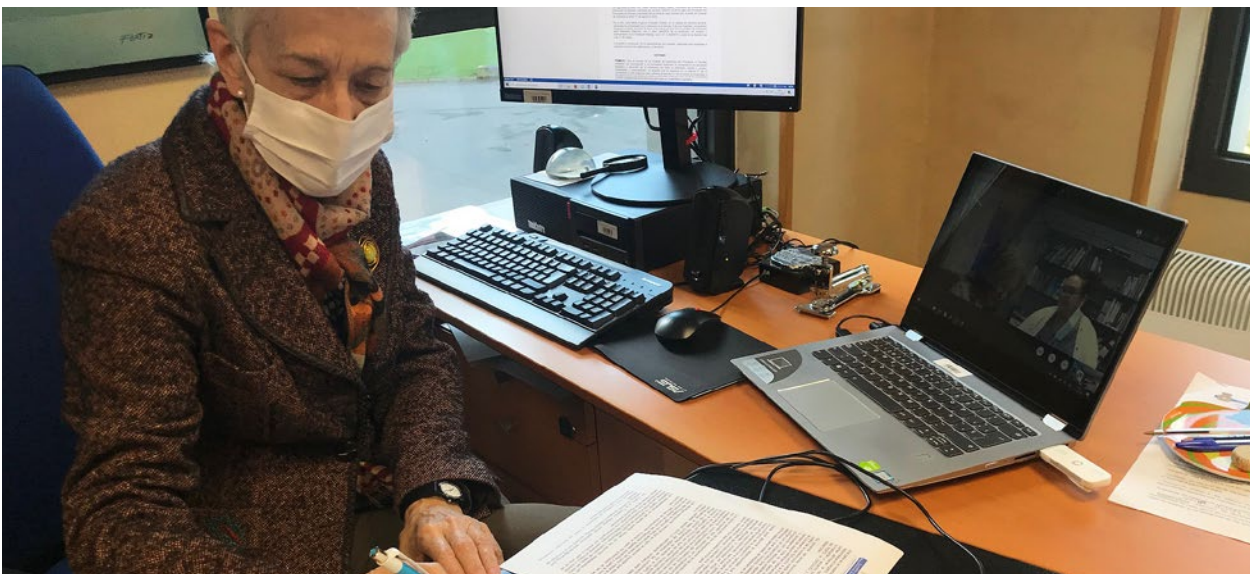
Signature of a covenant with the Regional Ministry for Education.

Educational programme in the Tineo area

During 2019, Naturgy Foundation conducted a teaching initiative through its educational programme Efigy Education in Tineo, offering the latest knowledge to Spanish education centres on new energy technologies, such as renewable gas and its role in the circular economy, and the transition to a more sustainable energy system, with a continuous training programme throughout the school year. Nine sessions were given at the education centres of Tineo, with 225 students.

Next steps:

- Signature of covenant with the Regional Ministry for Labour.
- Signature of covenant with the Regional Ministry for Social Rights and Welfare.
- The regional ministries and the Vocational Training authorities will certify the training to be given to unemployed people in that autonomous region.
- Asturias will be incorporated into the house refurbishment fund of Naturgy Foundation.
- Training to be given in autumn 2021.
- Selection of training and centres: Prioritisation of the training it is desired to give and the centres where it will take place.
- Courses in collaboration with the SEPE and the regional education and employment ministries.



Signature of covenant between Naturgy Foundation and the Asturias Regional Ministry for Education to update vocational training in the area of energy and enhance the employability of the sector's future professionals. The photograph shows the Regional Minister for Education of Asturias, Carmen Suárez.

4.4 Castilla y León

Covenant with the regional government

Forthcoming covenant with the Regional Ministry for Education.

Education programme around La Robla

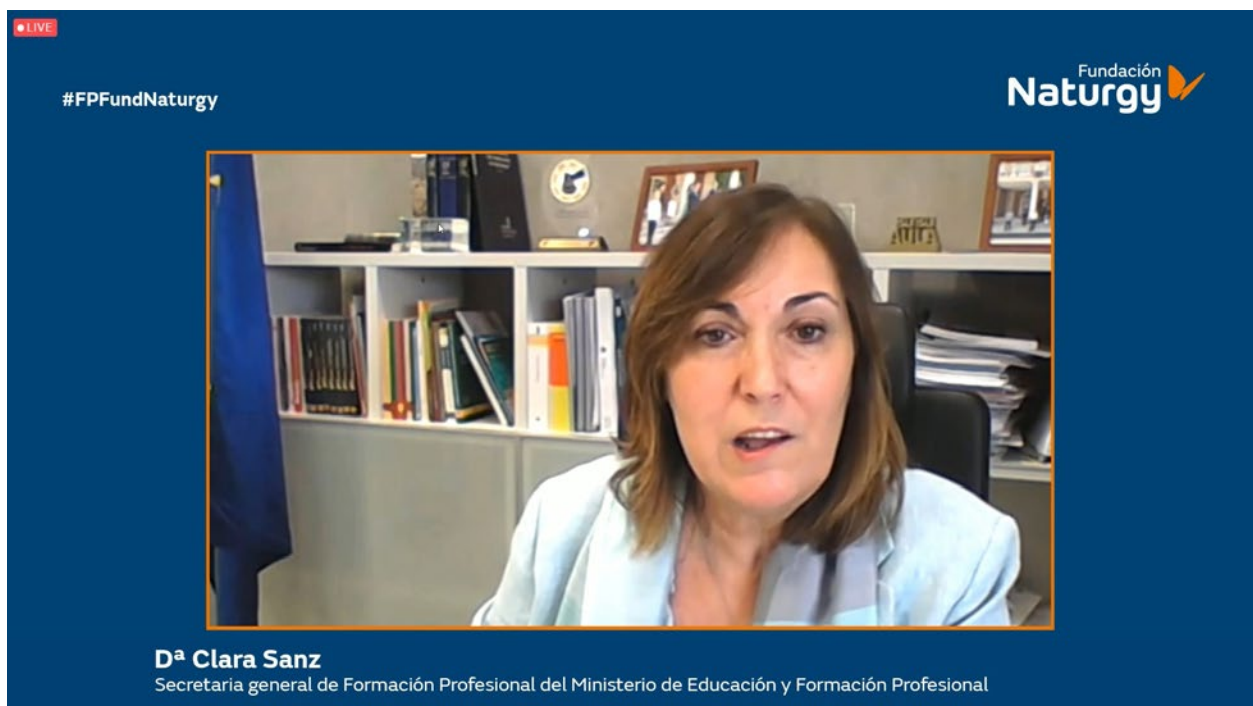
During 2019, Naturgy Foundation conducted a teaching initiative through its educational programme Efigy Education in La Robla, offering the latest knowledge to Spanish education centres on new energy technologies, such as renewable gas and its role in the circular economy, and the transition to a more sustainable energy system, with a continuous training programme throughout the school year. Four sessions were carried out at the education centres of Tineo, with a hundred students.

Visits to wind farms and solar plants

Communicating new professional profiles and employability opportunities with the energy transition process.

Next steps:

- Relationship with the employment authorities.
- Selection of training and centres: Prioritisation of the training it is desired to give and the centres where it will take place.





We have
ambitious
but realistic
targets backed
by assurances
that guarantee
the investments
and measures
implemented.

Just Transition
Report
2021

05

The value of renewable gases

05. The value of renewable gases

5.1 Renewable gases in the Spanish Just Transition Strategy

The Spanish Just Transition Strategy states that the keys to implementing a more ecological economy are the promotion of green growth through business development linked to optimal use of raw materials and greater competitiveness, reducing inequality and promoting balanced territorial development.

In the context of limited natural resources, the economy has to undergo a transition so it can respond better to local and global environmental challenges. On the one hand, the Spanish economy must transform itself to help the fight against climate change and attain emissions neutrality by 2050, although other environmental problems also merit attention, such as air pollution, a serious issue in some Spanish cities, waste management and recycling, and contamination in ecosystems.

Dealing with these problems by ecological transition of the economy could be a significant source of job creation. Thus, and apart from the fact that environmental protection is crucial for society and the planet itself as a whole, the journey towards a green economy, and therefore a more circular one, will bring with it economic and social benefits.

In this context, Naturgy considers that its stance on renewable gases rests solidly upon these principles, and that driving them forward and developing them will not only help to mitigate environmental impacts but also be a source of creation of value shared with society. Developing renewable gases, both biomethane and hydrogen, is included in the Just Transition Strategy ("ETJ") as one of the areas of Energy Transition offering the **greatest opportunities for creating employment**, and these gases are identified as routes towards decarbonisation and generating jobs in transport and industry, with special emphasis on the **creation of green jobs in rural areas**, in line with the Spanish Anti-Depopulation Strategy.

Naturgy Group, as one of the principal operators of the basic natural gas infrastructures, assumes its leading role **as a driver in developing the renewable gases value chain**.

5.2 Naturgy's stance for renewable gases

The current energy system must be transformed to meet the objectives set for decarbonisation, renewable production and energy efficiency. The Spanish and European energy and climate plans place particular emphasis on a high level of electrification based on renewable energies to reach these targets. Nevertheless, this model suffers from technical constraints on the electrification of certain sectors intensive in energy, like industry and transport. Given that electrification cannot meet all energy demands, **tighter integration of the electricity and gas sectors** is an effective solution for reaching decarbonisation targets because of how well renewable gases, the gas infrastructure and electricity complement each other. The gas network currently has a high storage capacity, reach and capillarity, enabling large quantities of energy to be carried to where it is consumed, as a prime element in decarbonisation using renewable gases at all those points where natural gas is currently consumed.

Against this backdrop, Naturgy Group, as one of the principal operators of the basic natural gas infrastructures, assumes its leading role as a driver in developing the renewable gases value chain.

5.3 The biomethane opportunity today

The production of biomethane, or renewable gas, from organic waste from livestock, crops or industry, or from landfill and waste water plants, is an excellent example of circularity in the energy sector, offering important environmental advantages and representing a complementary source of income in rural areas.

Environmental advantages

- Promotes the development of a production process based on using renewable biological resources, which guarantees efficient use of natural resources and reduces the generation of organic waste, thus fostering conservation of biodiversity and ecosystems.
- Facilitates decarbonisation in all those sectors that consume natural gas by replacing it with a fuel of biogenic origin, and therefore neutral in CO₂ emissions. Moreover, it also reduces emissions in sectors like agriculture, waste management and water treatment, by making use of their organic waste, in turn reducing the negative impact of these on ecosystems and population.
- Contributes to improving air quality by avoiding burning of these wastes, and reduces the environmental impact of chemical fertilisers by replacing these by the high-quality fertiliser yielded, digestate.

Social and economic advantages

- Generates employment, especially in rural areas, offering solutions to the demographic challenge and the empty parts of Spain.
- Agriculture and food production form a sector of significant weight in our economy, and managing their organic wastes properly offers a renewable and highly available resources.
- Obtaining a high-quality organic fertiliser which helps to maintain wastes within the production cycle.
- Spanish technology and engineering of the highest level to obtain biomethane, with R+D potential for making the most of opportunities such as the digitalisation of waste tracking and certification of the guarantee of origin.

Energy transition advantages

- Sustainable and renewable energy which contributes to the energy transition and security of supply.
- Reduction of external energy dependence.
- Administrable for continuous generation.
- Versatile energy source, valid for domestic, industrial, commercial and transport use.
- Harnessing the existing natural gas infrastructure so that a renewable fuel of biological origin. of distributed production, can be consumed everywhere.

Projects under study for injecting biomethane into the Nedgia network:

98 projects (2 987 GWh/year):

- 37 livestock (1 685 GWh/year).
- 25 water treatment plants ("EDAR") (322 GWh/year).
- 19 industry (454 GWh/year).
- 5 from organic fraction of solid domestic waste ("FORSU")- (136 GWh/year).
- 12 landfill sites (390 GWh/year).

With regard to creation of jobs associated to biomethane projects, in 2021 the biomethane projects Nedgia is participating in will total a production capacity in excess of 75 GWh/year, and the objective is that this figure should rise exponentially, to reach above 2 900 GWh/year by 2025. If we base ourselves on the estimates by NAVIGANT for the generation of jobs associated to biomethane production in Spain, these 2 900 GWh/year could mean more than 2 500 jobs, including direct local and indirect posts.

5.4 The opportunity of H₂

Green hydrogen is an energy vector capable of:

- Channelling large amounts of renewable energy from electricity generation to sectors where electrification is not a feasible option (chemical industry, high-temperature industrial heat, heavy transport...).
- Storing and managing energy on a massive scale and over long periods, coupling the supply and demand for energy.

The natural gas transport and distribution infrastructure existing today in Spain can be used in the short term to transport hydrogen in the form of "blending" without investment being necessary, while in the medium term it can transport pure hydrogen or in mixtures of more than 10%, by adaptation of compressor stations and other minor elements.

To encourage the penetration of hydrogen as a renewable energy vector, it is necessary to develop its entire value chain, from getting it to using it in the sectors of final demand. Development of the renewable hydrogen value chain is at an early stage, with pilot projects to substitute hydrogen of fossil origin, or other fuels.

The production of biomethane, or renewable gas, from organic waste from livestock, crops or industry, or from landfill and waste water plants, is **an excellent example of circularity in the energy sector**, offering important environmental advantages and representing a complementary source of income in rural areas.



Main milestones

- 2015** ■ We participated in the project LIFE Methamorphosis, cofinanced by the European Union, which was a pioneer in the production of renewable fuel from waste and whose objective is **efficient management of pig slurry**, a problematic waste with a major environmental impact.
- 2018** ■ The biomethane generation facilities at the water treatment plant ("EDAR") at Bens (A Coruña) were inaugurated; this was the first project in this country to use membrane technology to **upgrade the biogas generated in a purifier** (digestion gas).

September
- 2019** ■ We participated in a new milestone: **the injection of biomethane, for the first time in Spain, into the natural gas network of Nedgia**. This renewable gas came from the water treatment plant at Butarque (Madrid), and this was an innovative project under the auspices of the European ECO-GATE consortium (cofinanced by the EU).

October
- 2021** ■ Two years later, **biomethane from landfill was injected into the Nedgia distribution network for the first time**, from the site known as Elena in Cerdanyola del Vallés (Barcelona).

June

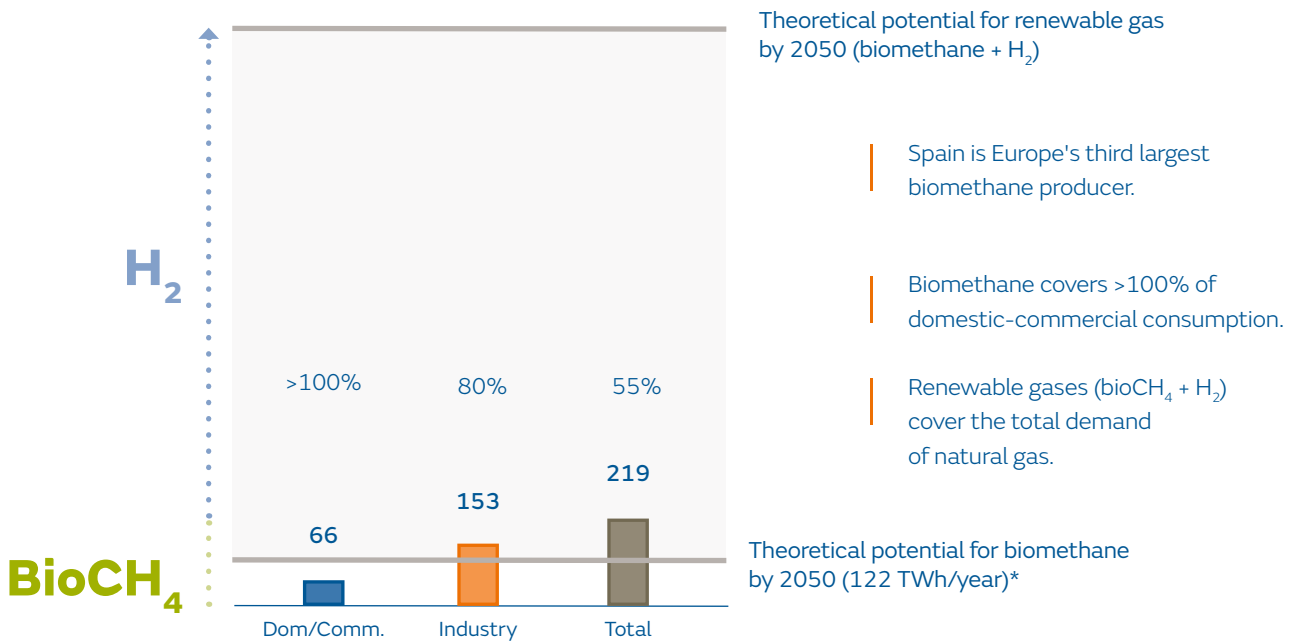
The adoption of hydrogen will not proceed at the same pace in all sectors, due to the differences between uses and availability, in addition to the cost of the final equipment. In the short term, the penetration of renewable hydrogen could be supported by the sectors which already consume grey hydrogen, such as refineries and fertiliser production plants. While at the moment, world demand for hydrogen stands at about 75 million tonnes (almost entirely as a raw material for industry), over the next decade this demand could rise to 100 million tonnes.

By 2050, green hydrogen production could reach 300 million tonnes, which would imply superseding a third of the current consumption of petroleum.

Green hydrogen has a promising future, always provided it receives the necessary support from government and the private sector to bring large-scale projects into service and enabling the expected technology roadmap to be fulfilled. At the start of 2019 the EU published its Hydrogen Roadmap, whose objective is to set out the path towards the growth and development of the hydrogen sector in the bloc. as one of the main players in the Energy Transition. This key role for hydrogen in the process of change the energy sector is undergoing is also supported by the milestones pursued by the Green Deal, because hydrogen is destined to become a key fuel for climate neutrality by 2050, a priority objective for the EU in relation to energy and the environment.

5.5 The potential of renewable gases in Spain

■ Conventional consumption of natural gas in Spain (TWh/year)



* Source: Demand for gas: ENAGAS annual report with demand for natural gas, from 2018. Consumption by industry dedicated to power generation (estimated as 30% of industrial consumption) and combined cycles have been subtracted. Biomethane generation potential from the study "EU impact of use of the biomethane and hydrogen potential on trans-European infrastructure", compiled by Trinomics for the EU.



www.naturgy.com