Renewable ever since

Sustainability report 2020

CVA

From the mountains, where we were born and which has inspired our development, we try to contribute every day to building the future for the generations to come. A future we want to be green, sustainable and full of our natural, professional and supportive energies.

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Beyond 2029

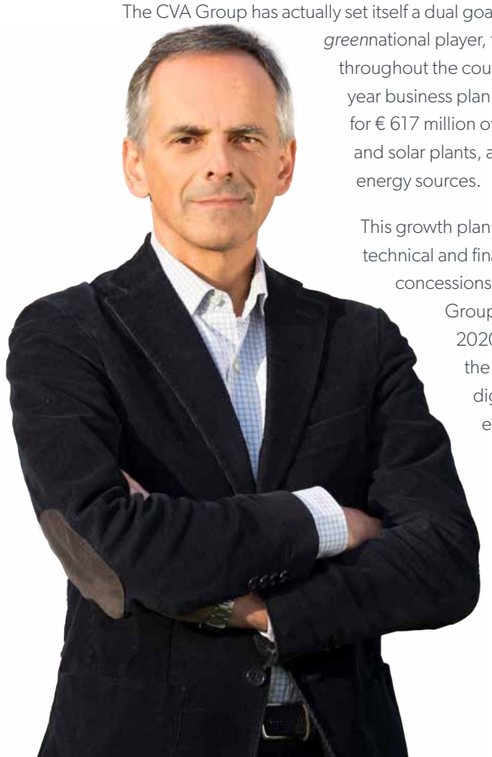
Dear readers,
2020 will go down as a watershed year in modern history. The COVID-19 pandemic had a sudden and overwhelming impact on our lives, an impact on all the areas of daily life; the attack on health systems, on personal health and on the economy has been unprecedented.

The consequences have been and continue to be serious, and see not only Governments on the front line at global level, but also all the players in economic and civil sectors, from citizens to businesses, in an attempt to mitigate the negative effects of this global emergency.

At the same time, 2020 was the year in which Europe responded by deploying a series of unprecedented aid and recovery measures, accompanied by precise guidelines to tackle climate change. This marks out an ambitious and challenging path, with energy companies at the forefront, that promises to put the paradigm of economic, environmental and social sustainability at the heart of the recovery. In this context, for which no one was prepared, and that no one could ever have foreseen in terms of its scope and duration, our company has never stopped providing the essential service it is required to provide: the production and distribution of electricity have been guaranteed constantly, despite the difficulties that all our workers have had to face.

We were also ready when Terna, the national network operator, called on us to take measures to keep the system safe. The Group has been able to respond promptly on several fronts: we have guaranteed employment to our employees, we have offered support to the local area, we have given assistance to our customers and support to our suppliers, taking a number of steps in response to emergency health and economic needs. In this dark year, however, we did not limit ourselves to dealing with the temporary situation: we strived to continue to look to the future, focusing our *roadmap* on two converging axes: the temporal one of 2029, when the hydroelectric concessions expire, and the geographical one, which shifts our projection from the regional to the national level.

The CVA Group has actually set itself a dual goal: on the one hand, to consolidate its distinctive positioning as a *purely green*national player, further increasing its contribution to the ambitious decarbonisation goals throughout the country; on the other, to expand its customer base throughout Italy, through a three-year business plan. The Strategic Plan approved by the Board of Directors in January 2021 provides for € 617 million of investment until 2029, including € 379 million for the development of new wind and solar plants, aimed at increasing diversification with respect to geography and renewable energy sources.



This growth plan means that, starting from 2024, the company will have the available human, technical and financial resources to participate in tenders for the reassignment of hydroelectric concessions, and to carry out *revamping* interventions on the related infrastructure. The CVA Group has already started several of these investment and development initiatives in 2020: co-development of new production plants, maintenance and diversification of the production assets, energy efficiency, strengthening of the distribution network, digital and production innovation (green hydrogen), commercial *cross-selling* for energy that moves from being a*commodity* to a service.

Thanks to the agreements entered into in partnership with specialised companies, an important portfolio of projects aimed at the development of wind and photovoltaic plants, that will have a central role in the energy transition, has been launched.

Marco Cantamessa

With the Green Energy Building symbol, CVA has inaugurated its entry into the energy efficiency sector, offering its services as a *General Contractor* for companies, professionals and citizens who wish to take advantage of the superbonus for building efficiency provided by the national legislation. The goal is to contribute to the sustainability of building stock, not only through green energy, but also through energy savings. The agreement stipulated with a major energy company will allow the Group to participate in the national hydrogen strategy as a producer of green hydrogen and bringing the experimentation of new energy models to the Aosta Valley territory. In addition, the development of an ambitious business plan will allow a growing number of domestic and industrial customers to have "green" energy, accompanied by a rich offer of services, for a more sustainable daily life.

Deval, the distribution company of the CVA Group, is also expected to increase its investments, which will enable it to upgrade and digitalise its network. This will accommodate both the incremental production of distributed generation plants and the increase in the number of electric utilities with simultaneous operations, not to mention the need to support the growth of electric mobility.

Despite opening this gateway to the future, CVA does not overlook the Group's main asset, which is its hydroelectric plants. Through predictive maintenance, we preserve and maintain even plants that have reached the century mark, while keeping a watchful eye on the wait for final regulations to assign expiring concessions. A regulation that, hopefully, will make it possible to recognise the infrastructural investments undertaken, to participate in the tenders according to a commensurate and fair playing field, and to ensure that the selection procedures take into due consideration the unique technical qualifications needed to manage technically complex plants, and that greatly affect the territory of reference.

"Today is but one day of all the days to come, but what you do on all the days to come depends on what you do today."

And with these words from Hemingway, we invite you to read our third sustainability report: from the mountains, where we were born and which inspire our development, we try to contribute every day to building future for the generations to come.

A future we want to be green, sustainable and full of our natural, professional and supportive energies.

Marco Cantamessa
Chairman
C.V.A. S.p.A

Enrico De Girolamo
Chief Executive Officer
C.V.A. S.p.A

Enrico De Girolamo

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About us

The year 2000 marked the start of the journey of the CVA Group with the signing of the framework agreement with Enel, a document of historical importance with which the Aosta Valley became the first region in Italy to secure the management of water and regional hydroelectric production.

The process was concluded on 1 June 2001 through the acquisition of Enel's entire hydroelectric infrastructure in Aosta Valley. In its twenty years of history, the Group has grown, becoming a mature player in the energy market, unique in the integrated production from solely renewable sources, from hydroelectric to wind and photovoltaic power.

The CVA Group today is the reference *provider* of energy services in the Aosta Valley

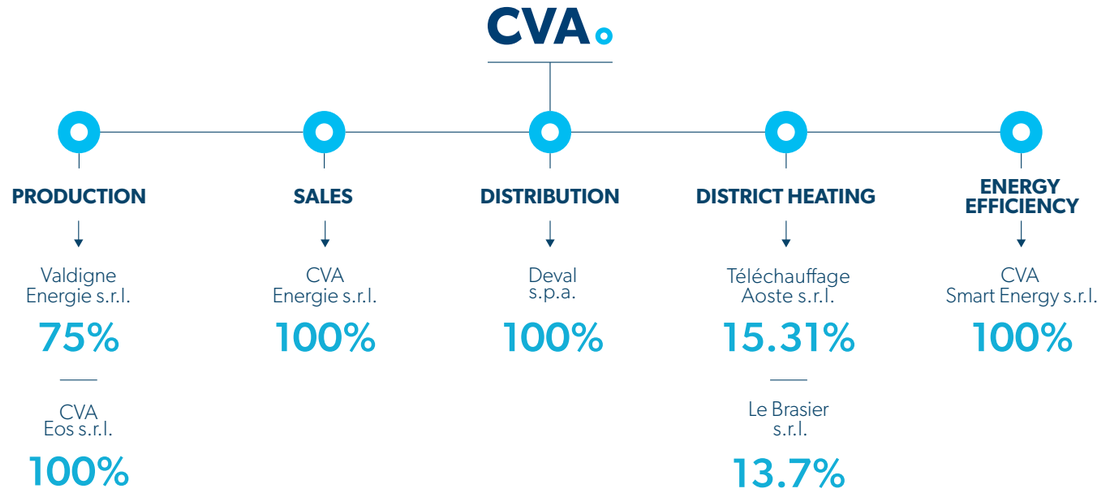
Today, it is the reference *provider* of energy services in Aosta Valley and one of the most important Italian companies in the *green energy*sector. CVA is the fifth largest national group in terms of the contribution to renewable generation from hydroelectric sources, while it is among the largest groups contributing percentage-wise to renewable generation, including wind and photovoltaic power[1]. The Parent Company, Compagnia Valdostana delle Acque S.p.A. - Compagnie Valdôtaine des Eaux S.p.A. - has a sole shareholder, namely the regional finance company Finaosta S.p.A., wholly-owned by the Autonomous Region of Aosta Valley. The Group ended 2020 with an **EBITDA of € 138.9 million** , down 8.87% compared to 2019 but **with a significantly improved revenue ratio**, up from 18.9% in 2019 to 25.9% in 2020.

ECONOMIC RESULTS (THOUSANDS OF €)	2018	2019	2020
Turnover	844,577	805,433	536,182
Gross operating margin	140,960	152,458	138,933
Operating income	91,013	104,097	87,198
Net profit attributable to the Group	62,687	75,103	59,977

BALANCE SHEET RESULTS (THOUSANDS OF €)	2018	2019	2020
Net invested capital	888,739	859,262	808,620
Consolidated shareholders' equity of the Group	787,686	795,369	809,694
Consolidated shareholders' equity of the Group and minority interests	794,486	802,286	817,344
Net financial position	173,514	141,554	147,235

[1]ARERA Annual Report; 2020

The Group operates through five subsidiaries and two associates, active in five vertical areas throughout the energy chain: production, sales, distribution and, to a lesser extent, district heating.



This is how EOS was born

EOS is the Greek goddess of dawn, and it is with this name that the CVA Group has decided to greet the creation of the new corporate container in 2020, which incorporates part of the production of wind energy and which, in the near future, it is assumed will also absorb the photovoltaic generation of the Group. This move streamlines CVA's production from other renewable energy sources, incorporating the companies CVA Vento and Wind Farm Monteverde into a single company, which is intended to enshrine the start of an incremental process of renewable energy production from wind and solar power. CVA's focus on expanding *pure green* generation responds to industrial needs for diversification of sources, in keeping with the national and European decarbonisation *roadmap* .

Felix Industria Award

In 2020, CVA was awarded the "Industria Felix - L'Italia che compete" Award, assigned by a Scientific Committee composed of high-profile economists, entrepreneurs and managers. The Award consists of the assignment of the "Alte Onorificenze di Bilancio" (High Budget Honours), reserved for companies with the best management performance and a financial reliability indicator of solvency and safety. Compagnie Valdôtaine des Eaux S.p.A. is among the 62 companies considered to be the best performing in terms of management and reliable on a financial level in the survey presented by Industria Felix Magazine and carried out in collaboration with the Cerved Studies Office and UiT Piemonte, on the performances of companies in Piedmont, Liguria and Aosta Valley.

CVA also received the "*green*" scroll thanks to the publication of the 2019 Sustainability Report.

The value chain

Electricity is an indispensable element of our life, so taken for granted that we only realise its absence in the event of power line faults, minor *blackouts* that, albeit temporary, are able to seriously jeopardise many of our daily activities. The full availability of an electrical connection during the periods of *lockdown* due to the pandemic was essential to keep us all connected to the world. Few people know that it has not always been easy to guarantee this public utility service, because of the network congestion due to the sudden shutdown of industrial activities. The case is illustrated in the chapter *Our most valuable resource*, where readers can find out about the actions taken during the emergency by the operational departments of the CVA Group, which had both the honour and the responsibility for ensuring the continuity of this fundamental service for the community.

Energy follows a complex journey to power daily activities, it is the process concealed behind the switch that turns on our lights, our PCs, the dishwasher or the electric car.

CVA has the prerogative to directly control the entire process that lights up our lives. **6 large dams, 32 hydroelectric power plants, 8 wind farms and about 55,000 photovoltaic modules are the great army of electricity generation, completely renewable**, which constitutes the Group's strategic and constantly expanding asset. The energy produced by these infrastructures is channelled into the national transmission network and, through it, into the distribution networks throughout the country.

CVA's **distribution network**, managed by the subsidiary DEVAL, runs along more than **4,200 km** of high, medium and low voltage **power lines** and passes through more than 1,700 transformer stations. In order to guarantee the quality of the service offered, the Group is continuously engaged in the technological upgrade of the distribution lines; in fact, all supplies are monitored remotely through electronic meters that can also optimise consumption readings and contractual variations, to the benefit of the end consumer.

And so we come to the **sale of energy** to end users in the national and regional territory. CVA Energie is the Group company that operates as a wholesaler in the Italian electricity market, both in the market subject to additional protection (through the brand Enerbaltea) and in the free market. CVA Energie creates**tailored offers for** residential, condominium, small professionals and large business customers.

From production to sale, through distribution, the Group's activities are deeply interconnected, allowing control of the entire process that underpins the energy's journey to the homes of citizens, companies and production activities in the Country.

In 2020, the value chain was enriched with an important **service** in the field of **energy efficiency**: as *General Contractor*, CVA manages the **initiatives promoted by the Government through the 110% Superbonus** introduced by the Relaunch Decree and converted into law in July 2020. The initiative is geared towards supporting citizens, construction companies and professionals who intend to activate energy efficiency projects financed through the Government superbonus.

A responsible governance

The basis of each sustainable development is a responsible and value-oriented management. CVA manages its *governance* with various tools, establishing the rules and principles of fairness and responsibility that must guide the conduct of employees and partners.

Regulation on transparent administration

The Group's choices and activities are constantly inspired by the principles of transparency and participation. The accessibility of the data and information relating to the activities of the CVA Group companies is also guaranteed by the compliance with the anti-corruption regulations and with those relating to advertising and transparency, to which the Company is subject.

In light of the relevant obligations in terms of prevention of corruption, advertising and transparency - the latter imposed by both national and regional legislation - the CVA Group has prepared measures for the prevention of corruption, in addition to those adopted pursuant to Legislative Decree. 231/2001. The Three-Year Plan for the Prevention of Corruption and Transparency is updated annually, as required by current legislation.

Code of ethics and conduct

The Code of Ethics and Conduct encapsulates the commitments and ethical responsibilities that the company assumes in the conduct of its activities. This document, drawn up by the Parent Company and adopted and implemented by all the companies belonging to the Group, sets out the principles and rules of conduct that the Group's employees are required to adopt in order to prevent unlawful or irresponsible conduct on the part of those working in the name and on behalf of the company.

The sixth revision of the CVA Group's**Code of Ethics** and **Conduct** , approved in 2019, aimed to consolidate the value of mutual respect, dignity and reputation among colleagues, while strengthening the focus on *privacy* issues and the promotion of the *whistleblowing*tool.

In the year of the pandemic, *compliance* activities then supported the preparation of company protocols for the implementation of the various Prime Ministerial Decrees, adapting *privacy* disclosures to the measures implemented. The Supervisory Body has monitored the control of health and safety goals through periodic meetings with the Prevention and Protection Service Managers (RSPP) and with the Employers with regard to the new problems faced, such as the procurement of personal protective equipment and the actions taken to ensure safety to workers.

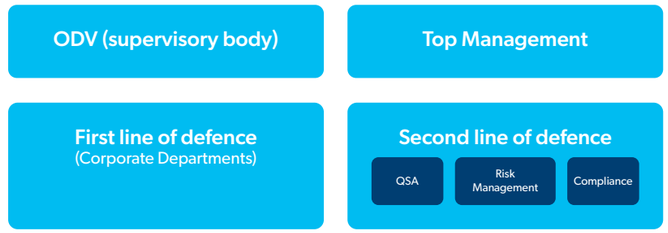
Data *privacy* management

In the digital age, the security and protection of the personal data of employees, customers, associates, and partners becomes increasingly important. The companies of the CVA Group pay the **utmost attention and commitment** to ensure availability, integrity and confidentiality of the personal data processed. With this in mind, awareness-raising of all the Group's administrative personnel continued in 2020 regarding the principles of EU Regulation 2016/679 (GDPR), including through the administration of training courses provided with the aid of an *e-learning*platform.

Business risk management

Starting in 2019, the CVA Group has made it its goal to achieve greater integration of *Risk Management* into its business processes. The *Risk Management* Department (FGR) is responsible for the process of recording and measuring risks based on the *Enterprise Risk Management* (ERM) methodology, which involves mapping, measuring, managing and monitoring the risks to which the company is exposed. *Risk assessment* activities make it possible to define the Group's risk profile which, together with mitigation strategies, is brought to the attention of the Board of Directors of the Parent Company and of the individual subsidiaries.

The internal risk control system is structured along several lines of defence.



- **Top Management** receives the results of the Group's *risk assessment* prepared by the FGR and is ultimately responsible for risk management in agreement with the Board of Directors.
- The **Board of Directors** (BoD), in carrying out its role of guidance and supervision, defines the guidelines of the internal control system of business risks.
- The**Supervisory Board** enjoys autonomy and independence in carrying out its control and supervisory activities.
- The **Department Managers** represent the first line of risk management and are called upon to manage the risks associated with the processes and operational activities for which they are responsible, defining and implementing the controls inherent in the operational processes, in compliance with internal procedures.
- The second line of defence is managed by the **Company departments in charge of specific areas/types of risk** for which they propose the evaluation, measurement and control systems and check their adequacy, in order to ensure effective monitoring, comprehensive and correct risk management and compliance with laws, regulations and internal procedures.

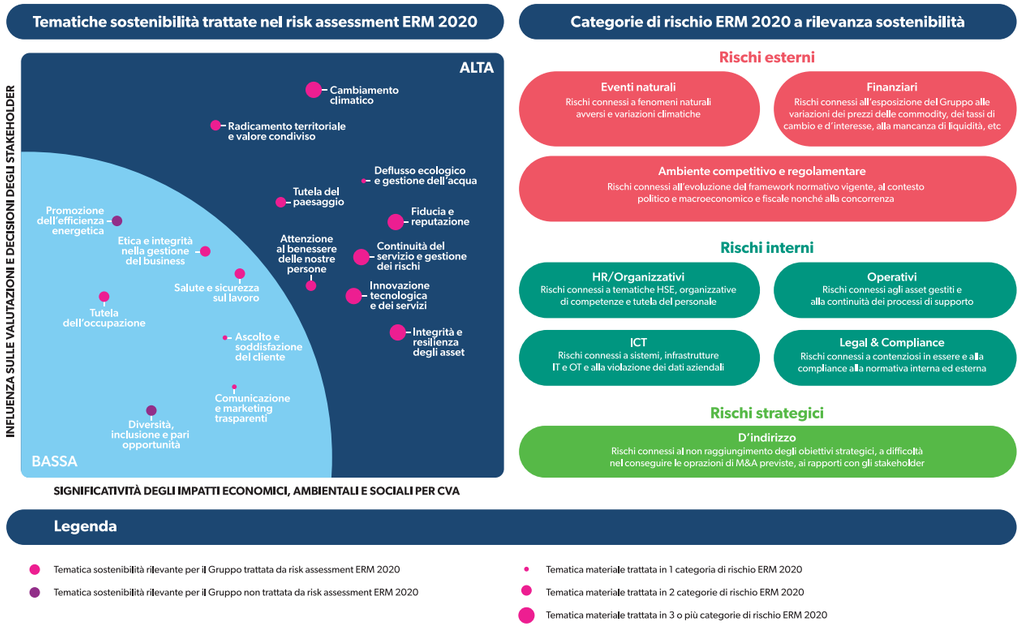
During 2020, *the Enterprise Risk Management* made provision for the involvement of the heads of all company departments, developed through interviews aimed at identifying the risks that may impact on business *performance* and goals. This analysis made it possible to update the Group's risk mapping by identifying new risk scenarios, updating previously identified risks and cancelling scenarios that were no longer current; the review included updating the context, evaluating the effectiveness of existing controls, planning mitigation actions and quantifying the probability and impact. From this first level of analysis, the Risk Management Department applies a uniform measurement metric to enable consistent representation of risks to *Top Management*.

In 2020, most ERM risk scenarios are focused on a "Medium-Low" *severity* level. The most relevant risk scenarios include: the expiry of hydroelectric concessions in 2029; the renewal of the concession for the distribution of electricity in 2030; changes in water availability that could impact the management of production plants; exceptional natural events capable of causing damage to works, plants and man-made environments, as well as disruptions to the distribution network, compromising service continuity; potential unforeseeable breakdowns that could lead to possible plant downtime at one or more production units; regulatory developments that could alter business models and, in particular, adaptation to the new Ecological Runoff regulations that could entail a limitation on the energy-efficient use of the plants. Finally, it should be noted that the impact of COVID-19 has led to new risks and increased the *severity* of others. In particular, the health emergency has entailed both direct impacts on the business, caused, for example, by the reduction in electricity consumption and the drop in energy prices, and indirect impacts stemming from the need to adopt measures to contain the spread of the virus.

In 2020, the Group decided to evolve its ERM *Framework* by integrating its risk analysis processes and methodologies with the Sustainability Report. The preparatory activities for this evolution included the analysis of the degree of coverage of the material issues represented in the Group's Sustainability Report (2019) within the outcomes of the ERM 2020 *risk assessment* . The results show that the relevant material issues are already largely and naturally integrated into the enterprise risk management process.

The following figure highlights the points of contact between the various themes and risk categories covered by the ERM Risk Model adopted by the Group. The materiality matrix depicted is the outcome of a *stakeholder* listening process conducted in 2018 and updated in 2019.

Finally, the Risk Management Department oversees the monitoring of *commodity* risk and the performance of specific activities required by the processes of *compliance* with European regulations in the field of *commodity trading* (*Market Abuse Regulation*, *Remit*, *Emir* and *MiFID* II).



Legality measured in stars

The Legality *Rating* is an important recognition, lasting two years, awarded to Italian companies by the Italian Competition Authority (AGCM). The award evaluates compliance with the principles of legality, transparency and social responsibility. For the 2019-2021 two-year period, CVA received the highest achievable score in the corporate legality *rating*, confirming itself as an ethical and transparent company. This achievement further improves on the score achieved in the 2016-2018 two-year period of two "stars" by awarding an additional "star".

Hydroelectric concessions: one year of waiting

The waiting for specific regional regulatory guidelines in the context of the concessionary regime, expected by 31 March 2020 by the amendments introduced by the Simplification Decree (135/2018) to the Bersani Decree (Legislative Decree. 79/99), has been extended, for the majority of Regions, until the end of 2020. The onset of the pandemic has affected the ability of local governments to preside over this legislative item, so much so that only 6 Regions have regulated the procedure for assigning expiring concessions in 2020, not without generating a heated political debate on the subject of the regionalisation of concessions.

The law enacted by the Lombardy Region has been challenged by the State on the grounds that some of the provisions concerning the procedures for the assignment of concessions constitutionally violate the State's legislative competence in the field of civil order and protection of the landscape, and also contravene the provisions of articles 42 and 43 of the Constitution, which provide for a compensation on private individuals who suffer limitations in the availability of their property necessary for the performance of a business activity[2].

Similarly, in 2020 the provincial law on concessions approved by the Autonomous Province of Trento was also challenged. An amendment inserted in the Cure Italy Decree (18/2020) has provided for the extension to 31 October 2020 of the deadline for the presentation of regional laws, a deadline further extended by seven months from the installation of the Regional Councils for the Regions that were concerned by the elections in 2020, a case under which Aosta Valley falls.

This amendment was followed by a report from the Antitrust Authority, which called for consideration of the effects of such extensions in further postponing competition in the market, thereby preventing the potential benefits from regular competition for the awarding of contracts via public procedures from being reaped[3].

The issue is particularly sensitive: **hydroelectric power accounts for**to **40% of Europe's renewable energy production** [4]. Moreover, the contribution of hydroelectric generation to the **decarbonisation goals set out in the PNIEC (Integrated National Energy and Climate Plan)** is substantial: 49.4 TWh of gross domestic consumption is calculated in 2020, rising to 51.6 TWh in 2040[5]. The European Commission has repeated a formal notice procedure in 2019, in which it challenges the Italian State for excessive protection of national operators, to the detriment of competition on a European basis. In Italy, there are just over 400 concessions for the large-scale diversion of water, about 70% of which are located in Northern Italy and CVA, together with Enel and Edison, covers 60% of the market share[6].

The regulation of tender auctions, which must be held 5 years before the expiry date of the concessions, i.e. for the majority in 2024, is the object of political debate, which sees discussions between the presidium of the Regions (Title V) and state centralisation. Above all, **the future of important regional economies is at stake, along with the need to free up investments of energy companies** for *revamping* and extraordinary maintenance of aging plants, many of which were built in the early 1900s.

For CVA, almost all of the concessions will expire in 2029, so the key year for auction participation is 2024[7].
The process of approving the implementing rule, aimed at regulating the procedures for the assignment of expired regional concessions, initiated by the Region of Aosta Valley in 2019, suffered a setback following the fall of the Regional Council and the consequent dissolution of the Joint Commission tasked with defining the rule in question. The new regional government, which took office in September 2020, began its work in the middle of the second wave of the pandemic and, not unlike other Regions, is heavily involved in the joint management of pressing health needs and equally significant economic needs, not least the concessions game.

In this uncertain context, it must be remembered that Aosta Valley, mainly by virtue of its hydroelectric production through CVA, is the Italian Region that holds the record of *burden sharing*, having reached the coverage of 83% of its energy consumption with renewable sources, far exceeding the quota of 52.1% expected in 2020[8].

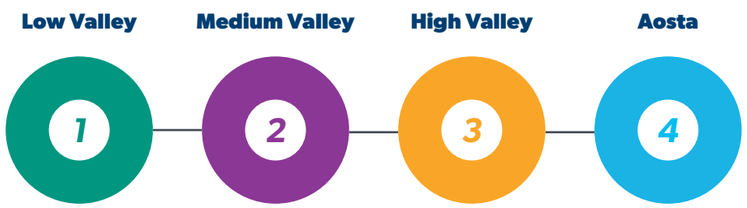
[2] Council of Ministers Press Release No. 49, June 2020
[3] Italian Competition Authority, Report S3940, 2020
[4] Assoidroelettrica, Hydroelectric concessions. An initial analysis of the regulatory framework adopted at European level. January 2021.
[5] Integrated national energy and climate plan, Ministry of Economic Development; Ministry of the Environment and Land and Sea Protection, 2019
[6] REF4E Annual Report 2020.
[7] The concession of Deval, issued free of charge pursuant to art. 1 paragraph 1 and art. 9 of Legislative Decree. 79/99 by the Ministry of Productive Activities in 2005, will expire on 31 December 2030. The concession concerns distribution activities in 69 municipalities in the Aosta Valley.
[8] GSE Monitoring of national and regional targets - Burden sharing. July 2020

Ci Vuole Ascolto 3.0: *En Compagnie*, a listening *tour* of the territory

In 2019, the CVA Group started a process of listening to and involving stakeholders, with the creation of the "materiality matrix". In 2020, the development of the path towards sustainability had a new opportunity for interaction, involving a group of about twenty *stakeholders* operating in the national and regional context, in the energy and *utilities*, social, economic and technological innovation sectors. The event was aimed at listening to their opinions about the four major areas related to material issues: climate change, innovation, people and community.

For the third edition of the Sustainability Report, CVA's approach to dialogue will be aimed at the territory of Aosta Valley, which the Group intends to focus closely on, in the year in which the pandemic has tested the staying power of the local environment and the resilience of its fellow citizens.

Starting from June 2021, the first CVA ***roadshow*** will be inaugurated through four territorial stages: in the capital, in Lower, Middle and Upper Valley to which the Mayors and institutional representatives of the Region will be invited, hoping that face-to-face meetings can be held.



En Compagnie will be our way of describing the value generated and distributed by CVA's activities for the sustainability of the regional territory, a territory that is a candidate to become a virtuous example in the context of decarbonisation strategies and, therefore, an attractor of talent, of financial and intellectual investments, as well as a catalyst for a model of eco-sustainable tourism.

In this capacity of **ambassador of Aosta Valley** for Italy, CVA participates in the creation of a flagship Region for the relaunch of the Country. At the same time, the *roadshow* will be an **opportunity to meet, listen to and compare the opinions of the territory**, in order to achieve ever greater **integration between industrial development and the local context**, our roots firmly planted in the Aosta Valley, our branches stretched towards a **future of national development**.

Last but not least, we hope that this can be an opportunity to enhance our territory: in respect of the pandemic regulations, that we hope will be extensively eased, **our desire is to be *En Compagnie***.

Mont Blanc

08

2020: CLOSE DESPITE THE DISTANCE

2020: close despite the distance

On 9 March 2020, our Country experienced the first *lockdown* in the history of the Republic. 9 March 2020 also marked the beginning of a sudden change in the way CVA Group works. As has happened to the entire working world, no one yet imagined how our daily lives would turn out.

The contingency of the first national closure required animmediate reorganisation of the work, in order to be able to **guarantee the public utility service** that the CVA Group companies provide: from production to the sale and distribution of electricity. The members of the operational departments therefore continued to carry out their work on site, albeit in limited numbers; all CVA employees were part of that segment of Italians who guaranteed, through their work, the stability of the Country in an incredibly difficult time. In the very first days of the *lockdown*, when finding the necessary PPE to protect our people was particularly difficult, some colleagues were nevertheless forced to use some of their holidays. In any case, the CVA Group has been able to make working from home feasible with great commitment and speed, without ever having experienced it before: from 9 March to 3 May 2020, 409 people were involved in *smart* working activities; 2020 ended with **427 people involved in smart working activities**.

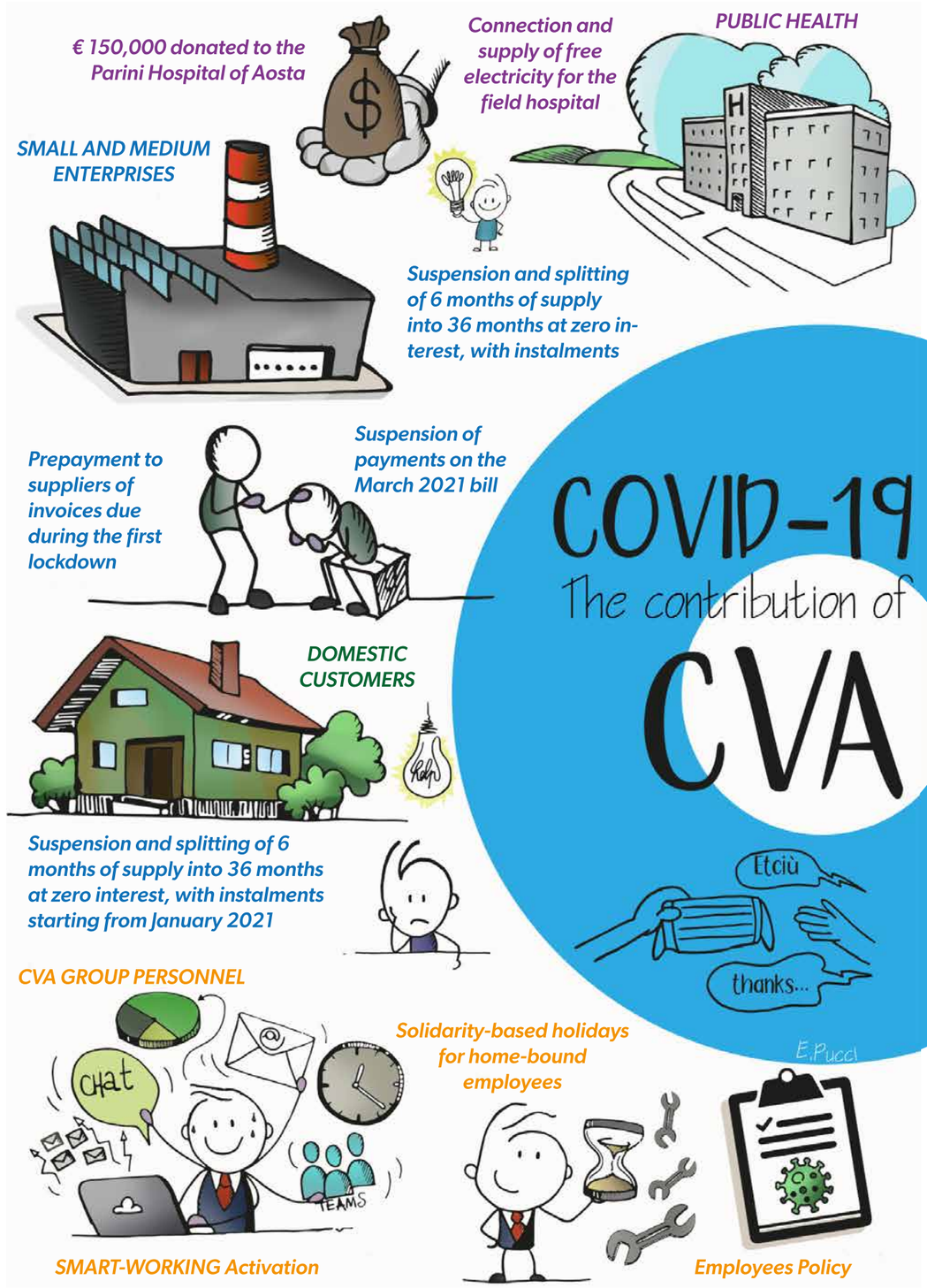
The companies of the CVA Group and the Trade Union Organisations signed an agreement aimed at introducing new extraordinary contractual measures, including the **Solidarity holiday bank**, through which employees could donate days of vacation to colleagues unable to work remotely. The number of days donated to the Solidarity bank by CVA Group employeesand companies totalled 1,176, of which 589 were donated by employees and 587 by companies. Moreover, in order to promote the local supply chain, and to ensure equal treatment of those who work remotely with respect to colleagues who instead work in the company's offices, a **"widespread cafeteria" service** has been set up **,** thanks to which it is possible to receive lunch at home with a take-away/home delivery service from participating establishments in the area. Taking out an **insurance policy** was alsointended to protect employees in the event of hospitalisation from COVID-19, providing hospitalisation and recovery benefits, home medical care, home delivery services, *babysitting* and *pet-sitting*services.

In **support of Public Health**, CVA has made a donation of € 150,000 to the Parini Hospital in Aosta and has arranged, in agreement with Deval, the connection and the **supply of free electricity** to field hospitals set up by the Civil Protection Authority in Aosta, as well as the free connection for the activation of a new micro-community in the Municipality of Morgex. Many Group employees also showed their solidarity with the Parini Hospital in Aosta, donating the equivalent of two hours of work in the month of April. The Group Companies made an equal contribution to those made by the personnel.

A **support campaign** was launched **for small and medium-sized businesses, traders, artisans and freelance professionals,** who were able to request the suspension of invoice payments for a period of 6 months and subsequent interest-free payment over 36 months (with effect from January 2021). CVA granted 323 instalments, totalling € 2,023,000. A similar measure was taken with regard to resident domestic customers who were able to request the suspension of the payment of three bills, for a total of 6 months of supply, with interest-free instalments and the start of payments in January 2021; 407 instalments were activated, for a total of € 131,000.

In order to allow customers in need to gradually realign their debt position, 251short-term interest-free **repayment plans** were also granted, for a total amount of around € 446,000. In order to help resolve the economic difficulties of the territory, from 5 March to 31 December 2020 **disconnections of** supplies due to arrears have been **suspended**. At the same time, **interest on arrears** of € 43,000 was **waived** for late payments received in the March-September 2020 period.

Finally, with regard to its **suppliers**, the CVA Group **made advanced payments on 31 March of all the amounts**falling due up to the end of June 2020, injecting much-needed liquidity in a difficult period of economic deadlock. The total value of this operation was € 4,300,000.

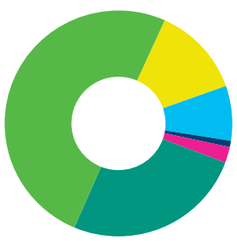


Listening to our people: the pandemic experience

The onset of the pandemic in 2020 took up much of the personal and professional energy of the people who provide their services at CVA. For this reason we felt it necessary, for the past year, to focus on listening to our People in relation to the management of the health emergency that has heavily impacted on all aspects of daily life, from work to family.

For this reason, all CVA Group employees were invited, in March 2021, to respond to an anonymous and optional *on-line*questionnaire geared towards taking on board their personal and work experience of the emergency situation.

A total of 221 employees (36% of the company population) signed up to complete the questionnaire. The *"Ascoltiamo la tua esperienza della pandemia" ("Let's listen to your experience of the pandemic")* questionnaire had 12 closed-end questions, asking participants to express their agreement with the statements presented according to an agree/disagree scale, and one open-ended question for free comments.



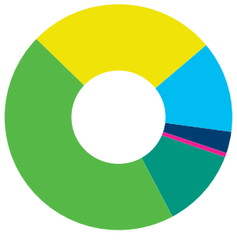
THE PANDEMIC SITUATION HAS PROMPTED ME TO REFLECT ON THE FUTURE AND ON THE PROFOUND MEANING OF THINGS

25,79%	50,23%	13,12%	7,69%	0,91%	2,26%
Strongly agree	Agree	Neither agree Nor disagree	Disagree	Strongly disagree	No response

As was probably the case globally, the unprecedented situation caused a majority of respondents to generally re-evaluate the really important aspects of their daily lives.

This was an common experience across the board, in response to the sudden lack of situations taken for granted, such as the value of health and safety or the restrictions on the freedom of movement and sociability.

"We had to reinvent ourselves. Reinventing a new way of working and even living, if you want to put it that way"



THE PANDEMIC AND THE RESULTING SOCIAL CONSEQUENCES HAVE CHANGED MY MOOD: I FEEL SAD AND WORRIED ABOUT THE FUTURE

11,76%	44,80%	26,71%	13,12%	3,17%	0,44%
Strongly agree	Agree	Neither agree Nor disagree	Disagree	Strongly disagree	No response

More than 50% of respondents highlighted a significant impact of the pandemic emergency on their emotional state and their mortgage, affecting their ability to imagine the future.

I AM AFRAID THAT LIFE WILL NOT GO BACK TO THE WAY IT WAS BEFORE

10,41%	Totalmente d'accordo
38,02%	D'accordo
24,43%	Né d'accordo né disaccordo
18,55%	In disaccordo
6,78%	Totale disaccordo
1,81%	Non risponde

For nearly half of the sample, there is the concern that COVID-19 marked a point of no return from previous life (48%).

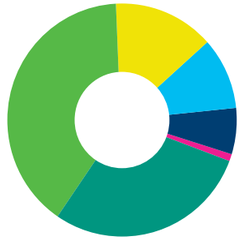
I AM NOT OVERLY WORRIED ABOUT BEING INFECTED

7,24%	23,53%	23,98%	32,58%	11,76%	0,91%
Strongly agree	Agree	Neither agree Nor disagree	Disagree	Strongly disagree	No response

In the face of these perceptions, the possibility of contagion is a concern for less than half (43%) of respondents.

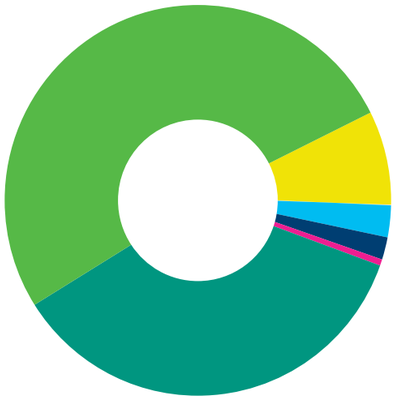
I FELT SUPPORTED BY MY MANAGER IN ORGANISING MY ACTIVITIES DURING THE LOCKDOWN

28,96%	39,82%	14,03%	9,95%	6,33%	0,91%
Strongly agree	Agree	Neither agree Nor disagree	Disagree	Strongly disagree	No response



Work organisation has a strong capacity to respond to the extraordinary situation, both in terms of relations with direct managers and as regards the company's ability to react quickly to events, protecting safety and operations. 69% of people felt supported by their manager in organising their work during the *lockdown*period.

I BELIEVE THAT THE COMPANY HAS MANAGED THE EMERGENCY EFFECTIVELY, THUS AVOIDING NEGATIVE IMPACTS ON OPERATIONS



35,29% Totalmente d'accordo

52,04% D'accordo

7,69% Né d'accordo né disaccordo

2,71% In disaccordo

1,81% Totale disaccordo

0,46% Non risponde

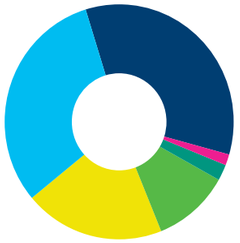
87% of respondents think CVA effectively managed the emergency while avoiding negative impacts on operations.

I BELIEVE THAT THE INFORMATION PROVIDED TO ME BY THE COMPANY REGARDING THE CONDUCT TO BE OBSERVED WAS COMPLETE AND TIMELY

29,86%	**53,84%**	**10,41%**	**4,07%**	**1,82%**
Strongly agree	Agree	Neither agree Nor disagree	Disagree	Strongly disagree

A similar evaluation is expressed regarding the completeness and timeliness of the information made available to employees regarding the conduct to be observed in response to the unprecedented situation.

"Mine is a heartfelt thank you to everyone for what we were able to accomplish and for how we adapted to the whole situation."



I HAD MORE DIFFICULTY IN CARRYING OUT MY WORK DUTIES IN *SMART WORKING* MODE THAN BEING IN THE OFFICE

2,48%	**10,89%**	**19,81%**	**31,67%**	**34,16%**	**0,99%**
Strongly agree	Agree	Neither agree Nor disagree	Disagree	Strongly disagree	No response

The positioning of respondents in relation to the experience of *smart working* indicates a healthy ability to adapt to the changed working conditions; only 13% of respondents highlight greater difficulties in managing remote work.

IT HAS BEEN DIFFICULT TO BALANCE WORK AT HOME WITH FAMILY MANAGEMENT

3,62%	**12,22%**	**17,18%**	**26,71%**	**29,41%**	**0,45%**	**10,41%**
Strongly agree	Agree	Neither agree Nor disagree	Disagree	Strongly disagree	No response	N/A

"For me, smart working has been an added value, allowing me to be able to spend more time with the kids and my husband at home, while still being able to work just as well and as efficiently as if I had been in the office."

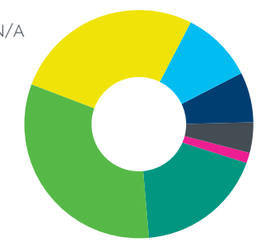
For the majority of the sample, the *smart working* experience has not significantly affected the work/family life balance, while around 16% of respondents report difficulties in integrating family management with remote work. It is possible that the situation has been more difficult for women in particular, who are more often committed on the dual front of family and work, a situation perfectly encapsulated by this balanced comment by a colleague: *"Knowing that I could work from home during a time of global restriction allowed me to experience this period with greater peace of mind.* ***I had a job and I was lucky enough to be able to keep it.*** *Except for the* ***time constraint,*** *limiting and* ***stressful to manage for those who have small children or in DAD (distance learning),*** *and the fixed workstation which did not allow me to disengage from the stressful situation, I feel I can give an overall positive evaluation to the management of events and the integration of my personal and family life with my work life"*

In the free comments, the huge benefit of remote work in terms of health protection is repeatedly stressed, as well as the incredible and unexpected advantage of being able to better reconcile personal and family needs with work needs. It is also highlighted as a way to reduce travel time, save fuel and reduce polluting emissions.

"I have ascertained how much smart working can result in saving money and time for the home-work journey, as well as nullifying the risks of accidents en route; I consider the increased free time that comes with it as the best form of Welfare, even if gained indirectly!"

I MISS THE SOCIAL ELEMENT OF WORKING IN THE OFFICE

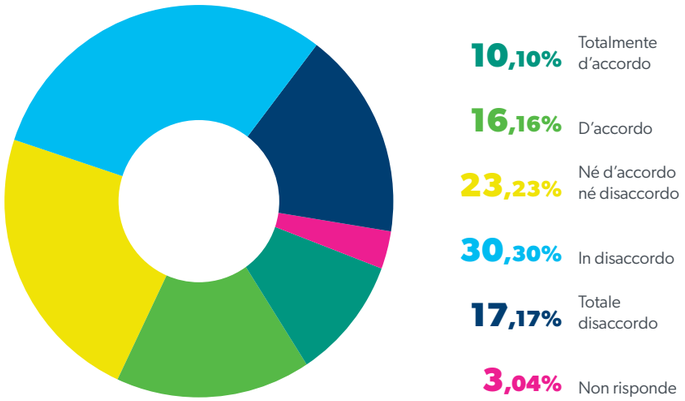
18,10%	**32,13%**	**26,71%**	**9,95%**	**7,24%**	**1,36%**	**4,51%**
Strongly agree	Agree	Neither agree Nor disagree	Disagree	Strongly disagree	No response	N/A



The loss of the sociability element brought about by remote work is rated as a problem by about 50% of respondents. In order to partially contain the impact of remote work on operational loneliness, the CVA Group has re-started work in a face-to-face setting after the first national closure, while setting a quota on the number of people present in the offices, in compliance with the guidelines on distancing measures contained in the national orders that have followed.

The theme of remote work was a first for Group employees, as it had never been tried before and was quickly activated by companies within few days of the first national *lockdown* in March 2020

DOING MY JOB REMOTELY WAS NOT POSSIBLE. I HAVE FOUND IT HARD TO WORK USING ALL THE PPE THAT THE COMPANY HAS MADE AVAILABLE TO ME.

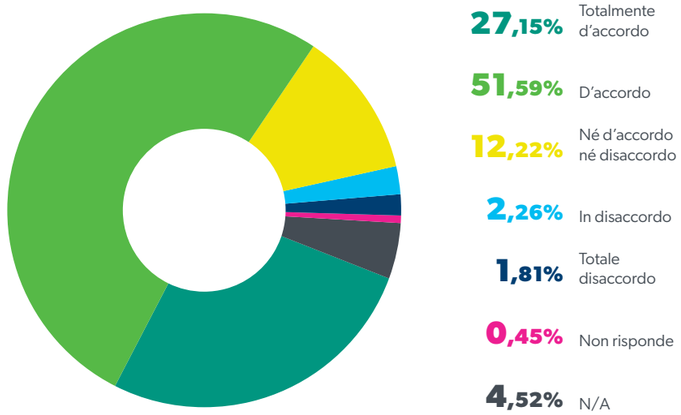


On the other hand, the operating personnel who worked in the departments and plants did not report any particular difficulties in working on site while maintaining the use of PPE that protected health and safety in the workplace.

The following graph excludes 122 people who answered N/A to the question, evidently users of *smart working*. One question asked respondents to evaluate CVA's response to the emergency needs of the community of the Aosta Valley: the vast majority of respondents believe that the company has been able to stand by their fellow countrymen with appropriate responses and facilities.

"I can't say that working remotely has made it more difficult to carry out activities, but it has certainly made me aware that the absence of direct interaction with colleagues impoverishes the exchange of ideas and experiences and therefore, in the long run, it affects the quality and productivity of work. I consider it a privilege to be able to work remotely to safeguard my health, but at the same time I hope to come back to direct, personal interaction with colleagues as soon as possible."

I THINK THE COMPANY HAS ADEQUATELY SUPPORTED THE COMMUNITY, WITH DONATIONS AND FINANCIAL CONTRIBUTIONS TO BUSINESSES AND FAMILIES IN NEED



The following comment, by a colleague, concludes with a note of clear optimism and impressive capacity to adapt; this section is dedicated to our People, who have on the whole shown a great ability to adapt and resilience, skills that are very useful not only in a pandemic but also for the *core business* of CVA.

"It was hard at first, being at home with kids, husband, DAD, and work to do. I was used doing a lot of paperwork in the office (an old legacy) and after the panic of the first week, I reorganised my ideas, created archives on files and in no time at all everything became simple, fast and especially much more convenient for the whole office. Having the data at your fingertips right away, on the web, with tables where you can immediately find data that previously you had to go sifting through folders. Also, ***NO MORE PAPER, a gift to the Earth****. The whole family adjusted and everyone gave each other the peace and tranquillity we needed and we learned to manage ourselves. I can say that, for my part, I find it nice to be able to work from home a few days a week. There is a healthy work/family balance, which is priceless. I hope this pandemic will leave the few good things it has brought, precisely in the work environment."*

"Otherwise, what can I say? There is some fear for the future, especially for children and teens. But I am convinced that it all will get back to normal. I would like to thank the company for everything they have done for us workers and for the huge donations they have given! Proud to be part of a Company with a capital C!"

2020 at a glance

3.347
billion of kWh

produced from renewable sources only

1.177
million tons of CO_2

avoided with our production of energy from renewable sources

+500 requests for energy efficiency

received under the Green Energy Building project

3,790
hours

of training on safety

~86,000
Customers

served in 2020

473
million €

economic value generated and distributed

178,000
working hours

for investments and maintenance only in 2020

+65
million €

invested in electromechanical and civil engineering activities in the three-year period 2018/20

~1 million households

the energy requirements that can be met by the Group's hydroelectric production

607
Employees

of which 159 women

7 AFFORDABLE AND CLEAN ENERGY

13 CLIMATE ACTION

Photovoltaic system of Alessandria Sud

1

WE ARE THE ENERGY OF THE FUTURE

We are the energy of the future

Key facts and figures

3 billion of kWh
produced from renewable sources only

5th among the producers
of hydropower in Italy in 2019

12° among the producers
of RES in 2019

32 hydroelectric
power plants

8 wind farms
in Aosta Valley, Tuscany, Lazio, Campania and Apulia

3 photovoltaic plants
in Aosta Valley and Piedmont

~536.2 million €
the value of production in 2020

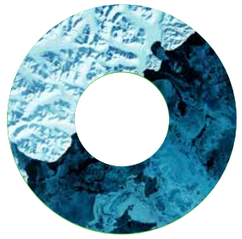
1.177 million
tons of CO_2 avoided with the production of energy from renewable sources

1,104 MW
of total installed power

Why it is important

Climate change is a reality: greenhouse gas levels in the atmosphere have reached unprecedented levels.

The fight against *climate change* has now become an issue of daily debate. In 2020, it contested the headlines with news of the onset of the pandemic, with a similar degree of alarm and gravity. The cartoon published by the British weekly *The Economist* illustrating a ring where the world fights against SARS-COV-2 dates back to April 2020. Just outside the ring, however, appears the personification of a huge monster with the words ***climate change*** written on its shorts. The meaning is clear: the pandemic that instils so much fear and that brings the health, the economy and the social condition of the citizens of the world to its knees, is nothing compared to what awaits us in the fight against climate change.



The awareness of the impacts of climate change has picked up speed in recent years. Despite the fact that as early as 1997 the Kyoto Protocol clearly indicated the need to commit to reducing emissions, a public *sentiment* of genuine alarm about the consequences of climate change was only elicited on publication of the IPCC (Intergovernmental Panel on Climate Change) Report in the autumn of 2018.

The report was commissioned to the scientific body in 2015 by the 21st United Nations Conference of the Parties (COP 21), at the end of which 193 Countries signed the Paris Agreement and agreed on the 2030 Agenda for Sustainable Development Goals. The results of the study highlight the impacts of global warming, estimated to be about 1°C above pre-industrial levels, and of the associated climate-altering emissions. The IPPCC's recommendations to the world's governments are to keep the global temperature increase **well below 2°C**, limiting it to 1.5°C.

The consequences of an uncontrolled rise would be devastating: desertification and loss of plant and animal biodiversity in several areas of the planet today with a temperate climate, as well as the decrease of the ice caps, related to the complete melting of perennial ice and the rise in sea level. In the 2020 edition of the *Global Renewables Energy Outlook*, the*International Renewable Energy Agency* (IRENA) highlighted the persistence of a gap between ambitions and reality in the fight against climate change: globally, CO_2 emissions related to energy production show a stable average growth of 1% over the last decade[9].

In addition to the calls from the scientific community , there have been major pushes from the **financial world**: in his latest letter, Larry Fink, the manager of the world's largest investment fund, ***Black Rock***, has threatened to sell the shares of companies whose activities are polluting and not in line with the path to decarbonisation by 2050, asking for a *disclosure* of their plans to combat climate-changing emissions.

In Fink's words, *"the coronavirus pandemic exposed us to an unprecedented existential crisis, highlighting our sudden and great fragility, pushing us, by analogy, to face up to the **real threat of climate change**, forcing us to realise the capacity of climate change to alter our lives."*[10].

A sign of how much the impacts of climate *change* are of public attention today is indicated by the increase in **climate-related court litigation**: in 2020, there were 1,550 climate change-related cases worldwide, filed in 38 Countries - 39 including the courts of the European Union - which saw 55 cases heard; in 2017, there were 884 court cases in 24 Countries.

The themes of litigation concern the violation of climate rights, including the right to life and health; the failure of government mitigation and adaptation strategies; inadequate climate *disclosures* , dubious risk analysis and corporate *accountability* ; and the promulgation of untrustworthy or false promotional messages*(green washing)*[11].

[9] *Global Renewable Outlook, IRENA, 2020*
[10] *Asset manager BlackRock threatens to sell shares in worst climate polluters. The Guardian, 26 January 2021*
[11] *Global Climate Litigation Report 2020 Status Review, United Nations Environment Programme & Sabin Centre for Climate Change Law*

80%
to reduce greenhouse gas emissions by 2030

Among the voices coming from the civil world, the ***Fridays for Future*** movement, promoted by Greta Thumberg, has attracted wide appeal. Believing that the goal of carbon neutrality by 2050 set by the European Union is not sufficient to contain global warming, the movement has recently promoted a ***European Citizen Initiative***, a petition addressed to the European Commission in which it calls for the implementation of four goals: the modification of the European *targets* of the Paris Agreement in order to achieve an 80% reduction in greenhouse gas emissions by 2030 and to reach carbon neutrality by 2035 in all Member states; the establishment of a duty on the import of non-European products calculated on the basis of the greenhouse gases emitted during their production; the suspension of free trade treaties with partner countries that do not pursue a path compatible with the goal of keeping the world temperature below 1.5°C; the production on a European basis of free educational material on the effects of climate change for the curricula of the Member states. Goals that are perhaps too ambitious, but which nevertheless remind us that the commitment to **ensure a sustainable development** requires us to extend our perspective beyond the short-term and to **focus on the time that will predominantly belong to future generations**.

Achieving a low-carbon economic system requires internationally coordinated solutions and

> *The average temperature increase of 1.2°C over the last century has generated a shift in the relevant climate zone by 200 meters upward. It seems little in our perception, but in practice it means that the climate of 50 years ago in the Aosta Valley at a certain altitude can be found today 200 meters higher.*

Luca Mercalli
Chairman
Italian Meteorological Society Association

cooperation between institutions, businesses and civil society. The gradual phasing out of fossil sources will involve, over the next few years, an **increasingly central role of electric energy generated by renewable sources**. There istalk of an**electrification of vital sectors,** such as heating and transportation, which could increase the current 20% use of electricity in global energy needs to 50% by 2050(*Global Energy Outlook*, IRENA).

The International Renewable Energy Agency believes that the economic gap generated by the pandemic could be a driver for the energy transition, as well as generate a downturn, depending on the response that Countries will be able to deploy by taking advantage of the development of a sustainable economy. The transition towards renewables has actually seen an acceleration during the economic crisis generated by the pandemic; many governments, the European Union at the forefront, have associated with the stimulus packages for economic recovery the opportunity to promote investment in technology and development necessary to implement the route to decarbonisation.

During 2020, the European Union issued a series of legislative guidelines aimed at giving a considerable boost to the adoption by Member states of concrete actions to combat climate change, which represent at the same time a stimulus for economic recovery.

The route to renewables

In 2020, the European Union supported the *Green Deal*, issued in 2019, with a series of legislative guidelines aimed at forcing a rethink of the current economic paradigms for the development of a sustainable Europe, which aims to become a world leader in the circular economy and clean technologies, pursuing the total decarbonisation of the energy sector by 2050.

The proposed **European Climate Act,** issued in March 2020, represents the legislative framework within which to regulate the actions envisaged to achieve climate neutrality on the continent. In September 2020, the Commission introduced a change to the*European Climate Law*, increasing the goal for **reducing climate-changing emissions from 50 percent to at least 55%** below 1990 levels **by 2030**. The advent of the pandemic emergency and the need to coordinate a Europe-wide response have provided an opportunity to accelerate the transition to a climate-neutral economy: ***Next Generation EU***[12] assigns € 209 billion to Italy, € 80 billion of which for actions to combat the climate emergency. The framework incorporates the ***Renovation wave strategy*** (October 2020) in favour of the energy efficiency of buildings, the promotion of renewable energies and digitalisation, as well as the ***Hydrogen Strategy***[13] which envisages a target of 14% penetration of green hydrogen through the development of new technologies. These are two directions for which the Group has put in place concrete actions during 2020.

In the scenario outlined, the development of renewable energies occupies a place of honour, since their role will be the constant and progressive replacement of fossil fuels. The *Renewable Energy* Directive 2009/28 is the directive issued by the European Commission that sets a target of 20% of final energy consumption from renewable sources by 2020. This target was revised to be more ambitious in 2018: the new Renewable *Energy Directive* 2018/2001, in fact, requires that 32% of final energy consumption from renewable sources be achieved in 2030. Subsequent measures and regulations will be aligned with the new targets defined by the European *Green Deal* .

The European targets were transposed and deployed, at national level, into a set of sector-specific goals through the 2017 update of the National Energy Strategy. On the renewables front, however, the new Integrated National Energy and Climate Plan (PNIEC) 2030 exceeds the goals of the National Energy Strategy by setting a target of 30% of the share of renewables of gross final consumption by 2030[14].

The PNIEC, sent by the Government at the end of 2019 to the European Commission in implementation of Regulation (EU) 2018/1999, incorporates the innovations contained in the Climate Legislative Decree, as well as those on investments for the European *Green Deal* provided for in the Budget Law 2020 (Law 160/2019). The European Commission issued its evaluation of the Italian Integrated Energy and Climate Plan in the autumn of 2020, welcoming the Italian targets for the use of renewable energies for the 2030 and for the 2050 goals, while some critical points were reported in the areas of innovation, research and competitiveness[15].

UN CLIMATE CHANGE CONFERENCE UK 2020
IN PARTNERSHIP WITH ITALY

COP 26

COP 26, chaired by the UK in *partnership* with Italy and postponed in 2020 because of the pandemic, will be held in Glasgow in November 2021. The new dates allow the British and the Italian governments to put climate action at the heart of the work of the G7 and G20, of which they will respectively hold the revolving presidency next year.

[12] Europe's time: repairing the damage and preparing the future for the next generation Brussels, 27.5.2020 COM(2020) 456 *final*
[13] A *hydrogen strategy for a climate neutral Europe. European Commission, July 2020*
[14] Integrated National Energy and Climate Plan 2030; MATTM (Ministry for the Environment, the Territory and the Protection of the Sea); 2020 (last *release* January 2020)
[15] *Assessment of the final national energy and climate plan of Italy; SWD(2020) 911 final, European Commission*, 2020

In order to meet the targets set by PNIEC, the **largest contribution to renewable growth will come from the electricity sector**. The strong penetration of renewable electricity generation technologies, mainly photovoltaic and wind, will allow the sector to cover 55% of gross final electricity consumption with renewable energy, up from 34.1% in 2017.

The significant incremental potential that can be exploited, also thanks to the reduction of the costs of photovoltaic and wind power plants, foresees an important development of these technologies, whose production should triple and more than double, respectively, by 2030.

The evolution of renewables

In 2020, for the first time in history, renewables overtook fossil fuels (down to 37%) in European electricity generation, generating 38% of Europe's electricity (34.6% in 2019), the remaining energy mix being the contribution of gas and nuclear. Compared to 2015, European electricity is 29% cleaner[16].

Italy: where we are

Italian electricity demand, after years of steady and significant growth until 2007, has undergone a considerable contraction; the historic low reached in 2014 (311 TWh) as a result of the economic downturn, is set to be exceeded in 2020 in the face of the collapse of industrial consumption recorded during the first *lockdown*.

~18%
the share of total national consumption covered by renewable energy

While demand had slowly returned to growth in 2018 (+1.6% compared to 2017), there was already a new decline in 2019 compared to the previous year (-1.3%). In 2020, the industrial electricity consumption index for the period March - May showed a vertical drop due to the nationwide shutdown, peaking in the last week of March with a -59% drop compared to the equivalent week in 2019, from 624 GWh drawn from the national transmission network to 253 GWh.

The most innovative dynamics of the national energy system remain linked to the role of **renewable sources** (RES) and of**energy efficiency**, the two main pillars forming the basis of the commitments made by our Country in terms of decarbonisation.

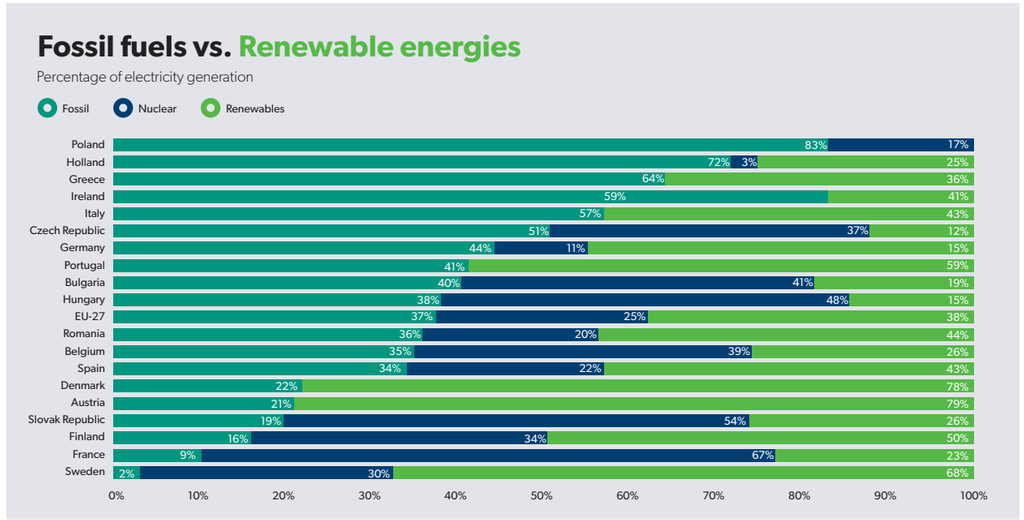
In 2019, RES showed a growth *trend* in all sectors of use (electricity, thermal, transport); the estimated share of total national energy consumption covered by renewables exceeded the threshold of 18%[17].

In the Aosta Valley, the energy distributed on Deval networks in 2020 decreased by 8.7% compared to 2019

[16] The European Power Sector in 2020; Ember&Agora Energiewende, 2021

[17] The National Energy Situation in 2019; MISE (Ministry of Economic Development); 2020

Italy is among the first four European countries in terms of the share of renewable production out of total generation:



Energy's Power Sector in 2020, published by Ember and Agora Energiewende on 25th January 2021.
The 19 countries displayed account for >97% of EU-27 electricity consumption
CVA rework

Renewable sources have confirmed their important role in the Italian energy panorama, helping to decrease our Country's dependence on foreign sources of supply. In the same year, domestic production of electricity met approximately 88% of total demand[18]. At regional level, Aosta Valley presents an excellent result: by covering 83% of gross final energy consumption with renewable sources, it confirms its leadership among Italian regions and the overcoming of regional ***burden sharing***goals [19] (52.1%) set forth in Ministerial Decree. 15/3/2012 for 2020[20]. In terms of the contribution of green sources to national energy **production**, in 2019, hydroelectric power contributed 15.8%, registering a decrease compared to the previous year (48.5 TWh, -6.2%) due to the decrease in rainfall. On the other hand, wind power production increased, which together with photovoltaics covered 15.2% of gross production (the remaining 8.6% from geothermal and bioenergy). According to the goals of the PNIEC, by 2030 renewable energies will have to cover more than half of the gross consumption of electricity; today, the demand for electricity is covered for more than a third by renewable production[21]. In 2019, in Italy, the share of total electricity consumption covered by renewables (RES) is 35%. Our Country ranks third among European countries with the highest consumption of energy from renewable sources. The source with the largest contribution to RES electricity production in 2019 is normalised hydropower (40.8% of total production), followed by solar PV (20.5%), bioenergy (16.9%), wind (16.6%), and geothermal (5.3%)[22].

[18] Italy's Electricity Budget 2019; Terna; 2020

[19] *Burden sharing* is the division of national energy goals into regional energy sub-goals of the national goal of reducing emissions and developing renewables and energy savings according to the targets assigned by the European Union by Ministerial Decree. 15/03/2012. Each regional goal consists of an indicator obtained from the ratio between Gross final consumption of energy from RES (renewable energy sources) and Total gross final consumption of energy, to be processed by applying specific definitions and calculation criteria set by Directive 2009/28/EC; unlike the national target, however, for the calculation of the numerator of the regional goals, the consumption of energy from RES in the transport sector is not taken into account.

[20] Monitoring of national and regional targets; GSE 2020

[21] The national energy situation in 2019; MISE 2020

[22] Renewable Sources in Italy and in Europe 2019; GSE 2020

Hydrogen: a light atom

Hydrogen is the lightest and most abundant atom existing on Earth, it is found in nature combined with other molecules and it can be used as a fuel, carrier or accumulator of energy. Its use does not produce CO_2, while its production currently still occurs mainly with the use of fossil fuels and is therefore a source of climate-changing emissions. Green hydrogen, produced through the electrolysis of water using an electrolyser powered by renewable energy, can play a key role in decarbonising those sectors where electrification is an even greater challenge, such as the steel, chemical, marine and aviation industries.

It is estimated that green hydrogen in 2050 could meet 24% of the world's energy demand. The **European Union's Hydrogen Strategy** has established a roadmap consisting of two main milestones: from 2020 to 2024, the strategic goal is to install at least 6 GW of electrolysers to produce up to 1 million tons of renewable hydrogen; from 2025 to 2030, the much more ambitious goal is to install at least 40 GW of electrolysers to produce 10 million tons of clean hydrogen across the European Union.

at least
40 GW
of electrolysers by 2030, for a production of 10 million tons of clean hydrogen across Europe

The hypothesis is that the technology will progressively become competitive and the costs of such an important investment can be brought down, capable of restructuring the economic framework of a large portion of heavy industry.

Hydrogen will also play an important role in the gradual introduction of renewable sources to replace fossil fuels: the transformation of surplus renewable energy into hydrogen will allow a balancing of the electricity system by ensuring a flexible service and regulating the introduction of green energy into the network which is, because of its nature, difficult to control. Hydrogen will also be used for storage, improving the security of supply[23].

In November 2020, the Ministry of Economic Development (MISE) put the Guidelines for the National Hydrogen Strategy up for consultation. The document aims to identify the sectors in which this energy carrier can become competitive in a short space of time and verify the areas of intervention that are best suited to developing and implementing the use of hydrogen.

In particular, the National Hydrogen Strategy aims to allow Italy to accelerate the achievement of the goals set by the PNIEC (Integrated National Energy and Climate Plan), favouring the energy transition towards a green, sustainable and technologically advanced economy .

A first phase of the strategy, with a goal in 2030, will focus on sectors where it is possible to produce and use hydrogen locally, starting from existing plants, and facilitate the use of the carrier in new applications such as, for example, in rail transport through the replacement of diesel trains in non-electrifiable routes[24].

[23] A hydrogen strategy for a climate neutral Europe; COM (2020) 301
[24] National Hydrogen Strategy Guidelines; MISE, 2020

Renewable hydrogen for the energy transition: the contribution of CVA

An effective *partnership* for the production of green hydrogen

It is with the intention of taking part in this ambitious and innovative strategy that **CVA, in the autumn of 2020, entered into a *partnership* with Snam**, one of the world's leading energy infrastructure companies, to implement **joint initiatives for the production and use of green hydrogen,** while finalising the projects needed to **facilitate the energy transition in the Aosta Valley**. Hydroelectric generation is ideally suited to the production of green hydrogen, both because - compared to wind and photovoltaic sources - it guarantees a high number of hours of operation, making the conversion of energy into hydrogen more efficient, and because it uses the basic element necessary for the production of hydrogen, namely water.

This partnership will allow the two companies to integrate their respective expertise to identify initiatives aimed at facilitating the decarbonisation of industry and transport, through the use of green hydrogen, and in general of the entire energy sector in the region. In particular, hydrogen mobility projects on rail and road will be studied also through the creation of infrastructures (refuelling stations, compressors, electrolysers) together with the **experimentation of advanced technological solutions** related to production, transport, compression and use of hydrogen for the development of energy communities. Joint initiatives may also concern solutions for the decarbonisation of heat-intensive industrial processes, for the power and heat supply of industrial facilities and districts and for dedicated storage for power generation plants. As part of the *partnership*, CVA will play a key role in providing renewable energy, delivering energy services and engaging with institutional *stakeholders* . Snam'*sexpertise* will be used in the development of infrastructure for the production, transport, storage and refuelling of hydrogen. Jointly, CVA and Snam will conduct and analyse feasibility studies, design and engineering studies, including technological infrastructures that allow the use of hydrogen and related operation and maintenance services.

Green Energy Building for energy efficiency

The Relaunch Decree[25], issued in the spring of 2020 by the Government to promote economic recovery in the response to the pandemic emergency, increased tax deductions for energy efficiency initiatives on the Italian housing stock, introducing the 110% Superbonus. The tool pursues the dual goal of revitalising the building sector and meeting the climate goals set by the PNIEC by encouraging, through tax relief, energy efficiency and anti-seismic measures, the installation of photovoltaic systems and infrastructure for recharging electric vehicles in buildings.

CVA, under the Green Energy Building brand, has taken up the role of "*General Contractor*", acting as a go-between for businesses and citizens interested in accessing the superbonus, crediting companies interested in carrying out works related to efficiency, absorbing the tax credit and providing the necessary support for the management of the practices required by the administrative process. The initiative, launched in July 2020, has collected about 500 intervention requests for private homes and condominiums in the space of just a few months, while roughly 70 professionals and suppliers gained credit. On the whole, it is estimated that energy efficiency measures will be carried out on 2,800 homes, corresponding to a saving of 1,183 TOE/year, equal to a reduction of more than 3,000 tons in CO_2 emissions into the atmosphere per annum.

[25] Decree Law No. 34 of 19 May 2020, converted, with amendment, by Law No. 77 of 17 July 2020.

Capacity market in support of decarbonisation

The *Capacity market* is a tool to support the energy transition, in response to the need to ensure the security of the network in the face of the gradual introduction of an increasing amount of renewable energy, which by nature, is characterised by variable availability.

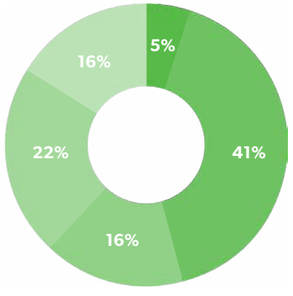
Technically, the capacity made available under contract to the network operator by market players becomes useful to ensure the ability to cover peak loads in each area of the national transmission network and thus to avoid *blackouts*. This mechanism for regulating market capacity makes provision for remuneration by Terna of plants and resources made available to holders of fossil and renewable generation *assets* through a system of auctions.

The *Capacity market* is essential, in particular, to ensure the adequacy of the system to cover the coal *phase-out* plans in the PNIEC, which could result in a decrease of up to 7 GW of available capacity in the coming years due to the decommissioning of coal-fired plants[26].

In 2019, CVA Energie was awarded 112 MW of Existing Flexible Capacity, 215 MW of Existing Capacity from Non-Programmable Renewable Sources and 150 MW of Foreign Capacity for the 2022 delivery year, reaching a total of 477 MW of Available Capacity in Probability (CDP). **Also for 2023, CVA Energie has been allocated 112 MW of Existing Flexible Capacity**, over 221 MW of Existing Capacity from Non-Programmable Renewable Sources and 150 MW of Foreign Capacity, with a total CDP of 483 MW.

In 2020, the *Capacity* market suffered a setback: in order to proceed with the 2024-2025 auctions, it will be necessary to comply with the new European Regulation of the internal electricity market (Regulation (EU) 2019/943) with the development of new bidding procedures and an Implementation plan that provides for the elimination of any market distortions. Italy initiated this *process* in the summer of 2020[27].

PRODUCTION OF RENEWABLE ELECTRICITY IN ITALY FROM RENEWABLE SOURCES OUT OF TOTAL AND BY SOURCE



Source: Terna, 2020

[26] System adequacy, decarbonisation and capacity market; Hearing before the 10th Committee on Industry, commerce, tourism - Senate of the Republic, TERNA 2021

[27] Annual report 2020, REF E

Reservoir of Brusson

Green energy

100% clean energy

water

32
hydroelectric plants

934.5
MW of power

2.5
billion of kWh produced
(~ the consumption of 1 million households)

wind

8
wind farms

157.5
MW of power

310.6
million of kWh produced
(~ the consumption of 115,000 households)

sun

3
photovoltaic plants

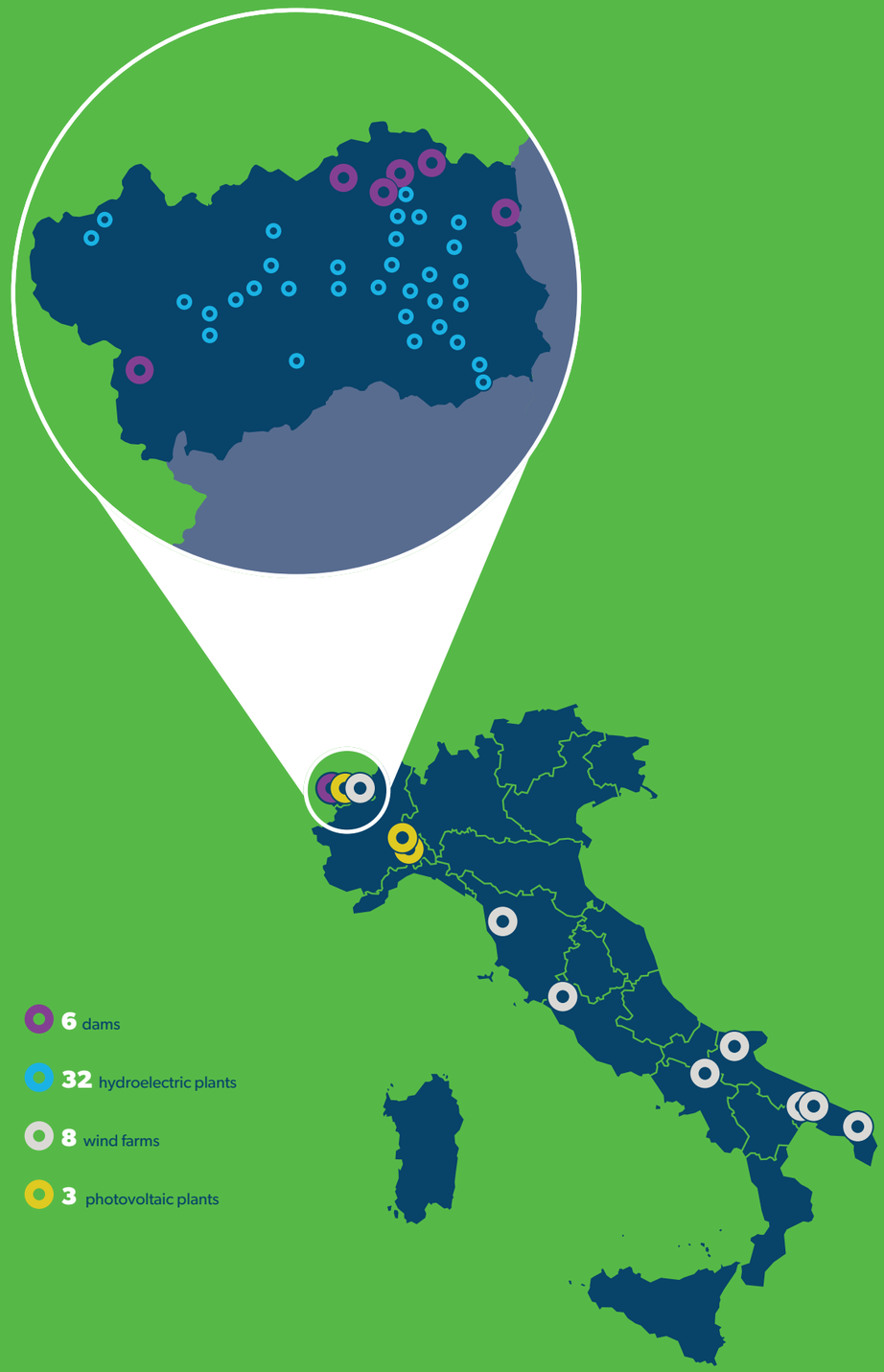
12.5
MW of power

16.8
million of kWh produced
(~ the consumption of 5,900 households)

2.819 billion
of kWh produced from renewable sources only

+ 1,293 million
tonnes of CO_2 avoided with energy production from renewable sources

+ 1,104 MW
total installed power



Water

1.308 GW
worldwide installed capacity

↓

~16%
of world electricity production

251 GW
installed capacity in the EU

↓

11.9%
of electricity production in the EU

Hydropower, in addition to being the most mature of the renewable technologies, also leads the way in terms of quantity: globally, it has an installed capacity and production far greater than any other renewable source. It is also the only renewable source that can be regulated as needed through water storage, such as dams and reservoirs. The pandemic crisis highlighted the resilience of hydropower and its ability to adapt to the flexibility required by transmission networks during *lockdown*periods.

In 2019, the world's total hydropower capacity accounts for 52% of total renewables: in other words, hydropower alone is more important than all other renewables combined together. According to the*International Energy Agency* (IEA), 16% of global electricity production comes from hydroelectric sources.

Also in Europe, the advantages of hydropower are being recognised increasingly more, as they provide a secure, affordable and sustainable energy supply. In 2019, installed capacity grew by 682 MW, for which Italy contributed 95 MW, ranking third in the European geographical ranking after Turkey and Norway[28].

Italy, where **hydropower is once again the top renewable source** ,producing about 16% of the total electricity required by the Country, ranks fourth for hydropower generated in Europe, after Norway, Sweden and France. The incidence of hydropower on the total electric renewable energy produced in Italy in 2018 was 33%. Scattered across the country, more than 4,300 plants in 2019 produced 48,153 GWh, an energy resource that employs nearly 15,300 people and that requires constant maintenance and continuous investment[29].

22.6 GW
installed capacity in Italy

↓

15.8%
of electricity production in Italy

CVA Group owns and directly manages one of the most important Italian hydroelectric parks, consisting of 6 large dams, 61 intakes (of which 33 classified as regional dams), more than 210 km of channels, about 50 km of penstocks and 32 power plants with 74 hydroelectric units. The plant park, with a total power of 934.5 MW, produces about 2,900,000 MWh of clean energy every year: the company ranks fifth[30] among national producers in the sector and places the Aosta Valley among the leading regions in Italy in the generation of energy from renewable sources. Hydroelectric power plants, with their dams, reservoirs and channels have an extensive presence in the lateral and central valleys of the region.

Montjovet power plant

Hydropower alone has a greater weight than all other renewables combined together; global hydropower generation in 2019 reached a record of 4,306 TWh

[28] *Hydropower Status Report 2020; International Hydropower Association; 2020*

[29] Renewable Sources Statistical Report 2018; GSE; 2019

[30] ARERA Annual Report; 2020

Wind

651 GW
worldwide installed capacity

↓

6%
of world electricity production

197 GW
installed capacity in the EU

↓

14%
of electricity production in the EU

At the end of 2019, the global installed capacity of **wind power plants** reached approximately 651 GW, marking an increase of 69.66 GW over the previous year and **reaching more than 6% of the world's electricity demand** [31]. Several dynamics are driving the sector: on the one hand, the slowdown in the development of European markets and the growth driven mainly by China, India and Brazil, and on the other, technological innovation. Over the past five years, *onshore* wind power technology (through ground-based installations) has evolved dramatically: in order to maximise generating capacity, even at sites with lower wind speeds, wind turbines have become larger and larger, with taller hubs and larger rotor diameters. Today, *offshore* (in open sea) wind power is also a proven and mature technology with a large global supply chain and rapid growth forecast.

Europe continues to maintain a solid *leadership position* in the wind power sector. With a total installed capacity of 182 GW and a production of **14% of the *mix***, wind energy in 2020 has increased at European level by 9%[32], earning a position on the podium of the main European sources of power supply. For future growth, from now until 2023, according to the 2030*Outlook* by *WindEurope*, Germany, France and Spain will drive wind power growth on the continent, although the outlook for new investments is still uncertain. The *Green Deal* foresees a significant expansion of wind power by 2050, reaching 50% of European electricity compared to current 15%. Between March and May 2020, with a 20% average drop in electricity consumption on a European basis due to *lockdowns and* the concomitant priority contractually allocated to renewables, wind power provided 17% of European electricity demand[33]. Today, **Italy is the tenth country in the world for installed capacity, fifth in Europe** after Germany, Spain, United Kingdom and France[34]. In the last 15 years, there has been an extremely rapid development of wind farms in Italy: in 2004, the installed plants were 120, with a power equal to 1.1 GW, while at the end of 2018 the national park is composed of more than 5,600 plants, with a total installed power of about 10.3 GW[35].

CVA, through its subsidiaries, produces an average of about 320,000 MWh of wind power, which meets the average energy needs of about 112,000 households. Wind power generation is developed through **8 wind farms** located in Aosta Valley (3 wind turbines), in Lazio (21 wind turbines), in Apulia (30 wind turbines), in Tuscany (4 wind turbines) and in Campania (11 wind turbines).

10.5 GW
installed capacity in Italy

↓

6%
of electricity production in Italy

Piansano wind farm

[31] *World Wind Energy Association; 2020*

[32] *The European Power Sector in 2020; Ember&Agora Energiewende, 2021*

[33] *Wind energy and economic recovery in Europe; WindEurope 2020*

[34] *International Renewable Energy Agency (IRENA); 2018*

[35] Renewable Sources Statistical Report 2018; GSE; 2019

481 GW
worldwide installed capacity

↓

1.8%
of world electricity production

132 GW
installed capacity in the EU

↓

5%
of electricity production in the EU

20.1 GW
installed capacity in Italy

↓

8.4%
of electricity production in Italy

Sun

Although global installed capacity remained virtually unchanged in 2018, the energy generated through PV (photovoltaic power) increased by 31% in the same year, recording the highest growth in terms of generation (+136 TWh) among all renewable technologies, just above wind power and hydropower. Also in this case, technological advancement is a key element in ensuring high levels of efficiency. The experimentation of higher performing materials could be a key element to counteract the negative consequences of rising temperatures on the efficiency of photovoltaic cells, recently demonstrated by a research paper from the *Massachusetts Institute of Technology*[36]. In 2020, photovoltaics provided 5% of European electricity (3% in 2015) increasing its production by 15% compared to the previous year[37].

Today, photovoltaics is the most popular source of energy among EU citizens, as well as the most versatile, and considering the continuous price reductions it is an increasingly affordable technology option to achieve the decarbonisation of the energy sector. The upward trend in solar plants can be observed across the EU, with 26 of the 27 Member states installing more solar power in 2019 than the previous year. At the end of 2019, the achieved capacity is 132 GW, up 14% from 115 GW in the previous year. The growth in installations that occurred in 2019 made Europe the second largest market in the world in the sector. Estimates for the year 2020 signal a temporary halt in the development of the solar market, due to the partial halt of new installations recorded during the pandemic: an overall decrease of 4% of new capacity is calculated compared to the evolutionary prospects assumed in 2019[38].

In the European ranking, **Italy is placed second after Germany in terms of installed capacity**, and sixth worldwide. At the end of 2018, there were 822,300 photovoltaic plants installed on the national territory, for a total power of 20.1 GW, of which small-scale plants (power less than or equal to 20 kW) make up more than 90% and concentrate 21% of the total national power. Compared to the double-digit growth of 2017, in 2018 the production of photovoltaic plants in Italy reached 22,654 GWh, a sharp decline compared to the production value observed the previous year (-7.1%), a reduction attributable mainly to less favourable irradiation conditions on the national territory. Every year, the CVA Group produces an average of about 16,000 MWh through **three photovoltaic plants** consisting of more than **54,000 modules** located in Aosta Valley and Piedmont. The plants in Alessandria Sud (15 hectares of land for 31,780 photovoltaic modules), of Valenza Fornace (14 hectares of land for 21,840 photovoltaic modules) and of La Tour (777 photovoltaic modules) produce energy to meet the average needs of about 5,600 households.

La Tour plant

[36] The research published in 2019, led by two MIT researchers, studies future climate scenarios developed by the IPCC to assume their impact on global PV installations. The estimate is an efficiency reduction coefficient of -0.45% for each degree of temperature increase.

[37] *The European Power Sector in 2020; Ember&Agora Energiewende, 2021*

[38] *Market Outlook for Solar Power; SolarPower Europe; 2020*

Effective*partnerships* for the renewable *roadmap* : increasing green generation

In 2020, the CVA Group, through its subsidiary CVA EOS, finalised 3 co-development agreements with selected developers, with the aim of **developing a *pipeline* of photovoltaic and wind projects on the Italian territory**.

Under the terms of the finalised agreements, the developers will assist CVA in all the phases of *asset*development, from entering into land contracts, to plant design to completion of the authorisation process. In addition to the positive conclusion of the authorisation process for all the projects started, CVA's goal is also the internal development of skills for the construction of renewable production plants, expanding and integrating the consolidated *know-how* in the hydroelectric field. The planned increase in generation from other RES also responds to a strategy of diversification of sources and expansion of production, consistent with decarbonisation goals and related market developments. This strategy also makes it possible to overcome the limitations created by the publication of Legislative Decree. 175/2016 (so-called "Madia Decree") that have effectively prevented the group's companies from growing in the RES plants sector through the acquisition of quotas or shares in companies.

During 2020, CVA EOS initiated projects to develop photovoltaic power generation plants, totalling 383 MW in the following regions: Piedmont, Lombardy, Veneto, Emilia Romagna, Sicily, Sardinia. If built, these plants will result in average annual savings of 340,000 tons of CO_2. The strengthening in the production of electricity from wind and solar sources will lead to a consolidation of CVA's role among the main Italian producers of energy from renewable sources and a consolidation of the Group's financial position.

CVA's new plants will result in average annual savings of 340,000 tons of CO_2

Zero km Power Purchase Agreement (PPA)

Achieving the goal of developing renewable sources by 2030 equal to 55% of gross domestic electricity consumption, as defined by the Italian national energy strategy, implies investments of over € 30 billion considering only new capacity, without including the refurbishment of the existing plants and the development of network infrastructure and storage. Mobilising these resources requires the involvement of the financial sector, which has traditionally been involved in financing renewable energy sources, limited to a context of public guarantees through incentives. The PPA tool, which can be briefly defined as a medium- and long-term electricity supply contract at a fixed price, is an alternative to the incentive system, especially in countries such as the United Kingdom, Spain, the Nordic European countries and the United States, while it is struggling to establish itself as a method of energy contracting on the Italian market. However, the PNIEC anticipates a contribution from "green" PPAs of an additional 0.5 TWh per year of renewable generation between now and 2030. In 2020, **CVA** signed a **five-year PPA** with Cogne Acciai Speciali, a historic Aosta Valley steel plant that is one of the world leaders in the production and distribution of long products in stainless steel and nickel alloys. The contract stipulates an hourly band supply of 2 MW of renewable energy for a total of 17.5 GWh per year. The energy supplied comes directly from the CVA power plants located near the plant. This is one of the **first long-term** , fixed-price, **zero-km green energy supply contracts signed in Italy**. It has been estimated that the supply will cover 6% of the consumption of the steel plant, allowing the reduction of emissions of 5,250 tons of CO_2, an amount equal to that absorbed by a forest covering an area that is equivalent to 290 soccer fields.

CVA moves the Aosta Valley cableway sector: the perfect circle of water energy

The CVA Group, with the commercial company CVA Energie, is the supplier of the Aosta Valley cableways for the three-year period (2020-2022). The Associazione Valdostana Impianti a Fune (AVIF - Aosta Valley Cableway Association), which awarded the contract to CVA, groups together all the cableway companies operating in the region and which, with their activities, cover 163 lifts distributed in 21 ski resorts, capable of transporting up to 240,000 people per hour. Ideally, this supply closes a natural circle: the snow that covers the ski slopes and that melts in the spring returns in the form of energy to these same places, to allow the sports and tourism activities of the districts.

Goillet dam

The CVA Group supplies green energy to all cableway plants in Aosta Valley

Studying climate change

Harmony, nature and innovation: the secrets of our territory

Aosta Valley, *carbon-free* by 2040

Environmental sustainability and *the green economy*, which heavily underpin the support policies implemented by the European Union and which are the basis of the future cohesion policy, are necessary steps for a greener and carbon-free Italy, starting from individual regions. **A territory such as the Aosta Valley is, by its nature, endowed with a unique and precious heritage, particularly favourable to an acceleration towards the energy transition.**

At the end of 2018, the Aosta Valley Region began the*process* of obtaining the *Carbon Free* certification, and in the future, it will start the process of obtaining the *Fossil Free label*. The project has made provision for a process of in-depth analysis geared towards the enhancement of investments in the energy-environmental field over the years, based on the awareness that greater attention to environmental issues, especially in this historical period, goes hand in hand with the economic growth of the territories.

The resolution of 29 March 2019, brought to the attention of the Regional Council by the Councillor for the Environment, Natural Resources and Forestry Corps and the Councillor for Finance, Productive Activities and Crafts and then approved by the Executive, establishes the definition of a working group dedicated to the drafting of a document which contains the necessary actions, the related costs and the impacts on regional society regarding *Carbon Free* certification and defines the "*roadmap*" to achieve the dual and ambitious goal by 2040. The regional economic and financial document DEFR 2019-2021 identified the drivers for regional development consistent with the European sustainable growth strategy aimed at promoting climate change adaptation policies, risk prevention and management, environmental protection and efficient use of resources, promotion of sustainable transport, promotion of sustainable and quality employment and worker mobility.

A *Carbon Free* territory is able to completely reabsorb its CO_2 emissions due to the use of fossil energy.

ARPA 2019

In May 2020, the Ministry of the Environment approved the project presented by the Autonomous Region of Aosta Valley for the development of its local sustainable development strategy. A concerted process is expected to be launched to identify the lines of action for the pursuit of sustainable development goals to 2030 through a *web forum* and a series of discussions with citizens and trade associations. The commitment of the Council, which will involve many departments of the Administration, is to make Aosta Valley a model of sustainable development, enhancing the attractiveness of the territory to the most innovative and sensitive companies to the experimentation and use of clean energy.

Finally, the Resolution of the Regional Council no.151 of February 2021 approved the **Guidelines for decarbonisation for a *Fossil Fuel Free* Aosta Valley by 2040**. The Guidelines, starting from European policies and goals, analyse the Civil sector, Transport, Industry, Agriculture and Livestock and Waste Management and propose possible actions for efficiency improvement, energy conversion and electrification of consumption with electricity from renewable sources. **CVA's values and experience make it a key player in the realisation of this ambition**: the Group is the promoter of the initiative by actively collaborating with the Region and the local authorities.

CVA's recent agreement with Snam for the development of green hydrogen is fully in line with the creation of a *green*Aosta Valley, ensuring effective integration between the natural resources of the territory and the opportunities offered by new technologies. Hydrogen production through hydropower is capable of generating a unique competitive advantage for this region that could become a completely *green* state of the art at the national level, as Professor Santarelli of the Polytechnic University of Turin notes: *"the Valley is the Arabia of green hydrogen."*[39].

A *Fossil Fuel Free* territory aims to eliminate fossil fuels or minimise their use, replacing them with renewable energy sources.

ARPA 2019

"The glaciers in the Alps lose an average of 1 meter in thickness per year. If we don't reverse the trend, the majority of our small glaciers will disappear within 50 years, and Mont Blanc will be a shadow of its former self."

Luca Mercalli

With the **CVA 2022**project, in collaboration with the Region, the Group is constantly engaged in monitoring cutting-edge technologies, in particular to study and support the electrification of carriers that today are still the prerogative of fossil fuels, such as heating systems and mobility, always with special attention to the environment.

The effects of climate change on the water cycle

CVA, as one of the major Italian operators of energy production from renewable sources, in particular through hydropower, is interested in and sensitive to monitoring and studying hydrology and, in particular, the relationship between climate change and the quantity and quality of water in the Alps. For this reason, over the years it has developed a series of partnerships with local entities, such as the Functional Centre of the Autonomous Region of Aosta Valley, Arpa and CIMA Foundation (International Centre for Environmental Monitoring), actively contributing to the development and maintenance of a **model for flood prediction, the evaluation of the equivalent water content of the snowpack, the evaluation of the contributions to the dams and the enhancement of knowledge related to the hydrological cycle and the impacts of climate change**.

The evidence that has emerged over the years reinforces the increasing need to monitor the effects of climate change. The latest studies have made it possible to affirm, with reliable and measured data, that in the Aosta Valley there has been a progressive increase in temperature, equal to +1.5°C in the last 30 years, with a consequent reduction of water accumulated in the form of snow[40]. The mass balance is used to measure the annual changes in the mass of a glacier based on the difference between the mass accumulated through winter and spring snowfall and the mass lost through snow and ice melting (ablation) in the summer season. The monitoring of the mass balance of a glacier is an established method to analyse the impact of *climate change* on glaciers (ARPA VdA).

Measurements made by CVA over the years show a well-established upward trend in temperatures: at the Cignana dam, the summers of the three-year period 2015-2017 were the hottest in the last 20 years, with a significant increase in the number of days with maximum temperatures above 20°C and significantly milder winters: the number of days with minimum temperatures below -10°C and average daily temperatures below -8°C was significantly reduced[41].

[39] "Per il nostro territorio sarebbe come il petrolio per l'Arabia" ("For our territory, it would be like oil for Arabia"), La Stampa 04/02/2020

[40] Measurements made by Centro Funzionale VdA (Functional Centre of Aosta Valley) and ARPA VdA at Saint Christophe (AO) in the years 1974-2017; data processing 2019

[41] Measurements taken by CVA at Cignana Dam; 2019 data reprocessing

[42] "Per il nostro territorio sarebbe come il petrolio per l'Arabia" ("For our territory, it would be like oil for Arabia"), La Stampa 04/02/2020

This means losing an important part of an extremely precious resource: the snow accumulated at high altitudes during winter, which will gradually melt during summer, can in fact be considered as an important and large natural reservoir that allows the accumulation and future gradual release of the water resource over time, to support all the essential services for human well-being in the mountains and in lowland regions.

+1.5°C
in the last 30 years in Aosta Valley

The **data provided by dam monitoring** is an **important reference for the study of climate change**. A key role in this is played by the Guardians who take care of this infrastructure.

Their monitoring has made it possible to build historical data sets, collected on a daily basis and handwritten, about the related weather conditions: rain, snow, sun and degrees centigrade. This information input to the system makes it possible to compare climate and seasons from the beginning of 1900s, when the dams were built, until today.

Today, the Guardians have more sophisticated detection systems at their disposal, but this daily 'barometer' task remains a valuable contribution to climate studies. Because of the nature of their work, which involves long periods of interpenetration between living and working places, Guardians are important witnesses to changes in the environment.

Cignana dam

The Guardians of the dams

Guardian Houses are located near dams in beautiful and remote naturalistic locations. Guardians ascend to their homes and workstations by helicopter from November until thaw, and during summer by car and sometimes by boat, crossing the lake. In winter their "pets" are stoats, foxes and martens, and ibexes in summer.

Peak Water is the time when the supply of water from glaciers melting is at its maximum

The warming of the atmosphere has a number of very serious consequences on the hydro-geological cycle, first of all a gradual decrease of the glaciated volumes and surfaces and the subsequent passage, on the reservoirs at lower average altitudes, from a glacial-nival regime to a pluvial-nival one. While the former is characterised by a very high runoff in summer, related to ice melting, and by a low runoff from late autumn through spring, the latter exhibits a *trend*of increasing winter flows and an increasingly early end to the abundant summer flows. Thus, rain-type precipitation increases in winter and decreases in summer, while the snow melting comes much earlier.

A future with glacier-free mountains seems increasingly likely: according to a research published in 2018[43] the *Peak*Water, i.e. the moment when the water supply expected from glaciers melting is at its maximum, has already been reached in most of the Alps. The same peak, separating the first phase of flow increase caused by glacial melting from the subsequent reduction, also occurred in most of the Aosta Valley reservoirs.

These well-established scenarios will certainly have an effect on run-of-river plants, whose power depends on the natural flow of the river or stream, while they will have limited impacts on reservoir plants, which are supplied by the water reserves accumulated by dams and are therefore more resilient to the variability of water availability and climate change. In the future, in order to maintain and develop renewable sources, making them compatible with climate change, **it will be increasingly important to maintain efficient reservoir plants and upgrade the run-of-river plants**, increasing where possible the maximum flow rates, in order to draw water when more available, and help to accumulate water at high altitude to release it when necessary, for civil and agricultural needs.

The initiatives in collaboration with the territory

CVA has been collaborating for more than 15 years **with the Cabina di Regia dei Ghiacciai Valdostani,** a body created in 2004 with the aim of coordinating all the organisations involved in the activities related to the cryosphere of the regional territory through research projects, management, preservation and promotion of the territory. In particular, in the year 2020, the working group identified and shared a *set of* indicators related to climate change, representative of the health of glaciers, snow and water stored in them, to be made public on the websites of the agencies involved.

CVA has contributed and continues to contribute, either by participating directly or as a *stakeholder*, to projects such as: ACQWA(*Assessing Climate impacts on the Quantity and Quality of Water*); RESERVAQUA, for the implementation of a network of services dedicated to the study, protection, enhancement and sustainable management of water resources on a local and regional scale; ADAPT Mont Blanc, a project geared towards the development of tools for territorial planning and management for adaptation to climate change, and MISTRAL, for the creation of a national portal dedicated to the collection and dissemination of *open* meteorological *data* . During 2020, CVA provided support to some *partners* for the presentation of projects to ESA(*European Space Agency*), in order to investigate the possible use of satellite products applied to glacial, snow and hydrological issues.

These collaborations and meteo-hydrological studies have made it possible to actually provide the company with a a "**hydro-meteorological portal**" via web, that brings together and displays in real time all the meteorological data, the regional automatic stations, the levels at the intakes and reservoirs of CVA, the estimate of SWE(*Snow Water Equivalent*) conditions on catchment areas of strategic interest for the Group and, last but not least, the forecasts of flow rates per event on the entire regional territory.

[43] Global-scale hydrological response to future glacier mass loss, Huss et al., 2018

The system is of particular strategic interest for the purpose of supporting short and medium-term planning activities in relation to both the forecasting of flow rates in case of a weather event to the intake sections of the CVA plants, for the purpose of ensuring their safety, and in relation to the estimate of the volumes stored in the "cryosphere" sector, which become available every year during the melting season.

As part of the SWE measurement activity, CVA entered into a collaboration contract with the Norwegian entity *Think outside* to test, in collaboration with ARPA VdA, a portable *radar* that would make it possible to speed up the acquisition of the snow height and density data needed to feed the site-specific accumulation and melting model.

The evaluation of the *Snow Water Equivalent* enables us to plan the management of hydroelectric reservoirs in relation to the amount of water in the form of snow actually accumulated on the ground at high altitude, which will melt during summer, optimising the planning of resource management.

Joint management of hydro-geological risk

The positioning of CVA plants in difficult to access and steep territories significantly exposes them to risks related to hydro-geological phenomena and in particular to flooding events. The danger deriving from such phenomena concerns the operators of the plants and the populations living near them: for the Group, it is fundamental to monitor the level of risk and to be able to predict the effects in the event of a calamitous event.

In order to further strengthen the protection mechanisms against intense weather events, the **Flood Hazard Procedure** was completely revised and updated in 2019 and the **Geological Hazard Procedure**was issued. During FY 2020, a procedure for avalanche risk was issued, in order to complement the land-related risk evaluation methodology.

These procedures are part of the fifteen-year collaboration between CVA and the Functional Centre of Aosta Valley, making it possible to define, according to the weather warnings issued, rules of conduct to protect employees and citizens and preventive measures to secure the plants.

The risk assessments have also made it possible to draw up a priority plan of safety measures for some sites that are currently closed in the event of intense events and reports of criticality. These risk mitigation actions will be able to guarantee the continuity of management even in case of violent events.

Place Moulin Dam

6 CLEAN WATER AND SANITATION

14 LIFE BELOW WATER

2

OUR MOST PRECIOUS RESOURCE

Our most precious resource

Key facts and figures

6 dams
in Aosta Valley

32 hydroelectric
power plants

129 Million m³
the total useful reservoir capacity equal to half of the water consumed every day in Italy

100%
successful DMV (minimum vital flow) controls

Protection
of ecosystems: a research project for the definition of the new Ecological Runoff

Reservoirs
multi-year plan for their cleaning

Why it is important

The energy of water is the oldest and most forward-looking source of energy

Water is the commodity most exposed to changes in the earth's ecosystem and to human ones. The effects of global warming play a decisive role on the future of water resources: the variation of temperatures and rainfall may have a dramatic influence on the availability of water, increasing in different regions of the world the frequency and extent of extreme phenomena such as droughts, floods and rising sea levels. If warming is not kept below 2°C, the estimate for the European continent by 2030 is that people exposed to water scarcity could rise from 85 million today to 295 million, about 40% of the population, mostly in Mediterranean countries, starting with Italy. A responsible and efficient management of water assets impacts 10 of the 17 sustainable development goals of the United Nations 2030 Agenda[44].

In this context, **glaciers**, sources of water supply for irrigation, hydropower and drinking, as well as a guarantee of slope stability, become a symbol of climate change. According to the*Intergovernmental Panel on Climate Change* (IPCC), the regions of the world that are home to smaller glaciers, including Central Europe, are set to lose more than 80% of their current ice mass by 2100, and many glaciers are set to disappear anyway, regardless of future emissions[45].

Working with water, therefore, entails a huge responsibility, as it represents a key resource for securing the future. For this reason, CVA is constantly committed to its protection, minimising the impact of its hydroelectric plants and guarding with great care **vast water assets** through its dams.

[44] White Paper Valore Acqua per l'Italia; The European House Ambrosetti, 2020

[45] Special Report on the Ocean and Cryosphere; IPCC; 2019

Ecological Runoff

Hydropower plants allow for the generation of renewable energy **without consuming natural resources**. In fact, water is always withdrawn in compliance with the so-called Minimum Vital Flow (MVW), thus ensuring the maintenance of natural biological and physical processes of the river ecosystem, to be finally fully returned to the environment after being swirled.

100%
of DMV controls with positive results

The **Regional Water Protection Plan** (PTA 2006) contains the necessary measures for the qualitative and quantitative protection of the water system in the Aosta Valley. It establishes the rules for the determination and the correct release of the DMV of hydroelectric derivations through the definition of a series of qualitative and quantitative goals for the sustainable management of bodies of water in the Aosta Valley.

The Plan has been subject to an **updating *process*** by the Region: the document, whose publication in draft version is of May 2019, in fact incorporates the new concept of Ecological Runoff, the result of the regulatory evolution dictated by the guidelines issued by the Ministry of Environment, Land and Sea Protection (MATTM) in February 2017. In developing a water management policy, the PTA emphasises the importance of climate goals and their oversight to ensure efficient management of such a valuable and risk-prone resource.

The new **Ecological Runoff Directive**, in addition to establishing the new parameter against which to determine the amount of water to be released, defines water release planning as the balancing point between three different elements: achieving a good status for bodies of water, demands for water uses, and decreasing resource availability due to the effects of climate change.

CVA, in order to determine the DMV for its power plants, participates in a *multi-stakeholder*technical round-table working group, set up by the Region, for experimentation concerning the DMV issues, together with the State Water Board, the Superintendence of Landscape Valuations and Environmental Authorisations, the Fisheries Office, the COA energy of the Aosta Valley Region, Arpa VdA, Fishing Consortium. The round-table working group is assisted in its technical evaluations by the Department of Environmental, Land and Infrastructure Engineering of the Polytechnic University of Turin. The round-table working group is working on the application of a "holistic" approach, required by the legislation, which in the definition of the Minimum Vital Flow takes into account, through a *multi-criteria*analysis, the satisfaction of various stakeholders: effects on the production of energy from renewable sources, impact on the fish fauna as a function of hydro-morphology, visual impact and economic effects.

Each stakeholder proposed an indicator representing their satisfaction, that will be applied in the creation of the various scenarios of the multi-criteria analysis. CVA has developed an indicator capable of quantifying the economic impact of the different scenarios proposed and, at the same time, the corresponding production of energy from renewable sources. In 2020, the formatting of hydro-morphological environmental data was updated uniformly to the new regulatory *standards* , supplementing with new data where necessary. CVA has also liaised with CIMA Foundation (International Centre for Environmental Monitoring), with which it has an active agreement for hydrological evaluations of events in the Aosta Valley. The possibility of applying the model used by the Region for the evaluation of flood events to the calculation of flows at the sections of interest was evaluated, which is fundamental in proceeding with the multi-criteria analysis. In addition, in order to provide the necessary elements for the Superintendence to carry out its own evaluations in the *multi-criteria*analysis, about thirty photographic devices have been installed that capture useful images on a daily basis to visually describe the effect of different flow conditions in the riverbed.

Operate in respect of the environment

For CVA, ensuringcompliance of its plants with release planning goals is a priority. Over the years, the Group has launched a **plan** for the gradual **upgrading of** all its plants, which were also built long before the DMV was established. Water is always withdrawn by CVA based on the quantity defined by the concession and in compliance with the prescribed limits of Minimum Vital Flow.

The automatic control of the Minimum Vital Flow

The automation and continuous control of the release of the Minimum Vital Flow is an important part of the *smart* systems upgrade activity of the main intake works. The commissioning of the Saint Clair intake, to which the Montjovet plant refers, was completed in 2020, while similar works for the Quincinetto and Quart plants were already completed in previous years. During 2020, moreover, the Acque Bianche intake works for the Valpelline and Grand Eyvia plant were also automated. The automatic capacity of the required releases makes it possible to operate in full compliance with the regional prescriptions concerning the Ecological Runoff, with the utmost attention to the environment.

In order to verify that the **quality of streams and wildlife*habitats*** is **maintained** , the Group draws on the expertise and knowledge of the Region and of other entities deeply rooted in the local area.

For over ten years, CVA has been involved in experimental activities aimed at identifying the most appropriate amount of DMV needed to maintain the river ecosystems affected by its plants. The goals, still valid today for Ecological Runoff, has always been to find **shared solutions**, which at the same time take into account the needs of all stakeholders of the water resource.

CVA operates in full compliance with releases from its plants: no violations regarding DMV occurred during the four-year period 2017-2020.

The experimentation of Valdigne Energie, in synergy for the protection of the environment

In 2010, Valdigne Energie and the Autonomous Region of Aosta Valley commenced the testing program aimed at verifying the compatibility of withdrawals and releases of DMV with the goals of the Water Protection Plan. Over the years, the results of monitoring have shown that the bodies of water affected by the new derivations, the Dora di Verney and Orgères streams, have maintained an excellent quality status.

In light of these positive results, the Technical Round-Table Working Group has defined the start of an additional experimental phase with the aim of evaluating a remodulation that provides for a release of ecological runoff in real time related to the actual measured incoming flow, taking into account the environmental, landscape, economic and energy aspects of the various stakeholders.

The value of hydropower for the territory

The hydropower industry represents a consolidated asset of considerable value to the environment. Its power generation meets the most stringent European recommendations in terms of climate change, containment of greenhouse gases and average temperature rise.

Hydropower plants meet relevant **land development and environmental** needs in at least three different ways: network balancing, electricity system security, and land protection.

Because of its storage capacity, hydropower plays a key role in **balancing supply** and **demand** and ensuring the proper functioning of electricity service. Hydroelectric storage - from a long-term perspective - is and will be increasingly important also to balance a potential often limited by authorisation and bureaucracy obstacles.

In fact, storage with pumping systems is among the solutions identified in the PNIEC to help get close to the 2030 renewable growth goals. Secondly, the presence of hydroelectric plants contributes to the **security of the electricity system** in the event of network disturbances or *blackouts*. In fact, voltage regulation, i.e. the ability to take steps not only in terms of generation, but also in terms of energy absorption, and the possibility to quickly start production without external power supply and in the absence of voltage on the network (*"black start")* make hydroelectric plants extremely flexible, a valuable feature for the security of the electricity system and energy markets.

Refurbishing existing plants, many of which built to serve industry in the early 1900s and thus with limited capacity for those purposes, could increase capacity and contribute positively to decarbonisation goals. It is estimated that thanks to renovation works, the major contribution to energy supply could reach 4 TWh (corresponding to the average annual energy consumption of about 1.5 million households), while the contribution to water safety is predicted to reach 900 m^3. For these reasons, the operators of the sector would like to see the adoption of *fast-track* authorisations together with regulation of the renewal of hydroelectric concessions that allows the planning of long-term investments, such as those necessary for the intervention on these major works[46].

Finally, hydroelectric plants play a crucial role in environmental protection, contributing to the **reduction of hydro-geological risk**. Periods of particularly heavy rainfall can result in severe flood events.

The presence of reservoirs allows the volume of excess water to be stored and then gradually drained off, reducing the disruptive force of water (lamination capacity). The presence of a dam on a watercourse is therefore in itself a positive factor for the protection of downstream areas.

Hydropower is the only renewable energy source to be programmable: the capacity for energy storage, combined with the use of pumping systems, allow the storage of energy reserves ready to be used in response to the needs of the electrical network

[46] Energy for water sustainability; Althesys, and Enel Foundation, 2020

A case in point: contributing to the safety of the national system

On Sunday, 24 May 2020, in the aftermath of the first national *lockdown*, the reduction of electricity consumption due to the halt of industrial activities has been significant; at the same time, the warm season has always determined better*performances* of renewable energies, photovoltaic due to the increase in sunshine hours and hydroelectric thanks to the greater inflow of water due to the melting of snow. For this reason, the manager of the national transmission network, Terna, contacted all the Italian operators, including CVA, because it was necessary to reduce the supply of energy to the network, whose surplus could not be balanced by a demand that was still too low: the risk was a national *blackout* [47].

In the CVA power plants, at that time the flow rates were almost at full load: turning off or significantly decreasing production meant redirecting water from the network to the riverbeds, rivers and streams; in other words, a sudden flood wave would have resulted. CVA answered the **call for national safety** by minimising production shutdowns and precisely by calibrating water releases. There are in fact power plants that, in spring, derive several tens of m^3 of water per second: stopping or minimising means managing huge quantities of water.

That's why, during that May *weekend*, CVA operators carried out close monitoring on-site at all the riverbeds and, at the same time, alerted the Mayors of all the Municipalities affected by the rivers and streams where water would have been conveyed, to avoid the presence of fishermen and passers-by. The total amount of production reduction carried out effectively, avoiding any accidents, was 1,426 MWh.

Blackouts

Blackouts can occur due to both a surplus of energy in the network and a lack of it, i.e. they occur whenever an exact balance between supply and demand of energy is not maintained.

The last national *blackout* occurred in September 2003 (only Sardinia and the minor islands with an autonomous network were exempt) due to a fault in Switzerland from which Italy imported 25% of the power required by the national electricity system. 59 million Italians were left in the dark for several hours, trains, subways and streetcars stopped, traffic lights, elevators and all the daily utilities, from PCs to refrigerators, were blocked.

Aosta Valley was the first Italian region to regain power supply from the early hours of dawn. This result was possible thanks to the coordination of the remote control posts of CVA and Deval and to the night work of the CVA on-call personnel that, starting from the Perrères power plant, immediately re-powered Valtournenche and then, by hooking up to this first island, the various CVA power plants and the various cities served by Deval, re-powered the entire Aosta Valley. The last ones, around 7:30 am, were the inhabitants of Aosta: to all intents and purposes a completely autonomous "energy community"!

CVA dams

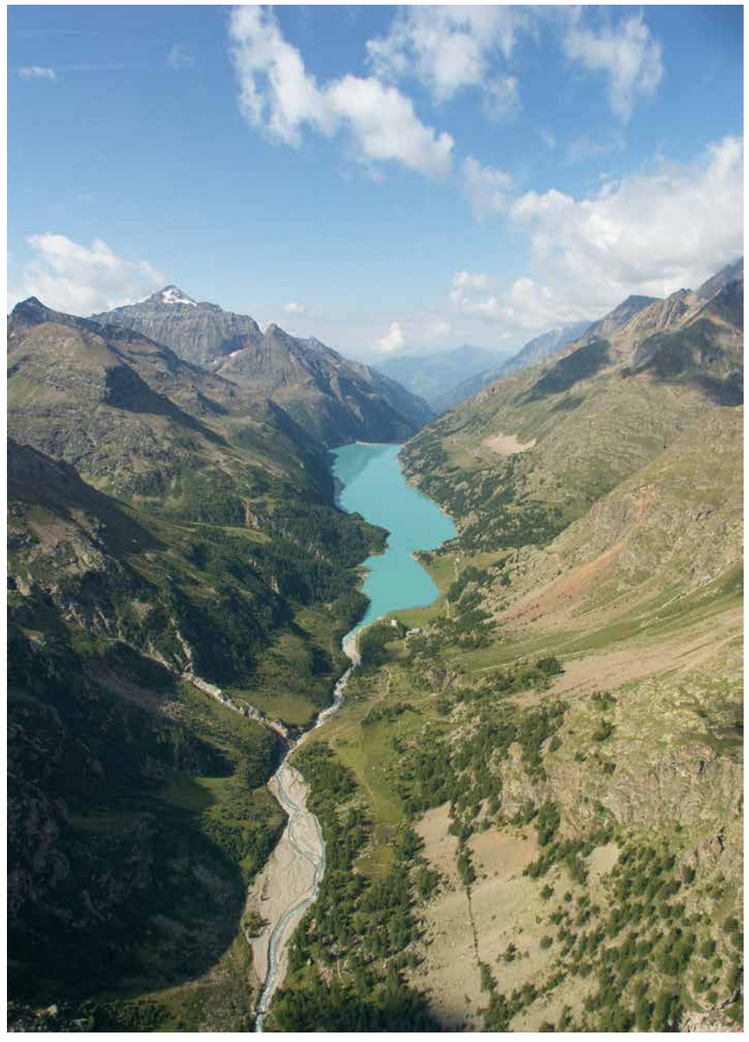
The term "dam" refers to a structure built on the bottom of a valley, in a generally small-scale section (narrow or gorge) and extended transversely over its entire width, with the function of retaining all or part of the natural flows of a watercourse or artificially adduced, from which a reservoir or an artificial lake or a body of water originates.

There are 541 large Italian dams, of which 62% are used for hydroelectric or industrial purposes; 38% are used for irrigation, drinking water or lamination purposes[48].

CVA dams guard over vast water assets and their maintenance is part of the strategy of optimisation of environmental resources, sanctioned by Legislative Decrees 152/99 and 152/2006. Their total useful reservoir capacity exceeds 128,600,000 m^3, or about half of the average daily water consumption of the entire Country. In a context increasingly characterised by extreme weather phenomena, these artificial reservoirs become real lungs of water, able to ensure the continuity of the resource.

On the ground, they play a key role through flood lamination, storing the volume of water produced by heavy rainfall to reduce the disruptive force of water and allow it to drain away gradually, as well as ensuring better distribution of energy throughout the year.

The Italian National Committee for Large Dams (ITCOLD) is the national association that studies and analyses the problems related to the management of large hydroelectric dams. CVA is a member of the ITCOLD working group on penstocks, hydraulic works associated with dams that create the height connection between the upstream reservoir and the hydraulic machinery of the hydroelectric power plant.



Place Moulin Dam

The Place Moulin dam, one of CVA's 6 large dams, is one of the largest in Europe. Measuring 678 metres long and 155 metres high, it was built between 1961 and 1965, and is capable of holding 93 million m^3 of water

[47] In May 2020, according to Terna's findings, electricity demand in Italy was 22.7 billion kWh, down 10.3% compared to the same month in 2019. The demand for electricity was met for 94.4% with domestic production. Production from renewable sources covered 51.2% of demand, up from the same period in 2019 (41%): this is the highest monthly value ever. Growth in photovoltaic (+25.1%), hydroelectric (+12.2%) and wind power (+6.3%) production sources. Terna Press Release, May 2020.

[48] 2018 Report, Permanent Observatory, ITCOLD, 2018

Landscape protection

CVA is always looking for technological solutions to combine the production of clean energy with the protection of the environment

Regulatory constraints for plant construction and operation

The development of hydropower in Italy is incorporated in a **rather complex regulatory framework**. The procedures, which may differ in detail from Region to Region, concern the environmental compatibility of the works and obtaining a series of authorisations connected with the production activity, with the prior requirement of a concessionary act for the derivation of public surface waters. While the renewal of concessions is still in a transitional phase, the regulations for the construction and operation of hydropower plants are more well-defined. The reference standard is Legislative Decree 387/2003,[49] which introduced the **simplified procedure of Single Authorisation** for RES plants. The procedure has a maximum duration of 90 days and is issued at the end of a single procedure by the Region or by another delegated institutional entity.

The role of the Municipalities and of the Superintendence of Cultural Heritage

In order to protect the significant value of the landscape heritage that houses the Group's plants, CVA adopts technological and shared solutions, always in harmony with the environment. The inclusion of plants and infrastructures for the distribution of energy, from the design phases to commissioning, take into account the needs of the community and the unique features of the territory. Every intervention on the plants of the CVA Group is preceded by the transmission to the competent Municipalities of SCIA (Segnalazione Certificata di Inizio Attività - Certified Notice of Commencement of Works) or Building Permit Request to obtain the authorisation to build. Often the activities are carried out in areas and on works bounded by the **Superintendence for Cultural Heritage and Activities**, therefore the above-mentioned permits are accompanied by special favourable opinions issued by the regional structures. Finally, some plants fall within the area of competence of the Parks and of specific protected areas (such as the Gran Paradiso National Park) for which the relative authorisation is obtained.

Plants in harmony with the environment

The context in which the Group's works are incorporated is characterised by the presence of local flora and fauna, whose existence depends on the presence of river and lake ecosystems. Especially in cases where plant sites are situated in protected areas, such as Parks, Special Protection Areas (SPAs), Sites of Community Importance (SCIs), wetlands, the management of plants involves compliance with **specific procedures**, including European nature legislation[50].

Protection of fish and biodiversity

The diversion of water for hydroelectric purposes implies a reduction of the amount of water in the riverbed and, consequently, also a reduction of *habitats* available. For this reason, specific protection measures are put in place for fish fauna whose particular ecological role is that of "umbrella species": by protecting an umbrella species, many other species living in the same ecosystem are indirectly protected, thus allowing biodiversity. CVA, as required by law, pays the Fishing Consortium a share in proportion to the concession fee paid to the Autonomous Region of Aosta Valley. Valdigne Energie has also signed a five-year agreement to finance the re-population of 1,600 brown trout in the Dora stream of La Thuile Valdigne. In 2020, CVA also signed a memorandum of understanding with the Department of Natural Resources and Forestry and Fishing Consortium for the creation of a fishing reserve in a stretch of the Dora Baltea river, which ensures the coexistence of hydroelectric derivations with the fishing activity for the purpose of integrated development of environmental, tourism and economic systems.

[49] Legislative Decree no. 387/2003 is the reference standard for the construction, operation and modification of plants for the production of electricity from renewable sources and the fundamental infrastructures for its distribution.

[50] Like any other water-based activity, hydropower generation must comply with the provisions of EU environmental legislation for the protection and restoration of European rivers and lakes. The Birds and Habitats directives, in particular, represent the cornerstone of EU policy for the protection of nature and biodiversity, allowing all EU Member states to work together within a common legislative framework, overcoming political or administrative borders.

Reservoir cleaning and waste material management

The presence of an artificial dam alters the natural balance of the watercourses, creating an area characterised by low water speeds and, consequently, by a high sedimentation capacity of the solid material transported by the current. Artificial lakes created upstream of dams are used to store and modulate water for hydropower, irrigation, recreation, and flood lamination purposes. However, as time goes by, they lose part of their accumulation capacity due to the sedimentation of solid material carried by the water flowing into the reservoir. The average annual siltation rate is extremely variable, depending on the features of the reservoir, on land use, on the water system of the intercepted stream, and on the geo-morphological features of the reservoir itself.

In order to **ensure the maintenance of the useful capacity of the reservoirs**, to guarantee the safety of the discharges and to safeguard the quality of the water in the reservoir and of the receptor body of water, specific **multi-annual Management Plans** have been drawn up that detail and **regulate the emptying and cleaning operations and the related environmental monitoring** to be applied, both for the large dams and for the weekly modulation reservoirs.

CVA cyclically schedules the weekly modulation reservoir mechanical mud cleaning operations taking into account historical material input. As far as large dams are concerned, following the comparison between the original plans and the bathymetry [51] carried out in recent years, it was found out that the landfill volume is less than 10%, a value well below the critical threshold, also favoured by the environmental configuration of the places where the reservoirs were created at high altitude.

The management of the waste material resulting from mechanical excavation is considered waste management and falls into the category of special non-hazardous waste. As such, they can be delivered and treated in a waste recovery plant that allows them to be reused and re-introduced into another production cycle. Planned reclamation activities, which must be authorised in advance, include the formation of road embankments and sub-bases, the creation of embankments, and the use to reprofile portions of the morphometry of the affected riverbed area. In any case, recovery is subject to the execution of the transfer test on the waste.

CVA is in charge of the entire management cycle that presides over these operations of good reservoir keeping, overseeing periodic activities of sampling and characterisation of the sedimented material, determination of the total out-of-service period of the plant depending on the amount of material and the difficulties of extraction and removal from the reservoir and general organisation of the work. Heavy rainfall in October 2020 generated a significant amount of material within the Guillemore reservoir, referred to the Pont-Saint-Martin plant.

A total of 10,000 m^3 of resulting material was extracted and recovered in a plant allowing for reuse. Overall, **in 2020, the excavation operations extracted more than 20,000 m^3 of material** , which was delivered to appropriate recovery and reuse centres.

20 thousand m^3

of waste material that has been delivered to appropriate recovery and reuse centres

[51] Bathymetry is a branch of oceanography that deals with measurements, by soundings, of depths relative to sea reservoirs and even lakes. Bathymetric charts analyse marine or lake depths, where points of equal depth are brought together by contour lines. Treccani

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Safety course on ropeway installations

3

RELIABLE AND RESILIENT

Reliable and resilient

Key facts and figures

65.7 million €
invested in electromechanical and civil engineering activities, during the three-year period 2018-2020

~170 interventions
inspections and controls of civil, hydraulic and electromechanical works

178,000
operating hours for investment and maintenance, in 2020 only

100%
of the dams is manned by guardians on site 24/7

100%
of wind turbines remotely monitored 24/7, with prompt on-site intervention 365 days a year in case of downtime

100%
of photovoltaic systems monitored remotely during daylight hours 365 days a year

Why it is important

Predictive maintenance is critical in order to keep plants safe.

An efficient and punctual maintenance of the plants is of strategic importance on the productive plan, it allows to constantly update the technological solutions adopted to obtain the maximum yields and guarantees working safety.

The generation of electricity with water, wind and solar power involves highly complex plants located in sensitive areas.

Predictive maintenance, through constant monitoring and collection of *asset*operating data, is able to anticipate abnormal situations and failures, ensuring high standards of safety and operational efficiency to protect employees, local communities and end consumers.

In the three-year period 2018-2020, more than € 65 million was invested in maintenance and renovation of the CVA Group's production and distribution plants.

Commitment to safety

*Asset*maintenance and modernisation

The integrity and minimisation of risks in the management of the plants are a priority for the Group, which constantly invests in their maintenance and modernisation. In the three-year period 2018-2020, more than € 65.7 million were invested in maintenance and renovation of production [52] and distribution plants.

INVESTMENTS IN MAINTENANCE AND RENOVATION OF PRODUCTION AND DISTRIBUTION PLANTS

Values in thousands of €

	2018	2019	2020
CVA Group	20,400	18,300	26,970

The improvement of safety and efficiency is monitored through regular checks that make it possible to identify the weaknesses of the plants and to implement preventive actions. The inspections, monitoring and maintenance activities concern all the elements of the plant present along the energy chain, from the intake works, through the derivation works, up to the electromechanical machinery and the distribution network.

Maintenance and operations activities are carried out both by in-house departments, including operations departments, and with the support of third parties

The safety of hydroelectric plants

Hydropower is an important reference for the Italian electricity system both for the quantity of energy produced and for the quality of the services offered that contribute to the reliability and stability of the network.

Large hydropower is considered by the PNIEC to be a resource of **strategic value** for achieving the 2030 and 2050 goals regarding the progressive increase of renewable sources, so it is hoped that production will be preserved and enhanced. Overall, by 2030 the contribution of renewable sources will reach 16 Mtoe, or 187 TWh. The Plan calls for wind power and photovoltaics to cover 55% of gross final electricity consumption, up from 34.1% in 2017. The modernisation and*repowering* of plants therefore become crucial factors both for ensuring *business* continuity and, above all, for contributing to European, national and regional decarbonisation goals. The *repowering* in fact, with the same infrastructure, makes it possible to optimise the installed power providing higher *performance* in terms of yield and production efficiency.

Building Information Modelling for asset management

A recent pilot project through the 3D modelling, proper of the *Building Information Modelling*, has made it possible to represent the structure of the plants three-dimensionally, including all the components, which are connected topographically. This technology makes it possible to remotely "access" in the plants to verify the maintenance structure, facilitating the punctual and constant monitoring of the *assets*.

[52] The value includes investments made in hydroelectric, wind and photovoltaic plants (net of amounts allocated to the acquisition of new plants) and in distribution plants.

All large dams owned by the Group are works built between 1920 and 1960 and, also for this reason, maintenance and investments are two crucial hubs of the activity that CVA is carrying out: major efforts to modernise the hydroelectric plants, aimed at safeguarding and innovating plants with the use of highly distinctive *know-how* . Efficiency measures enable a substantial margin of production increase; moreover, by allowing the production of greater volumes of energy from the same quantity of water, they promote greater environmental sustainability.

Champagne Bridge 1 connects the past with the future: restoration and innovation for our power plants

The Champagne power plant includes two penstocks that originate at the surge tank and stretch approximately 2,250 metres. In order to overcome the ravine through which the Dora di Rhêmes stream flows, the pipelines rest on a reinforced concrete arch bridge built in the 1920s, with an overall span of 54 m. The construction of the bridge in the 1920s was a technological breakthrough. The structure is actually made of reinforced concrete - which was patented in the second half of the 1800s - and has a particularly slender span, with a structural and architectural line that was pioneering for the time. The building is therefore subject to protection by the Superintendence of Cultural Heritage. Restoration work was done on this structure during 2020, the use of which is important not only to CVA, but also to local governments that use the bridge for water and sewer passage. The work was preceded by a well-structured study conducted by CVA Group's Civil Engineering and*Open Innovation* together with the Polytechnic University of Milan. The intervention involved the structural restoration of the building to extend its useful life, the static adjustment and the improvement of the dynamic behaviour of the structure. Since the work was suspended over a ravine, the activity required the use of scaffolding lowered from above, with the insertion of rails that would allow horizontal and longitudinal movement on the simple structure.

These actions have enabled an increase in safety for the operators who must travel over the bridge and will facilitate future inspections and maintenance. Carbon fibres were inserted in the parts most prone to deterioration, in order to strengthen the structure. Automatic tools were also installed to monitor the stability of the bridge over time. In terms of innovation, optical fibres have been inserted, whose distinguishing trait is to support the movements of the structure, recording a series of data that allow constant monitoring of the work. This technology is of an experimental nature: if it meets expectations, it may also be used on other Group plants.

Champagne power plants

Safe sealing of penstocks

A technical investigation of CVA's entire suite of pipelines, consisting of 43 penstocks, 5 outfall pipes, 3 siphons, a bulb turbine trunk and a pipe bridge, has been ongoing since 2016. The inspection plan, which will end in 2021, consists of ultrasonic thickness checks on metal pipes and nailed joints, as well as a visual inspection of the external or internal condition of the pipelines. The investigation will allow for a complete analysis of all pipelines built prior to 2009 and a timely inspection of newer pipelines as well. Simultaneously, the minimum thicknesses of the pipes that can be considered safe for the work concerned are calculated. The results of the*assessment* will also make it possible to define a plan for multi-year inspections of the pipelines according to their actual state of conservation and the evaluation of any need for local or widespread restoration work.

The differential flow meters are a highly important component, because they make it possible to intercept and automatically monitor the flow of water coming from upstream. Almost all CVA plants are equipped with these active protection measures, which enable them to avoid significant unintentional spills linked to possible leaks or pipe breakages, also protecting the surrounding areas.

The differential flow meters are interfaced with a remote control network equipped with a supervisory system that implements numerous data acquisition and storage functions, allowing the processing and analysis of statistical trends that are useful in predictive and programming terms.

Major construction sites in 2020

2020 saw the continuation of some existing maintenance projects and the commissioning of new and substantial maintenance and repowering interventions. The most distinctive modernisation works are the overhaul of the **Signayes power plant**, the maintenance of the **Hône 1 power plant** and the overhaul of Unit 2 of the **Aymavilles power plant**.

The infrastructural features of the **Signayes hydroelectric plant** make this site unique, considering that the plant's machine room is located inside a cave that can be reached through a 120-meter deep shaft.

From the design point of view, the overhaul of Signayes has the almost unique feature of impacting almost all sections of the plant[53] through the renovation and technological modernisation. The project is developed over a three-year period with works dedicated to the electrical section, to the electrical system in its entirety, to electronic and computer equipment, to electromechanical machinery and to hydraulic components limited to penstocks.

The adoption of advanced solutions and the installation of frequency and voltage regulators designed and engineered by CVA will ensure a fully automated and digitised power plant, with a significant advantage in terms of management and operation.

In June 2020, the renovation of generator unit no.1 was completed, thus completing two-thirds of the planned maintenance work. The extraordinary overhauling of the alternators, together with the process of total re-automation of the plant, represent the heart of the plant upgrade intervention thanks to the increase of the reliability of the machines to guarantee the continuity of electricity production.

[53] The interventions concern the components of the plant, while they do not modify either the intake works or the channel, i.e. the only parts visible from outside by the population.

*Moderate flow level:*state of the regime of a river or of a stream when the flow rate is between that of flood and low flow: in May-June, after the spring floods, the river has a moderate flow level

During 2021, the High Voltage station and the plant municipalities will also be re-automated, in addition to completing the re-automation of unit no.2, thus obtaining **the first power plant with all the automation systems designed *in-house* by CVA**. In addition to the extraordinary overhaul of the generator, aimed at the complete renewal of the active parts of the electrical machine, during 2020 the design and construction of the new turbine shaft and of the rotor bellhousing were finalised, intended to replace the components with metallurgical defects.

Continuing the work during the spring of 2020 *lockdown* was possible, because the plant is intended to provide essential services to the public; this allowed to stay on schedule and complete all the works planned for the year.

After a brief suspension, activities resumed following an update to the Safety and Coordination Plan, carried out with the support of the Safety Coordinator during the execution phase and the CVA personnel in charge. For the identification of the safety measures to be taken, it was necessary to take into account the unique features of the Signayes plant, whose machine room is accessed by an elevator. Accesses were staggered and allowed after temperature and regulatory PPE checks; elevator use was reduced to a maximum of 2 people at a time. Similarly, quotas have been set for restrooms and changing rooms. This timely adjustment of the new work safety, necessary for the protection of workers' health, allowed activities to be continued by excluding cases of contagion.

Hône 1 and the '*soft snow*' of May

The Hône 1 power plant, inaugurated in 1947 and built partly in a cave during the war, is characterised by one of the most powerful turbines present in Italy at the time: a turbine with Kaplan rotor with an efficient power of 18,400 kW that guarantees the delivery of the entire hydraulic power of the plant. The first thing that catches the eye of the uninitiated is a huge naval propeller. In May 2020, the personnel at the plant discovered that the drive train of a Kaplan wheel blade has broken. Repairing this fault would involve disassembly and reassembly time, which would require shutting the plant down. However, May sees the start of the ***soft snow***, i.e. the gradual influx of significant injections of water, due to the melting of snow at high altitude. "Losing the soft snow" means the loss of production of about 38 GWh of clean energy. In order to save this production, the decision to take extreme action was made: to block all the rotor blades at a certain opening, thus trying to avoid the otherwise inevitable lost production. With the help of technical experts in the field, who assisted CVA's Electromechanical engineering in the analysis and simulation of the possible hydraulic scenarios, we proceeded mechanically, welding metal wedges on the Kaplan wheel that would have prevented the rotating movement of the blades. The activity was carried out using a nickel alloy electrode welding technique, with a high elongation at break value and as such to avoid stress-relieving treatments, which would have entailed the need to completely discharge the oil from the Kaplan hub, with an increase in process execution times. Moreover, since this movement is normally managed by the speed regulator through the hydraulic system, it was also necessary to upgrade both devices. These **activities** were **carried out totally *in-house***, taking full advantage of CVA's internal ***know-how*** . In fact, the *software* implemented in the RDF12© speed controller was developed by CVA in 2019.

Ingenuity and professional expertise saved "the soft snow" and ensured production.

Special maintenance work on the turbine and alternator began in autumn 2020 and will be completed in late spring 2021. The*repowering* activated is relevant and involves the procurement of a new Kaplan rotor made with *oil-free*technology, with the hub filled with demineralised water instead of oil, confining the oil in the upper part of the machine, not immersed in water.

August 1918 - Work in progress on the Kaplan rotor in the Hône 1 power plant

Rotor extraction of the Hône 1 power plant

An overhaul of the turbine-alternator unit of Unit 2 of the **Aymavilles power plant** began in November 2020 and will continue until April 2021, followed by the overhaul of 1 twin unit in the period November 2021 - April 2022.

The turbines, which until now had been operated without any extraordinary maintenance, required targeted interventions on the rotor, guide vanes and hydraulic channels of the distributor and discharge. The intervention will make it possible to have a new Francis rotor on Unit 1, a regenerated rotor installed on Unit 2, a regenerated rotor available as spare part. All hydraulic channels downstream of the distributor will be protected with newly designed stainless steel liners. The intervention will then involve restoration of the correct functionality of the distributor and its servomotor, as well as the machine valve. As far as the generator is concerned, a complete extraordinary overhaul will be started with the aim of restoring and increasing the quality and reliability levels of the machine.

***Water Mist*an eco-friendly solution to protect production transformers**

In compliance with current legislation in terms of fire prevention and protection, CVA intends to equip the production transformer park with highly innovative extinguishing systems. In order to increase plant safety, the Group has decided to replace its previous CO_2 inert gas-based systems with high-pressure water mist*(Water Mist*) fire-fighting systems, starting in 2018 with a three-year plan. Due to the fractionation of water into a myriad of microscopic-sized droplets, the cooling surface area increases significantly (1 litre of water corresponds to 1,700 litres of fog). Compared to inert gas systems, *Water Mist* systems therefore reduce water consumption and block the ability to displace oxygen from the heat source. Since it has no emissions whatsoever, it is a **totally environmentally friendly solution**. By the end of 2020, there **are 5 Power Plants already equipped** with***water-mist* fire suppression systems** , and additional installations are planned in the near future.

Asset control and preventive diagnostics

Checks on the functionality of the electrical protections of the generators are essential to be able to safely operate the machinery. During 2020, **more than 50 checks** were performed on group protection devices and more than **22 checks**were performed on **line protection devices**, transformers, and Breaker Failure devices.

A census of the protection systems was also carried out, in order to plan the correct intervention strategies. A total of **20 thermographic analyses were carried out on the main electrical components** of hydroelectric plants and more than 15 inspections of high voltage capacitive voltage reducers were carried out as well.

More than 70 manual surveys of the vibrational phenomena of hydroelectric units were performed.

During 2020, the **preventive diagnostics** campaign on electrical machines, generators and production transformers continued, with **10 specialised internal machine inspections**, **17 electrical diagnostic measurements**, 4 *off-line* partial discharge surveys and the same number performed on-line.

In addition, the campaign to equip machines with on-line instrumentation continued: **7 generators have been equipped with fixed sensors** aimed at measuring and controlling the magnetic flux and partial discharges. The monitoring of the condition and reliability of the oil production transformers is ensured by the multi-year plan of periodic analysis of the insulating oil: **75 laboratory analyses** were carried out in 2020, which **enabled the early identification and prevention of as many failures**. In parallel with the oil analysis and in order to complete the preventive diagnostic plan, CVA has recently started the execution of electrical tests on some transformers: in 2020, the entire kit of electrical tests was carried out on the Quart/Nus transformer.

Wind energy: repair interventions

Scheduled maintenance of wind turbines is essential for the proper operation of all equipment, both electrical and mechanical. For the management of wind power plants, the Group relies on the expertise and preparation of the companies that build and install the wind turbines, through different *Operation & Maintenance*contracts, managed by the Electromechanical Engineering Department. In this way, remote monitoring and emergency intervention are guaranteed 365 days a year, in addition to scheduled maintenance every six months and extraordinary maintenance when necessary. Safety equipment (such as stairs and elevators) and civil works related to wind power plants (roads, buildings) are also subject to continuous maintenance.

Because of the advent of the pandemic, in spring 2020, for the continuation of ordinary and extraordinary maintenance, inspection activities, instrumental surveys and urgent interventions in case of failure, operational procedures have been drawn up with each O&M to implement the directives issued for the global health emergency.

These detailed procedures have been developed in collaboration with the HSE districts of all O&M, i.e. professionals from other European countries (France, Spain, Germany and Denmark) given their international prerogative. The maintenance and repair interventions of wind power plants involve complex operations, determined by the very configuration and scale of the plant components. The Piansano wind farm is the largest of the CVA Group in terms of installed power, 42 MW. It now houses 21 Vestas V90 wind turbines, each 2 MW, which have a tower height at the hub (the point where the blades are attached) of 80 metres and a rotor diameter of 90 metres. The repair of a blade in cases like this involves the**activation of complex instrumentation and construction sites**, which require stability checks, the use of cranes and sometimes even adjustments of the roads leading to the plants to allow access to construction equipment. In recent years, there has been a nationwide increase in intense thunderstorm phenomena and the formation of high power lightning. Wind turbines constitute a privileged lightning rod because of their height (100 -150 metres) and the places where they are installed.

During FY 2020, lightning damage to blades was reported at all CVA Group plants. Two events were more serious than the others: due to lightning damage to the root of one of the three blades of the Lamia di Clemente plant, the entire rotor had to be disassembled and brought to the ground, where the complex and lengthy repair work had to be carried out.

This operation, which is anything but quick, involves the preparation of an excavation around the tower to create a solid beaten surface on which a huge crane is positioned, whose task is to hook up the blade and bring it to the ground to carry out the repair. Works lasted for three months. Lightning damage to the Piansano plant, however, made it impossible to repair the blade, which will be replaced during 2021.

Weathering and site management

During 2020, there were several highly extreme and intense meteorological incidents, which required **sudden operational intervention to secure the plants and ensure continuity of service**. In addition to the lightning strikes that affected the Lamia di Clemente plant, during summer a **tornado** near the Alessandria **photovoltaic plant** destroyed hundreds of panels that had to be repositioned and partly replaced.

At the beginning of October, a **flood event** instead hit the Aosta Valley; the most significant damages that occurred in the Region included the collapse of a bridge. In the space of 12 hours, the situation changed so drastically as to require sudden intervention by CVA personnel, called in during the night. CVA has activated the prescribed procedure for safeguarding *assets* in the event of a flood. The procedure involves closing bulkheads and opening watertight doors; this has prevented damage to plants that would otherwise be unavoidable. The very strong wind that accompanied the flooding event caused numerous plants to fall onto the overhead distribution lines, resulting in widespread power outages for users. Given the severity and the high number of events, DEVAL has activated the electricity network Emergency Plan.

Restoration activities were performed in an emergency context exacerbated by site accessibility issues. DEVAL technicians have coordinated the restoration by keeping in touch with the Civil Protection, with the Mayors concerned and also organising some transports of materials with the help of helicopters, minimising interruptions and the inconveniences to the users. In summary, on 3 October, the Fault Reporting System received approximately 120 phone calls from users, for a total of 10 medium voltage faults and 20 low voltage faults. In the morning, there were about 7,500 Low Voltage users out of service; during the afternoon, thanks to remote control and interventions in the area, 95% of users were re-powered.

Climate change is causing an increasing number of weather-related incidents

A secure network for constant power supply

Security of supply

The power plants of Valpelline, Avise, Perrères, Maën, Covalou, Pont-Saint-Martin, Gressoney, Sendren and Zuino are included in the **National electricity system repowering and restarting plan** prepared by Terna and binding for operators. In the event of a *blackout of* the national network, these plants are required to carry out, autonomously or under the coordination of Terna as the case may be, manoeuvres aimed at restoring the electricity system. The Perrères and Gressoney plants are classified as essential plants for the security of the national system, as they have the capacity to supply isolated portions of the network, in this case the Cervinia and Gressoney areas, autonomously maintaining the correct voltage and frequency values within these portions of the network.

INDICATOR	2018	2019	2020
Total net production of hydroelectric plants (GWh)	3,096	2,727	3,045
Producibility = Net annual production / historical producibility [%]	104.4%	90.8%	102.0%
Load factor = Net annual production / (total hours per year * installed capacity) [%]	37.8%	33.3%	37.2%
Availability index [%]	95.03%	94.02%	92.27%
Unavailability index - unscheduled [%]	2.67%	2.87%	4.32
Unavailability index - scheduled [%]	2.30%	3.11%	3.41

The table shows the availability values recorded on CVA Group's wind and photovoltaic plants over the past year.

PLANT	CONTRACTUAL AVAILABILITY
Monteverde (AV, wind power)	99.16%
Tarifa (LE, wind power)	98.16%
Piansano (VT, wind power)	99.47%
Lamacarvotta (TA, wind power)	98.60%
Lamia di Clemente (TA, wind)	98.34%
Ponte Albanito (FG, wind power)	96.40%
Pontedera (PI, wind power)	98.28%
Saint-Denis (AO, wind power)	99.63%
Alessandria (AL, photovoltaic)	99.80 %
Valenza Fornace (AL, photovoltaic)	100%

The quality of electrical distribution service

The Regulatory Authority for Energy, Networks and the Environment (ARERA) has established two main indicators for measuring the ability of the Distributor to guarantee electricity supply to users (the so-called **continuity of service**): the **duration** and the **number of** power cuts.

Independently from the articulated calculation algorithm, the two quantities provide a vision, for the duration, on the level and quality of investments in network infrastructure (automation, remote control, realisation of alternative lines for re-powering) and, for the number, on the effectiveness of maintenance interventions that make the entire infrastructure robust and invulnerable. For both indicators, Deval has always performed significantly better than the goal levels set annually by the Authority, ensuring a high quality electricity service; it is noted

that, despite the difficulties related to the pandemic, the results obtained in 2020 show a progressive improvement in service continuity compared to 2018 and 2019.

The reasons for an electricity interruption can be different and - when not depending on force majeure or external causes (i.e. induced by third parties) - it can be traced back to the normal operation of the electricity network, where the parameters of *complexity* and *extension* constitute characterising elements.

SERVICE CONTINUITY	2018	2019	2020
Average minutes lost per LV user	27.87	21.27	20.03
Average number of interruptions per LV user	1.76	1.46	1.04

The distribution network and the energy transition

The energy transition will entail the need for major investments in the coming years, which will enable the distribution network to accommodate the input of energy from distributed generation plants powered by non-programmable renewable sources and to cope with the progressive electrification of consumption. Further expected developments in e-mobility, moreover, require much higher contemporaneity coefficients. The activities launched by the CVA Group, through its subsidiary DEVAL, to cope with these new developments, will be aimed at:

- increasing electricity transmission capacity;
- meeting the growing demand/production of electricity for sustainable mobility, the refurbishment of risers and the development of distributed generation;
- implementing automation and digitisation of the network(*smart network*);
- improving network resilience;
- encouraging environmental improvements, including the burying of lines;
- technologically upgrading the plants.

The resilience of the electrical distribution network

The resilience levels of the electrical network against severe and persistent weather events are relevant factors in ensuring continuity of service. Therefore, it is important to identify and measure risk factors and promote interventions to improve network resilience. In the Aosta Valley, some cases of risk identified are related to natural causes: **falling trees**, the formation of **ice sleeves** and problems in**accessing sites to be repaired in emergency contexts**. The first point concerns the aspect of damage to the line conductors as a result of the fall of plants located outside the usual buffer zone of the power line. The second aspect is typical of the winter season and concerns the formation of a cylinder of ice, a "sleeve", around the line conductor, stressing it with a weight that can reach and exceed the design data of the line. As you can guess, both aspects can cause the conductor to "tear" and fall to the ground, a situation that requires long repair times with often challenging on-site interventions.

The third aspect is related to the difficulties of intervention and repair during emergencies; in fact, in such cases, Deval may, in response to the need to restore the power supply, need to access, with men and equipment, sites closed to normal access because of the existing emergency framework at the time.

Resilience Plan: the collaboration with the Polytechnic University of Milan

The Energy Networks and Environment Regulatory Authority requires Distributors to prepare a Resilience Plan, to be updated annually. The document contains the calculation of the risk related to falling trees and ice sleeves, performed according to precise procedures unified at national level.

The application of the calculation algorithms set out in the Resilience Plan has allowed Deval to map the risk of the electrical network by associating a risk index to each secondary station.

Protect lines during snowfall

During the winter months, overhead lines can be subjected to severe mechanical stress due to a combination of extreme weather conditions, such as icy snow and strong gusts of wind.

In order to mitigate the risks associated with this eventuality, Deval, in collaboration with CVA's*Open Innovation*, provided for the installation of a series of **anchoring devices capable of adjusting the length of the span**, the distance between the two poles of the electrical conduit. The device, which is easy to install and tested also under the most extreme conditions, is designed to stretch and thus absorb the accumulated tension on the pole, causing controlled deformation of the pole and preventing it from breaking. The devices - about twenty - have been installed on an experimental basis on some stretches of line in the municipalities of Champorcher and La Thuile.

Petersen Coils

The Petersen coil is a complex piece of equipment that makes it possible to reduce the intensity of certain types of faults on the medium voltage network, thus improving safety levels. The great advantage of this tool lies in the possibility of **eliminating an electrical fault automatically**, with a very short interruption in service continuity. Deval, in order to increase the robustness of the network and decrease the stress on the plants, has planned the installation of 18 coils distributed over 10 plants over the three-year period 2020-2023.

Further future investments, for example in network digitalisation and specific protection mechanisms, will allow the development of a level of network automation that will **increasingly reduce the number and duration of interruptions** suffered by medium and low voltage customers.

18

Petersen coils

will be installed by 2023 to increase the stability of the distribution network

Interventions at very high altitude

Electricity distribution networks often pass through inaccessible locations where environmental conditions can make access impossible, except with the proper skills, equipment and precautions. In particular, the wind and the very wet snowfalls, typical of the spring season in the high mountains, accumulate thick layers of snow and ice on the pylons and on the surrounding rocks, putting the former under huge structural pressure and the latter inaccessible for safety reasons. Some repair interventions on distribution lines thus take place under very special conditions. Personnel had to work at a height of almost 3,400 metres, roped together, along a snowy ridge to re-power a hut, as well as to dig out the Medium Voltage stations submerged by meters of snow with the help of snowcats.

+6 km

of underground power lines in 2020

Burying of overhead network

2020 saw further progress in the project to bury a section of overhead lines 6 kilometres long in the western part of Aosta. The electrical part, which involved replacing the overhead lines with underground cables, has been completed, while the demolition and restoration of the pavements are still in progress.

While overhead lines are constantly exposed to natural phenomena, underground cables are only rarely affected by outages and failures. There are a number of advantages and they do not only concern **less exposure to risks**, they also extend to an environmental sphere, since they allow a **reduction in the "aesthetic" impact on the landscape**.

Emergency management

In order to provide greater protection from weather and geological events that may cause an outage, the CVA Group works with various civil entities to**activate joint actions**. The Regional Civil Protection represents a primary contact point for the management of emergencies, especially considering the Alpine context in which most of the Group's physical *assets* are concentrated. A **Memorandum of Understanding between DEVAL and the Regional Civil Protection** defines the guidelines to be adopted in cases of coordination of action, with particular attention to the issue of access to sites, as in the case of blocked roads due to avalanches or other extreme natural events. Cooperation is not limited to the actual moment of the emergency but, for example, includes the development of **training courses and joint exercises**.

Deval has also prepared an **Emergency Plan of the electrical network** structured into four levels of severity: alert, alarm, emergency and crisis, which involve different actions and guidelines on how to operate according to the existing situation. Depending on the needs, provision is made for the appointment of a Head of Emergency Management and the activation of a control unit with specific support tasks. Especially for locations rendered critical by the presence of wooded areas and subject to landslides, avalanches and floods, the sharing of both human and operational resources allows synergistic use, able to reduce the risks and inconvenience to the population and the personnel involved in rescue and recovery operations.

Deval is always working to preserve the functionality of more than 4,000 km of electricity distribution network throughout the Aosta Valley

Between technology and nature

Automation of dam monitoring

Dams are complex engineering works that require continuous monitoring and control to verify their behaviour during operation. A fundamental requirement of the supervision system is the congruence between the rapidity and frequency of observations and the speed of evolution of the phenomena to be detected. In this regard, the substitution of manual data acquisition procedures with automatic ones makes it possible to follow the evolution of extremely rapid phenomena, taking into account several processes at the same time. Another key feature is related to the need to contain the time between the execution of measurements and the completion of data processing and analysis. The activation of an automatic control system allows the control procedure to be completed in a reduced period of time, eliminating one of the biggest intrinsic limitations of the processes.

During 2020, an important piece was added in upgrading the entire "data chain" that comes from CVA Group's large dams. In fact, a new *software* has been introduced for manual data acquisition, transmission and automatic control in real time. The measurement performed on site is directly uploaded to the *smartphone,* which immediately reports any situations in which set thresholds have been exceeded, with the aim of verifying the effectiveness of the measurement and reducing errors. The data, subsequently transmitted through the company's network, are controlled in real time with the help of a specific *software* program that enables the presence of anomalous behaviour of the structure to be evaluated. Exceeding the thresholds results in a *warning* being issued to the relevant technical personnel.

The Goillet dam has been chosen as a pilot site; over the next 2 years, plans are in place to extend this new system to the other large dams of the group.

Remote control never sleeps

The remote control of the CVA Group's hydroelectric assets is ensured by a dedicated unit belonging to the Operations Department: the Aosta Remote Control Post, the supervision and monitoring station of the plants and the network nodes to which they are connected. The remote management of the assets allows real time monitoring, with the possibility to intervene promptly in case of emergency: in such circumstances the operating personnel is activated, even on call, sometimes at the request of external bodies in charge of public safety and security, such as Fire Brigade, Civil Protection, Police.

- **365 days a year**
- **7 days a week**
- **24 hours a day**
- **the Remote Control Post of Aosta is always active**

11 SUSTAINABLE CITIES AND COMMUNITIES

17 PARTNERSHIPS FOR THE GOALS

Saint-Denis Wind Turbine

4 CLOSE TO THE COMMUNITIES

Close to the communities

Key facts and figures

473 million €
the economic value generated and distributed

37.2 million €
of payments to the Public Administration for derivation fees

16.3 million €
sales to local suppliers

~86,000
customers served in 2020

97%
of Retail supply points on the free market is in Aosta Valley

8 stages
dedicated to the eBike Tour Evolution in Aosta Valley

Why it is important

The CVA Group is the point of reference for the economy of Aosta Valley: its work generates shared value that is channelled into heavy investments in the territory

In order to exploit the potential of an area, it is necessary to manage its assets in an organic and coherent way, with the collaboration of all the players involved.

The natural resources, culture, and skills of its inhabitants are the foundation for creating value for the entire community, in a cohesive system geared toward shared goals.

For 20 years, the CVA Group has been a point of reference for the community of Aosta Valley, in which it is deeply rooted, and it is one of the main drivers of the development of the territory through the creation of employment, as well as through the use of local suppliers for the purchase of goods and services and the provision of a reliable and efficient service to its customers, through the improvement of contact.

But the Group's impact on the community is also to be found in the constant payment of taxes, dividends and contributions, as well as in the provision of sponsorships and donations.

Creating shared value

In 2020, the value generated by the Group amounted to approximately **€ 535 million** , down compared to 2019 (-33.7%).

Of this value, € 473 million was distributed, 88% of the total. The distribution of the generated economic value table makes it possible to analyse the distribution of the value created by CVA in the form of costs, highlighting the flow of resources addressed to the *stakeholders* that have contributed, in various ways, to its production.

535 million
the value generated by the Group in 2020

Values in thousands of €

	2018	2019	2020
Economic value generated	**842,643**	**806,677**	**534,743**
Value of production	840,572	801,230	531,628
Income from equity investments	- 495	-	-
Other financial income	2,566	5,447	3,115
Extraordinary income	-	-	-
Distributed economic value	**729,387**	**679,587**	**472,977**
Operating costs	635,569	581,394	323,213
Value distributed to employees	37,514	34,839	38,469
Value distributed to capital providers	2,783	5,793	5,824
Value distributed to the Public Administration	52,803	55,566	56,698
Value distributed to shareholders[54]	68,963	42,195	47,795
Value distributed to the community*	718	995	978
Economic value retained	**68,984**	**92,930**	**61,766**

*donations, sponsorships, events, membership fees

The restitution of value to the territory also passes through contributions to the Public Administration, which since 2011 amount to € 708 million in profits and reserves and to € 2,237 million in taxes paid.

DISTRIBUTION OF THE ECONOMIC VALUE GENERATED	2020
Suppliers	60.4%
Employees	7.2%
Capital providers	1.1%
Public Administration	10.6%
Community[55]	9.1%
Economic value retained	11.6%

Payments made to the Public Administration in the form of tax revenues, contributions and fees in 2020 amounted to approximately € 57 million, which are mainly allocated to local governments in the form of taxes paid to the Region, IMU and TASI, state fees for the use of public waters, waste taxes and other contributions.

[54] Finaosta SpA is the Group's sole shareholder.

[55] In order to obtain a more representative value distributed to the community, the value of the dividends distributed to the Sole Shareholder Finaosta S.p.A., which holds 100% of the share capital of the Parent Company CVA S.p.A. a s.u. under special management on behalf of the Autonomous Region of Aosta Valley, was also augmented by the economic value of the donations and sponsorships provided by the Group.

~70 million €

the value of supplies in 2020

542

suppliers activated in 2020

The supply chain

Sustainable and responsible economic management concerns not only internal processes, but also those upstream of the company, such as the procurement of goods and services. As a full-service energy provider, CVA Group purchases work, services and supplies from nearly 550 different companies.

During the last three years, CVA's total regional purchasing volume exceeded € 39 million and the number of local suppliers accounted for around 35% of all Group suppliers. In particular, 39% of the orders issued in 2020 were commissioned from companies in Aosta Valley. For CVA, making its purchases locally means promoting and supporting the development of the economy and the entrepreneurial environment of the territory.

Amounts in thousands of €

CVA GROUP	AOSTA VALLEY		NON-REGIONAL		TOTAL	
FY	Suppliers	Amount	Suppliers	Amount	Suppliers	Amount
2018	217	11,880	307	34,662	524	46,542
2019	158	11,179	436	35,535	594	46,713
2020	211	16,250	331	52,929	542	69,179

CVA is committed to supporting and promoting the development of the local economy, selecting local suppliers for its supplies

Attention to our customers

CVA Energie dedicates offers and solutions tailored to the home, small professionals, condominium uses, as well as large business customers.

In 2020, residential customers accounted for 98% of the users served, and almost all supply points are in the Aosta Valley (97%). Large business customers, distributed throughout the country, account for more than 90% of the energy sold in 2020.

TYPE OF END CUSTOMERS	2018		2019		2020	
	Energy sold (GWh)	Customers	Energy sold (GWh)	Customers	Energy sold (GWh)	Customers
Business	4,752	1,480	3,909	1,174	2,083	799
Retail	128	38,603	150	42,992	155	44,686
Greater Protection	98	50,394	70	44,308	62	41,096
Total	4,978	90,477	4,131	88,474	2,300	86,581

2021: the transition for small businesses

Starting from 1 January 2021, price protection in the electricity market has ended for all small businesses (with between 10 and 50 employees and/or a turnover between € 2 and € 10 million and with LV withdrawal points) and fro some micro-businesses (with fewer than 10 employees and an annual turnover of less than € 2 million). For all other micro-businesses and domestic customers, the law converting the so-called 'Decreto Milleproroghe' established that the deadline will be 1 January 2023.

On 29 January 2021, the Single Buyer published the Regulations governing the competitive procedures for the assignment of the service subject to gradual protection for small businesses in the electricity sector[56].

This regulation defines the rules for the conduct of auctions for the assignment of the electricity service with gradual protection, which, on 1 January replaced that of greater protection for about 190 thousand small businesses, of which 354 are Enerbaltea customers.

The time-line submitted by the Single Buyer calls for the tender to be held at the end of April 2021 with subsequent announcement of the results. The end of the entire procedure is expected on 7 June 2021.

[56] Pursuant to Law No. 124 of 4 August 2017 (Legge annuale per il mercato e la concorrenza - Annual market and competition act)

Raising the awareness of the community and of its customers to respect the environment through the sustainable use of energy remains one of the goals that the Group has continued to pursue with commitment in 2020, despite the cancellation of a large number of events and initiatives compared to previous years.

During the course of the year, already during the first *lockdown* due to the closure of the branches as a result of the COVID emergency, it became necessary to accelerate the process already undertaken for the on-line management of customer relations or via telephone contact: from 9 March, the date of the start of the first *lockdown*, until the end of 2020, there were over 2,000 files processed through the use of the portal, of which a thousand in conjunction with the total closure of the branches in the March-June period, during which the flow of requests via e-mail was on average 40 per day.

CVA ENERGIE's new site, made operational in conjunction with the launch of the new brand at the beginning of the year, facilitated this transition, ensuring continuity of service even during the period of the pandemic emergency. With the renewal of the site, moreover, we opted for solutions that would make**accessibility**easier**for visually impaired individuals**, through the choice of appropriate colour contrasts between background and text to facilitate reading, as well as with management of page navigation through keyboard commands to facilitate reading through*screen readers*, with the inclusion of *alt tags* in the communicative images to allow the visually impaired individuals to read the textual alternative and, finally, with the use of responsive method with adaptation to the change in font size and page zoom up to 200%.

The involvement of local players, established as partners over the years based on mutual collaborations through the signing of agreements and participation in fairs and events, was inevitably drastically downsized in 2020, but the CVA Group has undertaken initiatives to support of the local productive and industrial environment.

Differences between Free Market and Market subject to Greater Protection

In July 2007, the Italian electricity market was liberalised also for small professionals and domestic customers. Since then, there has been a differentiation in electricity sales between the free market and the service subject to greater protection. As for the former, customers have the opportunity to choose the supplier that offers the best electricity supply rates and services, with whom they then directly negotiate commercial terms.

Under this regime, the Regulatory Authority for Energy, Networks and Environment (ARERA), determines energy costs only for matters concerning transport, distribution and system charges. On the contrary, customers who have chosen not to change their tariff and their supplier have automatically re-entered the Service subject to Greater Protection, in which ARERA also determines the price of the electricity component and the contractual conditions.

It is therefore a market that is still heavily national in scope and administered, unlike the free market, characterised by the presence of a multitude of players. In addition, the Greater Protection market uses the national *fuel mix* for energy supply, which means that the supply of the Greater Protection market is never completely *green*. CVA Energie operates in the Free Market as an energy supplier, therefore it represents the entity in charge of the retail sale to the final customer.

The service subject to**Greater Protection**, contractual condition for all those consumers who have not yet joined the free energy market, has been provided by the CVA Group since 2011 with the acquisition of the company Vallenergie S.r.l., later merged into CVA Energie. Since July 2016, in adhering to the guidelines of ARERA on functional*unbundling* , **CVA Energie has carried out this service through the Enerbaltea brand**, supplying approximately 41,000 customers.

The arrival of 2G smart meters

The 2G *smart meters*, stemming from the technological evolution in the field of measurement and remote management, represent the development of the first generation of electronic meters, installed since 2001 to replace the old electromechanical meter. By means of Resolution 306/2019/R/eel, the Authority ordered the start of the commissioning plans for these systems from 2022 at the latest, with the achievement of 90% of the total number by 2025 (95% in 2026). Nationwide, the transition will affect approximately 37 million users.

Deval, as a CVA Group distributor, is directly involved in the gradual replacement process of smart meters and will install approximately 130,000 systems. The main advantage lies in a greater control of daily consumption, with data collection and energy consumption every 15 minutes, carried out in real time. The data can also be consulted via *web* with a 24-hour time lag.

In 2021, Deval will prepare a replacement plan that will be presented to local governments, customers, associations, and building managers: ARERA will proceed with pre-approving the plan, which will then be brought to the attention of *stakeholders* through a public meeting. Replacement will involve drafting a plan to dispose of old meters by dismantling, a costly but more environmentally sustainable method.

Raising the awareness of the community and of its customers to respect the environment through the sustainable use of energy remains one of the goals of the CVA Group.

Building the future together, in communication with the territory

The CVA Group continues to invest significantly in the area to maintain a dialogue with the community of which it is an integral part. During 2020, the Company implemented a number of initiatives geared towards both providing support for events organised by regional associations and organising autonomous initiatives with which to strengthen ties with people and the environment.

Dialogue matters. The pandemic has increased inequalities and citizens' distrust of institutions, which are often struggling to manage the emergency. Businesses are now the only trusted institution, but this implies society's increased expectations of them. Communities expect companies to fill the void left by national governments and international institutions, focusing on listening to their stakeholders and taking a stand on the great social and environmental challenges of our time[57].

Carlo Cici
Head of Sustainability Practice
The European House - Ambrosetti

Donations in 2020

In addition to the donations to Healthcare provided in 2020, the CVA Group continues its support to the Courmayeur Mont Blanc Foundation through its scientific activity, carried out through studies and research involving national and international bodies and entities .

In addition, on the occasion of the distribution of panettone cakes to employees at Christmas, CVA chose not to purchase them from traditional suppliers, but to make a donation to ADMO as part of a fund-raising campaign focused on the distribution of Christmas cakes.

Always on the move in the challenge to tackle climate change

Nevica plastica (It snows plastic) - meetings of sport and environment

CVA participated in "Nevica plastica", a *two-day on-line* event held on 27 and 28 November 2020, with the aim of discussing**microplastic pollution in the mountains of Aosta Valley**.

In the presence, among others, of the Minister of the Environment Roberto Costa, the Honourable Ms. Rotta - Chairman of the Environment Commission of the Chamber of Deputies - and the Chairman of the Autonomous Region of Aosta Valley Erik Lavevaz, Mr. De Girolamo spoke on CVA Group's role in the energy transition. The conference also saw the presentation of the results of 5 years of EcoloTor, the sustainability project promoted during the Tor des Géants, as well as the Courmayeur Charter, a document promoted in 2019 by the Ministry of Environment and dedicated to sustainability in sporting events, then signed by the participants at the conference.

Save The Glacier 2020

In 2020, CVA Energie continued its collaboration with the **Save the Glacier**project, carried out in partnership with Skyway Monte Bianco and Grivel, two important Aosta Valley businesses, with which practical actions were taken to protect the glaciers of Mont Blanc and the territory in general.

Despite the limitations imposed by the pandemic emergency, this year CVA Energie has supported the project with a new sponsorship for the planting of 50 cherry trees at the foot of Mont Blanc, trees with a high capacity to capture dust and a good capacity to absorb gaseous pollutants.

[57]Edelman Trust Barometer (2021)

School support

Culture has always been one of the drivers of growth in the area and, in a year in which face-to-face cultural initiatives have been almost reduced to zero, CVA has continued its commitment to sustainability education by financing and participating in the creation of the book **"Come Valorizziamo l'Ambiente" (How we value the environment),**in which the character of Monsieur Casteau guides the reader through a fun and colourful journey, presenting in a simple and effective way aspects relating to energy, pollution and energy saving through the description of the CVA Group's business situation. At the beginning of 2021, the book was distributed to all fifth-grade classes of elementary schools in Aosta Valley.

All the energy of sport and attention on diversity

Sport, by encouraging connections with others, can become a successful tool not only in tackling discrimination, but also to **give value to differences**, transforming them into important resources for society. That's why CVA invests in inclusion by supporting the important initiatives reported below.

Tor in gamba

In 2020, CVA supported **Tor in Gamba**, a sporting event with a focus on the theme of *diversity*, which included a relay course with the goal of having nine amputee athletes retrace the route of the Tor des Géants from 12 to 19 September. Together with their companions, the nine athletes took turns along the 342 km of the Alte Vie nos 1 and 2, taking on a positive difference in height of 24 thousand metres and completing a magnificent journey along the Alps of Aosta Valley.

Diverse Bici

Also this year, the CVA Group has supported the development of mobility for those who are not completely autonomous through the contribution to the purchase of special vehicles for people with disabilities: through the Diverse Bici Project, it has purchased a **tandem** combined with **tricycle** in which the co-pilot, seated in the front, can enjoy the view and experience the sensation of driving in total safety, while also exercising.

Tandem tricycles donated by CVA

+300

People involved in the CVA eBike Tour Evolution

Towards a sustainable mobility

CVA eBike Tour Evolution

The second edition of the eBike Tour, an event created in 2019 with the aim of promoting sustainable modes of transport, took place during the month of August through a cycle-tourist route in 8 stages with pedal-assisted bicycles. Despite the pandemic emergency, CVA has decided to promote also the 2020 edition to give an important sign of support to sustainable mobility, in total safety and with *on-line*bookings. Also this year the event, organised in collaboration with the interested Municipal Administrations, saw participants explore some of the most beautiful corners of the Aosta Valley in a clean, fun and sustainable way.

Green Vallée d'Aoste

Although to a lesser extent due to the COVID emergency, in 2020 collaboration continued with the Alpine Green Experience project, now called ***Green Vallée d'Aoste***, to which CVA has adhered for the promotion of electric mobility and the enhancement of the Aosta Valley territory. The service consists in renting electric cars at the Caselle airport or at one of the two railway stations in Turin and it allows you to reach and visit the Aosta Valley using a completely sustainable means of transport at competitive prices. The twelve electric cars made available to users bear the CVA ENERGIE logo and each of them is named after one of CVA's hydroelectric power plants.

Together with Alpine Green Experience s.r.l. and other partners, such as Be Charge and RSE, CVA ENERGIE is also participating in the cross-border call Alcotrà "***Parcours Itinérants autour du Mont Blanc***" which provides for the development of services, products or tools for sustainable mobility, through the testing and validation of different but interoperable technologies. The solution proposed by the Temporary Grouping of Companies that includes CVA ENERGIE involves the parallel implementation of several closely integrated activities:

- the installation and management of a widespread network of recharging infrastructures for electric vehicles on the territory of Aosta Valley;
- the study, design, installation and operation of an innovative high-power charging infrastructure integrated with a stationary *storage* system;
- the activation of an electric *car sharing* service for cross-border tourism between the regions of Aosta Valley (Italy), Valais (Switzerland) and Savoie (France) in a *network* of participating hotels;
- the preparation of research projects aimed at analysing the use of electric recharging infrastructures for vehicles equipped with *storage* with the possibility of including these infrastructures in a sustainable *car sharing* service.

The winner of the call tenders will be announced during 2021.

The success of the CVA Group is based on the competence and motivation of its workers, who represent the real source of energy of the Company and the key to its future growth. In a

Sustainable mobility is an ideal system for travel that allows you to reduce environmental impacts while making it easier and more efficient to reach your destination.

Stage of CVA eBiketour Evolution in Bionaz

3 GOOD HEALTH AND WELL-BEING

8 DECENT WORK AND ECONOMIC GROWTH

Valpelline power plant

5 FULL OF ENERGY

Full of energy

Key facts and figures

607
employees

44 years
average age

26%
women

3%
Temporary workers

Welfare
The welfare system and the initiatives promoted to strengthen the sense of teamwork

4 accidents
out of nearly 1 million hours worked

3,790 hours
of safety training

0 professional
illnesses recorded in the last 3 years

427 people
involved in *smart working* activities

Why it is important

In 2020, CVA continued to ensure the safety of its employees by implementing extraordinary measures

year disrupted by the pandemic, the professionalism of the people who work at CVA ensured the continuity of the company's operations, despite the sudden shift to *smart*working, which allowed people to work safely during 2020.

CVA's people: the key to the Group's future.

The composition of the Group

Today, there are 607 people in the CVA Group. The majority of the personnel is employed full-time (98%) and on permanent contracts (98%). At individual Group company level, 404 employees are employed by the Parent Company CVA S.p.A.,136 by Deval and 67 by CVA Energie.

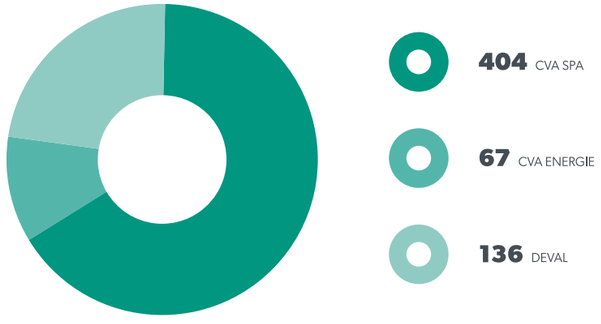
Compared to the total, 5% of employees and agency personnel are under 30 years old, 23% are over 50. In terms of gender, approximately 26% of the population is female. The percentage rises if we consider the professional classification of employees, where the share increases to 40%.

Compared to the 2019 figure, **in 2020 the Group's headcount increased slightly** by 9 units, from 574 employees in 2019 to 583 employees as at 31 December 2020 (+1.5%), a number that reaches 607 when associates and agency personnel are also taken into account.

The Testo Unico in materia di Società a Partecipazione Pubblica (TUSPP - Consolidated Law concerning publicly held companies) - and Regional Law 20/2016 and subsequent amendments and additions regulate the management of publicly held companies, particularly in the recruitment of personnel.

In particular, the CVA Group hired 18 individuals, of which 5 for the stabilisation of positions held by agency personnel, 10 for the coverage of urgent positions and/or the replacement of workers who have left/are in the process of leaving and 3 in accordance with the provisions of Law 68/1999 on compulsory placement (protected categories).

CVA GROUP PERSONNEL



Experience, passion and growth are the key words that characterise CVA: a transparent Group that has always focused on and listened to the needs of all its employees.

Safety first

The Group's commitment to maintaining high levels of safety for the people who work with CVA had to contend with all the consequences associated with the pandemic emergency.

Starting in March 2020, all the activities related to the **company's Prevention and Protection Service** were disrupted by the Coronavirus emergency. It was therefore necessary to organise ourselves in order to continue to carry out all the activities and checks required by law that had already been carried out in previous years to improve safety standards in the Company and, at the same time, to propose unprecedented measures to the Employers of the Group companies to limit the risk of contagion among employees as much as possible.

The companies' work continued as an essential public service and the companies worked to include the biological risk from COVID-19 in the company Risk Assessment Documents with two different updates, creating a Risk Committee that, in close contact with the Trade Unions, the RLS (workers' safety representative) and the company doctors, managed the evolution of the health emergency and participated in the creation of the **"Protocol for the regulation of measures to counteract and contain the spread of the COVID-19 virus in the workplace"** (3 different editions).

The measures identified went hand in hand with health knowledge of the virus and in line with legal requirements as they were issued.

During the so-called **Phase 1 (March-May 2020)** for all office activities, regardless of the job description, actions were put in place to avoid, as far as possible, the physical presence of workers in the various locations with the activation of smart working arrangements or by making use of holidays or leave of various kinds provided for by the Electricity CCNL (national collective labour agreement) in force. In this context, QSA collaborated in the preparation of the information on risks to be distributed to all workers and collected, keeping track also of subsequent changes, all the addresses at which colleagues carried out smart working.

For those activities that could not be carried out remotely, it was necessary to provide workers with **Personal Protective Equipment** (masks, gloves, overalls, ...) to be able to continue to carry out maintenance activities on plants that require workers to work in close proximity to each other. Starting from the FFP3 masks already provided by the company, the compliance of the devices found on the market with the provisions of the law in force was checked, verifying the authenticity of the compliance certifications, in order to guarantee the use of optimal products.

With the start of **Phase 2 in May 2020**, it was necessary to learn to live with the virus and organise the gradual return of workers to the office. Also based on the comparison with our main *competitors*, through weekly meetings of the **HSE committee of Elettricità Futura** to which CVA belongs, the Company Protection and Prevention Service (SPP) has developed guidelines for employees, to inform them about the behaviour to be observed during working activities.

Personnel was provided with individual kits, depending on its duties, for respiratory protection, sanitation of workstations and equipment. Products and directions for sanitising vehicles were also provided and, in accordance with the directions contained in ISS reports, air conditioning systems are sanitised.

At the same time, the Group companies have maintained all the periodic **safety management activities** already carried out in previous years, such as, for example,the organisation of training, inspections, audits, coordination meetings, the drafting of DUVRI (single document on the assessment of risk from interference), legal checks (lifts, stairlifts, cranes, hoists, mobile platforms, davits, pressure vessels, safety valves...), reports of INAIL (National Institute for Insurance against Accidents at Work) equipment, the maintenance of fire prevention certificates at the Company.

In addition, since 2020, the JARVIS*app* has been active on all the *smartphones* of operational employees who travel to isolated workplaces. This*app* provides an immediate alert and an exact location in case of injury, illness or a critical situation. The alarm can be sent in two ways: automatically, in the case of a man on the ground and/or motionless (road accident, sudden fall), or by voluntary activation in case of difficulty. This method of handling emergencies was activated following a specific union agreement and after a suitable training.

In order to facilitate **communication within the plants**, two pairs of radio headsets were also purchased on an experimental basis, to carry out an evaluation on the possibility of improving the transmission of information during work activities while preserving the workers' hearing.

During 2020, taking into account also workers with employment contracts, 4 accidents occurred, while no occupational illnesses were reported.

The Injury Severity Index expresses the seriousness of accidents at work in conventional lostdaysper thousand hours worked, while the Frequency Index measures the incidence of accidents at work per million hours occurring in a given period.

YEAR	NO. INJURIES[58] CVA GROUP	GRAVITY INDEX[59]			FREQUENCY INDEX[60]		
		CVA SPA	CVA ENERGIE	DEVAL	CVA SPA	CVA ENERGIE	DEVAL
2018	3	0.38	0	0.09	3.18	0	4.62
2019	4	0.04	0	0.16	1.56	0	5
2020	4	0.05	1.22	0.04	3.08	9.15	4.42

In addition, in order to provide operational guidelines aimed at increasing the effectiveness of the precautionary containment measures adopted to combat the COVID-19 epidemic, in 2020 the Protocols for the regulation of measures to combat and contain the spread of the COVID-19 virus in workplaces were signed for the companies of the Group. The sanitisation operations of the offices and of the car park, activated extremely quickly, have guaranteed the continuity of the activities that could be conducted remotely, in compliance with the safety and health protection of the workers.

Elettricità futura

CVA is part of the HSE (Health, Safety and Environment) Committee of Elettricità Futura, the main association of the Italian electrical world. The Committee studies, enhances, and promotes best practices in safety, environment, and circular economy in the context of power generation companies. This activity is also carried out in an operational manner by means of peer-to-peer comparisons between Italian electricity production companies. 2020 was marked by a big push in terms of analysis and discussion of issues regarding COVID, which led to focused round-table working groups on a monthly basis. This activity has allowed CVA to have a continuous exchange with other companies, participating through the trade association in discussions with the national government on a situation that continues to evolve rapidly.

Training people on safety means addressing risk situations with greater awareness, especially when they occur in extreme and particularly challenging settings. The unique features of the Aosta Valley area, where most of the Group's plants are located, require specific knowledge and training to guarantee the highest level of safety for all the people who work with and for the CVA Group.

[58] It excludes commuting injuries.

[59] The severity index is calculated as the number of total injury days x 1,000 / number of hours worked.

[60] The frequency index is calculated as the number of injuries x 1,000,000 / number of hours worked.

The *welfare* system

Based on the interaction between the Company, social partners and institutions, tools are created that aim to create a positive and stimulating working environment for all workers.

The *welfare* system provides different types of benefits and services aimed at improving the lives of its people, starting from support for family income, study, parenting, health protection, up to proposals for leisure and commercial facilities. As part of the Utilitalia Agreement, "La diversità fa la differenza" (Diversity Makes the Difference), CVA continued its commitment through participation in the *Committee on Diversity and Inclusion*. During 2020, the Committee worked on the definition of a *Diversity Index*, the application of which is currently being verified, and on the elaboration of an application guideline of the Agreement to be addressed to all associates.

Work-life balance

At the beginning of 2020, a round-table working group dedicated to *smart working*was set up, with a feasibility study being examined by top management. The COVID-19 emergency has forced the CVA Group to make extensive use of *smart*working, with a reorganisation of work that has involved a sudden paradigm shift in the balance between home life and work activities, as well as the need to put in place a computer system and *hardware* instrumentation capable of ensuring the continuity of activities, including remotely.

Personnel remuneration and incentives

The CVA Group applies reward and professional growth systems, deriving from national bargaining, but also based on the company's initiative. The main tools are a marriage allowance for employees who get married, a seniority bonus, paid to persons who have been with the company for 25, 35 and 40 years, and a variable incentive pay system linked to the general performance of the company and the achievement of goals relating to the work of the Departments.

Insurance protection and welfare

The CVA Group implements company programmes to protect the health of workers through the FISDE (Fondo Integrativo Sanitario per i Dipendenti - Supplementary Healthcare Fund for Employees), for personnel regulated by the sector's CCNL, and the FASI (Fondo Assistenza Sanitaria Integrativa - Supplementary Healthcare Fund) for executives. All permanent employees are enrolled in the FISDE, with the company paying a share, and they are entitled to health care reimbursements for themselves and their dependents, as is also provided by the FASI for executives.

Alongside these tools and the insurance coverage provided for in the contract (including coverage for extra-professional accidents), the Group has taken out an additional insurance policy to protect all permanent employees regarding coverage for death and permanent total disability, supplementing it in 2020 with additional clauses to protect the worker to deal with any problems caused by the coronavirus (indemnity for hospitalisation and recovery, medical assistance and home delivery services, *baby-sitting*and *pet-sitting*services). There are two complementary pension funds for personnel regulated by the sector's CCNL. The CVA Group has also provided for an additional contribution to supplement the contractual provisions.

Recreational - cultural activities, concessions and conventions

Through the ARCA association, the CVA Group has always supported the recreational activities of its employees, but during 2020 these activities were inevitably reduced to a minimum. The Group's annual allocation, through which employees can obtain subsidised loans for personal needs, such as the purchase of a first home or for family needs related to health, disaster, and weddings, remains active.

Subsidised services

Since 2016, the CVA Group has signed an agreement with the trade unions that introduced the possibility on a voluntary basis, within the limits provided for by current regulations, to convert the Performance Bonus into *welfare*services and benefits. The CVA Group incentivises the conversion of the Performance Bonus by increasing the converted portion by an additional percentage - currently 15%. Furthermore, in the presence of better results from the Profitability component of the Performance Bonus, the CVA Group disburses an additional fixed amount of "productivity*welfare*" to be allocated to supplementary pension funds.

Insieme 2020 (Together 2020)

Growing together means collaborating to achieve increasingly ambitious goals: teamwork must be one of the central goals of the working life of every worker, as well as the means to create synergies through dialogue and the exchange of knowledge. CVA is constantly committed in this domain and promotes initiatives aimed at the constant involvement of its employees.

CVA holds an annual meeting to share with Management and Personnel the results of the closing year and to announce future plans. The *2020 convention* could not be held in person, but was organised in *streaming* mode to give all the people of the Group the opportunity to share a few hours of information and corporate communication, with the participation of two special guests: the meteorologist **Luca Mercalli**, author of a timely speech about the risks related to climate change, and the *performer* and writer **Arianna Porcelli Safonov**, with her brilliant interpretation of *smart working*. In addition, this method of holding the convention via remote connection enabled the participation of those who usually can not take part: the guardians of the dams. In fact, we have organised some live connections in which our colleagues have been able to actively take part, talking about some unique aspects of their working life and of the sometimes extreme environment in which they are called to operate every day.

Luca Mercalli

Arianna Porcelli Safonov

Personnel training and development

Despite COVID-19 emergency problems, 3,790 hours of health and safety training were provided in during 2020. Through dedicated courses, workers acquire the knowledge and the procedures necessary to work while protecting their personal safety and at the same time reducing risks to the company.

In addition to in-depth courses on health and safety issues, courses were offered aimed at improving workers' managerial, communication, language and IT skills, mainly using on-line channels, with the use of high-level *e-learning* platforms, characterised by a high degree of involvement.

4 guests
for the 2020 *induction* days

CVA Group Sustainability: training and awareness

During 2020, the Company also invested in training on Sustainability issues for all the top levels of the organisation through two courses. The first course was held via video conference during spring, consisting of **three stages** of two hours each. The goal was to foster greater familiarity with respect to sustainability reporting within the Company.

The second series of meetings, during the autumn of 2020, took place through four days of *induction* on key materiality themes: **People, Community, Climate Change, and Innovation**.

Each meeting featured a very special speaker:

- **Marco Grazioli**, Chairman of The European House - Ambrosetti, with a speech on **people**;
- **Carlo Cici**, *Head of Sustainability Practice* at The European House - Ambrosetti, with an analysis of the theme **Community**;
- **Luca Mercalli**, meteorologist, climatologist, science promoter and academic, with a presentation on **climate change**risks;
- **Matteo Kalchschmidt**, Professor of Innovation and Project Management at the University of Bergamo, who addressed the issue of **Innovation**.

Five subsequent round-table working groups were responsible for introducing the contributions from the experts to the company environment.

Sales Area: continuous training

CVA Energie continues to focus closely on the training, updating and increasingly better qualification of its sales personnel. Training, technical and motivational courses continue, also in light of new customer expansion goals.

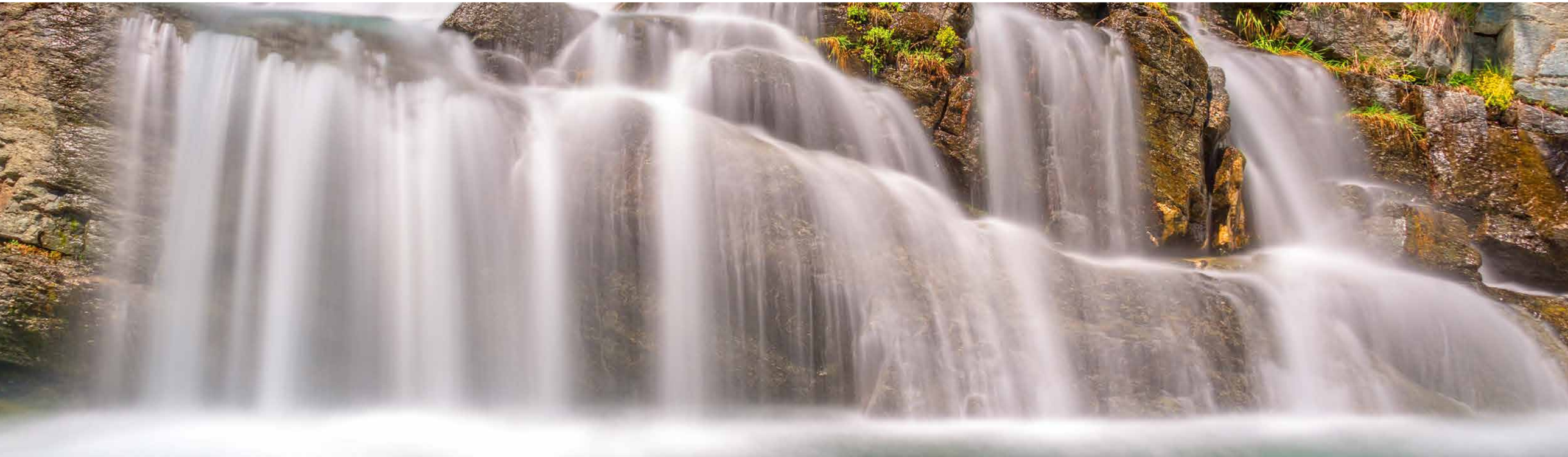
The two-year training plan, which began in 2019, is aimed at improving listening and communication skills and it also involves the Credit Management Department, in which all resources participate. During the health emergency, in order to ensure continuity of the training under way despite the situation, the methods of use were revised, replacing face-to-face meetings with remote ones.

2019
training was launched to enhance the skills of operators

The success of an organisation does not depend on star performers, it is achieved by working on the performance of the individual, which is directly proportional to their skills and motivation. Skills, in turn, are an aggregate of three basic components: knowledge, or the more notional component of learning; skills, understood as the ability to apply the knowledge learned; and orientations, or the predisposition to be proactive.

Marco Grazioli
Chairman
The European House - Ambrosetti

Panorama of Lillaz waterfalls, Gran Paradiso National Park



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

11 SUSTAINABLE CITIES AND COMMUNITIES

Stator extraction of the Hône 1 power plant

6 ABLE TO INNOVATE

Able to innovate

Key facts and figures

Energy Community
study for the development of residential and industrial energy communities

e-mobility
a *partnership* to fill up with energy

Monitoring
of all *assets*
through state-of-the-art systems

Cybersecurity
a guarantee of service continuity

2040, the year of *Carbon Free*
by that date, the Aosta Valley aims to become a *Fossil Fuel Free* region

+12 recharging columns
activated in 2020

Why it is important

One of the 5 guidelines of the National Integrated Energy and Climate Plan is "Innovation, competitiveness and research"

The energy sector is undergoing rapid change, thanks to the increasing integration of renewable sources, the development of new consumption monitoring systems, the evolution of storage systems and the availability of tools for remote control and plant automation.

Technological innovation is radically changing the way energy is produced, exchanged and consumed, and renewable sources are playing an increasingly central role in the future of electricity production and sustainable development.

Accelerating the energy transition requires smart networks that use as much clean energy as possible and that draw on the cheapest source at all times.

For this reason, the decision has been taken at European and national level to accelerate the development of Digitalisation and Decarbonisation, the so-called "2D" (with the colour blue to identify the first and green for the second): an "alliance" between the "blue" technological development and the "green" turning point is essential to boost a virtuous circle between technology and nature, essential for creating a more sustainable world in all its parts.

This is also the direction taken by the CVA Group, whose investments are geared towards the achievement of "2D" goals, with an eye on a future in which new technologies and the production of renewable energy have increasingly positive environmental, economic and social impacts.

Technological innovation and the use of increasingly interconnected systems have led to a constant search for solutions to deal with increasing risks and threats to computer networks. The European Commission has put up for consultation a proposal for a new cybersecurity directive to replace the *Network and Information Security Directive 2016/1148 (NIS Directive)*, taking into account the increased levels of digitisation in the internal market and the evolving cyber threat landscape.

The CVA Group's commitment is to leave the resources that nature has bequeathed us untouched and preserve them for future generations

*We often focus too much on inventing something new, when we should be focusing on innovating **what's already available**.*

Matthew Kalchschmidt
Professor at the University of Bergamo

The proposal envisages a number of systemic and structural changes to the NIS Directive with the aim of covering a wider segment of EU economies, with targeted surveillance systems and a simplification of the obligations imposed on companies regarding cyber security.

The increase in the general level of *cybersecurity* must also be read with a view to greater prevention of risk or environmental damage in the event of attacks on essential services, such as those related to the energy sector, water supply and transport.

The CVA Group, for its part, thanks to its IT Services and to the Department also dedicated to ***Open Innovation***activities, promotes innovative projects and initiatives, effectively exploiting new technologies and the advantages of digital and contributes to the development of the sector through the adoption of systems able to ensure an increasingly efficient use of renewable energy and promoting forms of collaboration between players with different and complementary specific skills.

Towards a new paradigm

Self-production

goal pursued with increasing conviction by the European Union

The dissemination of renewable energy sources offers opportunities not only in terms of reducing environmental impacts, but also in terms of improving the economic and social system, increasing the convenience and accessibility of the service.

Shared energy

With a view to increasing production from renewable sources, the growth of self-generation of electricity is a goal pursued with increasing conviction by the European Union, which through its own Directive of November 2018 has given greater powers to individual citizens from this perspective.

A self-consumer of renewable energy is an end customer who, operating at his or her own sites located within defined boundaries, produces renewable electricity for his or her own consumption and may store or sell such self-generated energy so long as such activities do not constitute a business activity[61].

This process envisages a development based on two main aspects: collective self-consumption and energy communities, with the reduction of waste and the creation of economic and environmental benefits for all those involved and for the community in general. Electricity and heat generation by small businesses and households will become increasingly important in meeting their own and third-party energy needs.

In the early months of 2020, the approval of the amendment to the Decreto Milleproroghe in favour of self-consumption has laid the groundwork for the development of these new energy models, starting an experimental phase for the sharing of energy from renewable sources in condominiums and among companies for systems not exceeding 200 kW of power, promoting, with an advantageous tariff, the installation of *green*energy systems[62]. This regulation was followed by a consultation document and a resolution of ARERA[63], as well as a MISE implementation decree dated 15 September 2020 to regulate economic incentives.

Finally, at the end of December 2020, the **GSE Regulations** regarding energy communities and collective self-consumption were published. Thanks to the publication of these technical Rules, which have obtained the green light from ARERA, access to the serviceinvolving **enhancement and incentivisation of shared electricity** within communities and groups of self-consumers of renewable energy is regulated.

Energy Communities

Energy Community is a legal entity that includes a **community of users** (private, public or mixed) located in a given area in which end users (citizens, businesses, Public Administration, etc.), market players(*utilities*, etc..), designers, planners and policy makers **actively cooperate** to develop high levels of "*smart*" energy supply, encouraging the**optimisation of the use of renewable energy sources** and technological innovation in distributed generation and enabling the application of efficiency measures, in order to achieve benefits in terms of affordability, sustainability and energy security.

[61] Pursuant to Directive 2018/2001

[62] Conversion Law no. 8 of 28 February 2020, which became effective on 1 March 2020, implements Decree-Law No. 162 of 30 December 2019. Article 42-bis, in particular, defines the terms and conditions regarding collective self-consumption from renewable sources or the creation of renewable energy communities.

[63] ARERA, document no. 112/2020/R/EEL and resolution no. 318/2020/R/EEL

For the achievement of the goals contained in the National Integrated Energy and Climate Plan, self-consumption is considered to be of considerable importance. In this context, the joint collaboration between CVA, the Polytechnic University of Milan and the Polytechnic University of Turin was established for the study of energy communities and the start of **several experimental projects to study the feasibility of energy sharing communities** in order to:

- reduce user spending on procurement;
- optimise energy withdrawal from the network;
- improve the quality and reliability of supply;
- improve integration of renewable sources;
- optimise the overall load profile.

The Aosta Valley territory thus becomes an interesting field of study for scenarios of energy production and consumption, in line with the goals identified by the ***carbon-free*** plan to 2040 approved by the Autonomous Region of Aosta Valley, for the achievement of which the CVA Group, with its strong experience in the energy field, believes it can play a central role.

Central to the projects with the Polytechnic Universities is the analysis of the best options for CVA to become part of the Energy Community, taking advantage of the efficiency improvements linked to the Energy Bonus and assuming the role of manager that makes the plant available. The first municipalities to be involved are Chamois and La Magdeleine, which, through the Univer Consortium, have launched a feasibility study to define the features of the systems and the possibilities of installation in their territories.

Moreover, within the **European project Come RES** ("*Community Energy for the uptake of renewables in the electricity sector*")[64] events aimed at facilitating the dissemination of energy technologies based on renewable sources through the establishment of Renewable Energy Communities (RECs) are multiplying. In the *partner*countries, including Italy, national *Desks* are being set up: places for dialogue and discussion between the various *stakeholders* to focus on barriers, opportunities, measures and solutions for the spread of Energy Communities, through the sharing of application practices and discussion on the transposition and implementation of relevant standards.

2040

the year of *carbon-free*

by that date the Aosta Valley aims to become a *Fossil Fuel Free*region

Perrères power plan

[64] "Energy communities for the deployment of renewables in the electricity sector."

Electric mobility

2020 was a critical year for the Italian automotive market, which posted a 27% reduction in sales compared to 2019.

4.3%
electric cars sold on the total Italian market
Unrae, 2020

This is result of the various *trends* that are sweeping through the industry, which is increasingly oriented towards hybrid and electric cars. While gasoline and diesel lost about 40% in sales compared to last year, hybrid models and 100% electric cars posted increases of 103% and 207%, respectively, compared to 2019. Adding the electric vehicles to the *plug-in* hybrids (the hybrids that can be recharged at the wall socket), in 2020 60,000 models were sold.

Electric's **market share** rose to **4.3%** last year (2.3% "pure" electric cars), while in 2019 the figure was still less than 1%.

The number of recharging stations has also increased: in August 2020 in Italy there were about 16,000 recharging points, considering both public and private recharging points with public access. The growth in private charging points is also notable: nearly 8,000 were installed in 2019, with *wallboxes*accounting for more than 80% of these.

A *partnership* to fill up with clean energy

The provision of recharging infrastructures located throughout the territory represents a decisive factor for the spread of electric mobility: during 2020, CVA continued the implementation of the plan for the development of the electric network that provides for the installation of 250 recharging points for vehicles on the territory of the Aosta Valley, in collaboration with Be Charge and the municipalities.

After the two charging columns installed in 2019 at the forecourt adjacent to the Courmayeur Skyway, 50 car charging columns were installed during 2020 (12 of which have already been activated), while the others will be put into operation in 2021.

In addition, an experiment was launched in preparation for the creation of an eBike recharging network: from mid-August to the end of November 2020, an experimental recharging station was installed in the municipality of Gaby. At the end of this test period, the charging column has returned to the supplier company to allow improvements to be made in order to repeat the experiment in 2021.

Technology at the service of infrastructures

CVA universal spare transformers

As a **national preview**, two **universal resin transformers** (TEUS) capable of operating in nearly all of CVA Group's hydroelectric plants were built in 2020, in constant collaboration with a major supplier.

These devices can replace excitation transformers (TE) and auxiliary services transformers (TSA), covering a wide range of voltages. The versatility of this solution makes it possible to achieve multiple goals, ranging from the reduction of the production unavailability of a hydroelectric unit from 4 months to 2 days in case of failure of the excitation transformer or of delays in the supply of excitation systems, to the possibility of carrying out tests with gradual tensioning even in power plants included in the National Electricity network restart plan*(Black Start*).

Improving transformer insulation: mission accomplished

The ATMoS Basic Control 1 Mobile tool, installed at a world première on the production transformer of the Hône I power plant in 2019, allowed 2.8 kg of water to be extracted from insulating oil in 8 months (between 17/10/2019 and 16/06/2020), guaranteeing the operation of the important transformer, during the time needed to supply a new transformer, without failures or production interruptions. At the same time, fundamental plant engineering precautions have been studied and adopted (e.g. localised depressurisation) to allow the overall extension of the residual life of the existing transformer until it is replaced.

In addition, during the operational *testing* phase for the first 3 months of operation of the ATMoS tool, improvements were made that **significantly increased its performance** and the possibility of future installations.

However, ATMoS is not the only ***smart device*** at the service of the CVA Group's oil transformers: thanks to the combination with *Dissolved Gas*Analysis analysers, which can also be remotely controlled and operate 24 hours a day, it is possible to intercept many types of failures at source and extend their useful life thanks to the optimisation of operating conditions, made possible by the centralised analysis of *big data* coming from the analysers and operated by the Engineering Department. In this case, the Company plans to invest in 15 analyser installations over the four-year period 2019-2023, of which 5 have already been performed during 2020.

Valpelline power plant: on-line DGA monitoring of the 6 single-phase transformers

6

new automation systems developed *in-house*

In-house software for more *smart* and resilient plants

Also in 2020, the path started in 2010 by the Electromechanical Engineering Department for the creation of a unified process of management, effective and technological operation of electromechanical plants continued. This process led to the installation of new automated systems designed *in-house*. The following table shows the updated numbers of systems affected by the technology evolution and their functions.

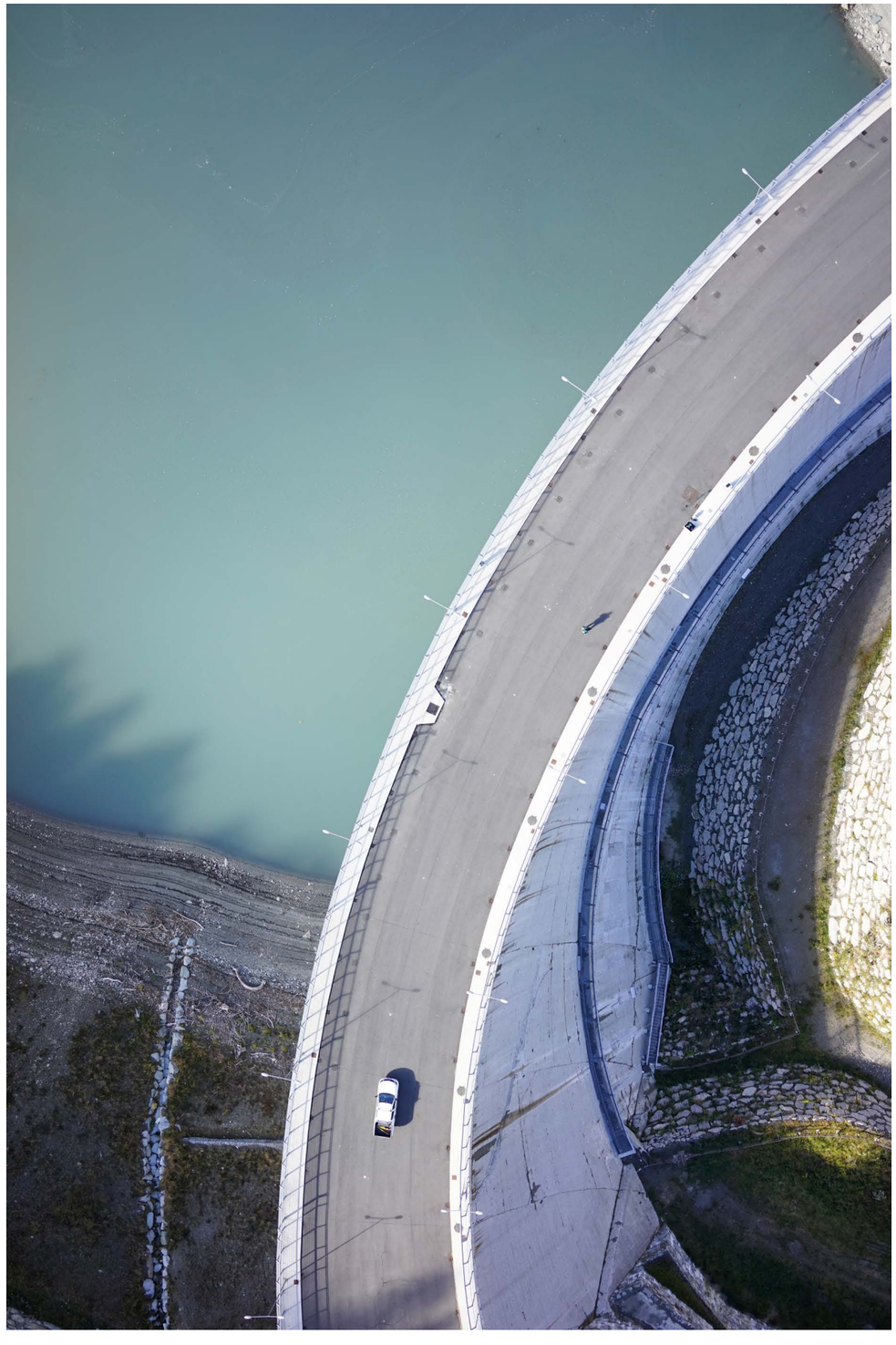
NEW AUTOMATED SYSTEMS	WHAT FUNCTION THEY HAVE	WHERE THEY ARE INSTALLED
RDF12©	• It regulates the speed of the plant in terms of turbine speed, synchronising the power requirement from the electrical network and the power generated • It avoids *blackouts* on the power lines that supply the tourist town of Gressoney in the Aosta Valley, where there are many ski lifts, at peak times	Out of CVA's 21 hydroelectric groups, covering more than 50% of the entire installed capacity
RDT14©	• It adjusts the system voltage • It synchronises the voltage produced by the generator according to the overall voltage of the network	Out of 15 plants
AUT16©	• Together with the two previous systems, it allows the management of the entire generation unit in an automated way • It reduces disruptions through an intuitive user interface for auditing and monitoring production groups	Out of 7 plants
AUTOP	• It manages the river weirs by adjusting the maximum level of the reservoir and it generates the opening and closing commands of the individual gates • It continuously monitors the Minimum Vital Flow and allows for real-time adjustment	Out of 4 plants
AUTDS	• A more compact version of the AUTOP particularly suitable for small intakes (of size or with few gates to be controlled) or in applications on releases for third parties	Out of 3 plants
RDL18	• It regulates the water level of the system's loading tank, determining the hydraulic head available and maximising efficiency • It continuously monitors the redundant acquisition of the tank level and generates anomaly alerts for this purpose • It enables integration within RDF12© • It allows the totally autonomous operation of the system depending on the water available	Out of 1 plant

Hi-tech maintenance , on the mountains with drones

Since 2019, the Civil Engineering Department has been equipped with a Remotely Piloted Aircraft (APR, commonly referred to as a drone) with specific features to be able to conduct high-quality photogrammetric surveys. In recent years, technologies related to the development of APR systems have seen significant development in multiple fields, including the use of drones in engineering activities. Modern aircraft can be used to survey hazardous areas, such as landslide-prone areas, strategic infrastructure, areas at risk, or affected by flooding events. In the engineering field, drones are and will certainly be a revelation and a determining factor in achieving sustainable conditions in surveying activities: mapping from above allows the creation of complex, multifunctional, high-resolution three-dimensional maps, containing information relevant to the design, management, planning and securing of the territory. Because of the mountainous conformation of the Aosta Valley, this equipment is particularly important for the management of analysis and monitoring activities related to the maintenance of the sites.

CVA technicians, who also hold ENAC certification for specialised critical operations, carried out numerous missions in 2020 aimed at the**visual inspection of inaccessible rock faces** andat theexecution of photogrammetric surveys for the design activities on the plants, for the verification of the state of consistency of existing works and for the calculation of the volumes removed by the cleaning operations of the reservoirs. The data obtained from the missions carried out, processed with photogrammetric technique through the use of specific *software*, makes it possible to have continuous surveys of the investigated areas.

Aerial view of the Beauregard Dam



Water levels in channels: innovative monitoring systems

The diversion channels of the Hône II and Chavonne plants were built in the 1920s using the building technologies most widely used at the time. They were built on impervious slopes with a high hydro-geological risk. In 2019, an articulated system of 22 piezometric sensors was installed along the diversion channel of the Chavonne plant, distributed along the two branches of the channel that reach Valsavarenche and the Cogne Valley, allowing real-time monitoring of levels within the installation. In 2020, a similar monitoring system was implemented on the diversion channel of the Hône II plant with the inclusion of 11 level sensors.

The difficulty and at the same time the unique feature of these monitoring tools are related to the fact that, along the channel, there are no distribution networks that can feed the sensors, nor are there infrastructures for the remote transmission of data. For this reason every single sensor of the system, designed with low energy features, is provided with a battery powered by a photovoltaic panel. The individual sensors are then connected to the acquisition stations located downstream along the regional road system through a *wireless* network capable of transmitting the data collected in *real time* to the servers of CVA. The system therefore allows **continuous** and real-time **monitoring** of the levels inside the structure and is ableto **emit alarm signals** inthe event of sudden drops in level, allowing a rapid closure of the intake gates. Through a WEB application, it is possible to display the sensor levels, access the history and set the alarm thresholds.

Satellite monitoring of CVA works

CVA has undertaken a project aimed at applying **satellite techniques** on some plants with the goal of testing and using the **most advanced technologies** for geological and structural monitoring.

The satellite interferometric analysis is conducted by NHAZCA S.r.l., a *spin-off* of *Sapienza University of Rome*, in an *Open Innovation* collaboration involving SWEEXO S.r.l., a *start-up* company based in Aosta and formed by a team of Information Technology professionals, and TITAN4 S.r.l. a company based in Rome, ESA *business incubation centre*, specialised in collecting and processing satellite data.

Satellite monitoring has also been used for some years in the control of works and it has recently reached an **extremely high level of accuracy and reliability**, making it a tool of particular interest for the analysis of geological and structural aspects.

The technique used, known by the term *SAR interferometry*, makes it possible to monitor the movement of the earth's surface and controls the behaviour of unstable slopes, on which the installations of the Group's plants are built, and the movements that affect the structures themselves. The possibility of obtaining images and data that satellites have detected throughout their life is also extremely useful, therefore with the ability, at any time, to obtain a historical evaluation of movements in the areas of interest.

The technology is affected by the morphology of the terrain: in the mountain territory where the Group's plants are located, it is therefore necessary to evaluate the applicability and effectiveness of the method for each site.

In 2020, three pilot sites were identified (Chavonne plant diversion channel, Beauregard dam and Gabiet dam) on which historical movement analysis, which provided extremely interesting results, was carried out. In 2021, activity will continue with four-monthly monitoring of the three sites. Plans are also in place to install special artificial *reflectors*(called *corner reflectors*) that will allow a more accurate control of the areas of greatest interest.

Through an agreement with the Autonomous Region of Aosta Valley, the exchange of territorial data and the sharing of practices in the field of slope stability will start. The agreement involves *the Department of Finance, Innovation, Public Works and Land*: CVA will periodically receive a satellite monitoring bulletin*(PS Monitoring*) from the Region, related to any deformation anomalies of the ground, potential precursors of landslide, processed according to an innovative computer method developed by the *Geological Activities* structure of the Region.

Installation of a turbine for micro energy generation

In 2019, a collaboration began with a metalwork company that developed a **prototype hydroelectric generating unit** suitable for installation in free surface flow channels[65]. The collaboration has led to the creation of a *proof of concept* [66] (POC) that involves the installation of a turbine for the microgeneration of energy that makes it possible to electrically move, on site and remotely, the side gutters of the channels, in areas difficult to reach by the network. Some of these gates are located in inaccessible locations or along inaccessible and dangerous trails: in the event of an emergency, this system would allow for remote action without the need to send personnel to the site, thereby improving workers' safety. The intake identified for experimentation is the Crest one, located on the Hône II channel.

At the beginning of 2020, the necessary authorisations were acquired for the implementation of the project, which got under way in September and October with the installation of the turbine, the laying of the power line for the motors that drive the gates and the configuration of the panel. Some tests were performed to evaluate the communication between the switchboard and the gates, but the long out-of-service period of the channel[67] did not allow for completion of system testing, as some tests required higher water levels in the channel. These tests, as well as the remote controls, will be conducted starting from the spring of 2021, as soon as weather conditions allow access to the site.

Cybersecurity for service continuity

During 2020, there was a significant increase in cyber attacks (+390% attacks from the comparison between the first half of 2019 and 2020), with one attack every 11 seconds in Italy[68]. A spike in *phishing* and *ransomware*scams[69] which, in the period of the COVID emergency, saw Italy stand out among all western countries. Elements that underline the increasingly central importance of *cybersecurity*, also in light of the increase in *smart working* and teleconferencing, which necessarily expose users to an increased risk of cyber attack.

Protection of the electrical distribution network

Protection from cyber attacks, which is extremely relevant worldwide, is even more important in the context of the provision of so-called essential services, i.e. those aimed at ensuring a primary need of society, such as the distribution of electricity. For this reason, in 2020 DEVAL continued the process initiated in 2019, for **adaptation** to the most current and modern *cybersecurity*requirements.

The project, still in progress, is carried out in compliance with the guidelines of the*National Framework for Cybersecurity and Data Protection,*[70]which is an operational tool for organising *cybersecurity* processes in complex organisational structures. This protocol, which is the result of collaboration between companies, institutions and universities, also has the approval of the Italian Data Protection Authority and of the Department of Information for Security. Thanks to the skills of its personnel and the help of consultants and specialised companies, it has been possible to consolidate the protection of *hardware* and *software* systems at the service of the regional electricity network, especially in terms of remote control and telecommunications. The project made it possible not only to complete an analysis, but more importantly, it allowed the preparation of a **change of approach to *cyber issued*** and the evaluation of their impact on the business organisation.

The focus on continuous improvement

The application of data and information security rules is an increasingly important goal for CVA, as well as a constant opportunity to improve its internal control system.

Introduction of dual-factor authentication

With a view to active investment in *Cybersecurity* and in order to increase the level of security of user authentication in the CVA network and corporate applications, during 2020 the CVA Group equipped itself with a special*software suite* that implements dual-factor authentication and password management technologies through a single *set of* automatically generated access credentials.

[67] The out-of-service period for the channel, originally scheduled for interventions to restore the channel's waterproofing, was extended as a result of the fall 2020 flood, which resulted in an extended out-of-service period for cleaning of the channel and the intakes.

[68] Data Oren Elimelech - Conference 'Digitalisation and Information Security in Law Firms', organised by the Council of the Order of Lawyers of Rome with the participation of experts from the Postal Police and Società Visura -

[69] Malware that "takes computers hostage" and then demands a ransom to unlock data

[70] For more information, please visit www.cybersecurityframework.it

All CVA Group employees with a company *computer* have been given new *hardware* devices to which the company has assigned different authentication methods:

- Biometric (via fingerprint *hash*)
- Dual-factor via *Corporate Badge* and *Password*
- By OTP ("*One Time Password*")

At CVA, 2 different *Strong Authentication*profiles have been applied: each profile allows authentication using the most practical and secure technologies to date. Each user has been assigned a specific profile depending on the position and role held in the company.

Data centre*technology*refresh

In 2020, the technological*upgrade* of the *hardware*infrastructure was carried out, according to the architecture called " *Hybrid Cloud*Infrastructure", necessary to host the application map supporting the Group's business processes, which operate in an increasingly complex and constantly evolving context. In particular, *hardware* was purchased that guarantees high reliability in the processing of information, the possibility of seamless maintenance and *upgrades*, and high machine performance with the possibility of further upgrades in the future.

The infrastructure was built to be able to host SAP's HANA *database* : CVA will be among the first Italian companies to make the transition to *S/4 HANA*, which, in the medium-term (2026), will be the only *database* compatible with SAP products.

Of particular interest is the *Cloud backup* replication of the data present in the two data processing centres of Châtillon and Pont-Saint-Martin. This architecture strengthens *disaster recovery* and lightens the workload on the physical network, without compromising the security of the data, which is encrypted both in the *cloud* and on the two *data centres*. In addition, through the *cloud* infrastructure, there is an increase of about 10% in available computing power.

Philosophy of ***Robotic Process Automation***

Robotic Process Automation (RPA) is the intelligent automation achieved through the use of *software* that performs more or less complex tasks based on predetermined rules. The use of RPA generates increased efficiency in processes, leading to improved quality and flexibility, reduced costs and an overall increase in productivity. To date, three *use cases* using this technology have been completed: the imputation of consumption estimates in SAP, the *download of* CADE[71] distributors from both portals and PEC.

[71] Energy Distributor Activity Codes

Saint-Nicolas

Champagne power plants

7

HOW THIS DOCUMENT WAS CREATED

How this document was created

3rd
edition of the Sustainability Report

Now in its third edition of the Sustainability Report, the CVA Group considers this to be an essential event to be shared with all its *stakeholders* for the reporting and presentation of the economic, environmental and social results achieved in 2020.

Information reported within the document refers to fiscal year 2020 (1 January - 31 December) and is compared to 2019 and 2018 data, where possible. By adopting the same reporting scope as the Consolidated Financial Statements, this document describes the situations and the performances of the CVA Group and of its subsidiaries.

The document has been prepared in accordance with the *Global Reporting Initiative*'s *GRI Standards*, which are currently the most widely used national and international standards for non-financial reporting, under the GRI "*core*" option.

In accordance with GRI guidelines, the Sustainability Report has been developed around relevant issues identified through a process of materiality analysis, i.e. the definition of a threshold beyond which an issue is considered sufficiently important to be reported. The process that in 2018 led to the definition of the relevant issues included an initial phase of context analysis carried out with reference to the sector and international standards, sustainability communications of the main *players* in the sector, as well as through an analysis of internal documentation, company *policies*, interviews with the various departments of the Group and based on an internal evaluation of opinions and expectations of the main *stakeholders* able to define the relevance of each of them.

Starting from an initial short-list of potentially relevant issues, the truly material issues were focused on according to the significance and evaluation of their impact in the exercise of the Group's activities and to that perceived by its *stakeholders*.

In 2019, the materiality matrix was updated to reflect the increased relevance of two specific themes: "Diversity, inclusion, and equal Opportunities" and "Transparent communication and marketing". On these two issues, the Group has increased its reporting and development efforts.

In 2020, the materiality matrix was retained based on the evaluation made by the company's senior management, as no major changes occurred.

The collection of information and related data reported in the Sustainability Report took place in collaboration with all the people of the company, each for the activities within their competence, constituting a timely and comprehensive information flow that has ensured the soundness of the reporting model. For further details on the contents of this document, please refer to the Index of GRI Reported Indicators.

GRI Content Index

"In accordance - core" option

General Disclosure 2016

GENERAL DISCLOSURE		REFERENCES AND NOTES
Organisational Profile		
102-1	Organisation name	CVA Group
102-2	Activities, brands, products and services	§ About us; The value chain
102-3	Headquarters location	The registered offices of the CVA Group companies are: • CVA S.p.A. a.s.u.: Via Stazione 31, 11024 Châtillon (AO) • CVA EOS S.r.l. a.s.u.: Via Stazione 31, 11024 Châtillon (AO) • Valdigne Energie S.r.l.: Piazza Vittorio Emanuele II, 14, Pre S. Didier, 11010 (AO) • CVA Energie S.r.l.: Via Stazione 31, 11024 Châtillon (AO) • DEVAL S.p.A. a.s.u.: Via Clavalité, 8, 11100, Aosta
102-4	Business locations	The CVA Group operates exclusively in Italy. The operating offices, as far as energy production is concerned, are: • CVA S.p.A. a.s.u.: Via Stazione 31, 11024 Châtillon (AO) • CVA EOS S.r.l. a.s.u.: Via Stazione 31, 11024 Châtillon (AO) • Valdigne Energie S.r.l.: Piazza Vittorio Emanuele II, 14, Pre S. Didier, 11010 (AO) The operating offices, as regards the sale of energy and therefore of CVA Energie S.r.l. a s.u., are: • Via Stazione 31, 11024 Châtillon (AO); • Via Clavalité, 8, 11100, Aosta (AO); • Via Resistenza, 6, 11026, Pont-Saint-Martin (AO); • Via Valdigne,57, 11017 Morgex (AO). The operating office for the distribution business is: • DEVAL S.p.A. a s.u., Via Clavalité, 8, 11100, Aosta (AO).
102-5	Ownership structure and legal form	§ About us
102-6	Markets served	§ About us; The value chain
102-7	Organisation size	§ About us
102-8	Information on employees and other workers	§ Full of energy Next tables

EMPLOYEES AND OTHER WORKERS [GRI 102-08]

a. The total number of employees by type of contract (permanent or fixed-term) by gender

	2018			2019			2020		
	Men	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**
Permanent	415	131	546	440	145	585	442	151	593
Fixed-term and temporary personnel	35	15	50	12	8	20	6	8	14
Total	**450**	**146**	**596**	**452**	**153**	**605**	**448**	**159**	**607**

GENERAL DISCLOSURE		REFERENCES AND NOTES

b. Total number of employees by type of contract (permanent or fixed-term) per company

	2018				2019				2020			
	CVA	CVA Energie	Deval	Total	CVA	CVA Energie	Deval	Total	CVA	CVA Energie	Deval	Total
Permanent (employees and temporary personnel)	366	57	123	546	387	63	135	585	393	64	136	593
Fixed-term (employees and temporary personnel)	32	6	12	50	15	5	0	20	11	3	0	14
Total	**398**	**63**	**135**	**596**	**402**	**68**	**135**	**605**	**404**	**67**	**136**	**607**

c. Total number of employees by type of employment*(full-time* or *part-time)* by gender

	2018			2019			2020		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Full-time	444	135	579	448	143	591	444	150	594
Part-time	6	11	17	4	10	14	4	9	13
Total	**450**	**146**	**596**	**452**	**153**	**605**	**448**	**159**	**607**

d. Incidence of non-employees

	2018	2019	2020
Non-employees / Employees (%)	**11.2%**	**5.4%**	**4.0%**

102-9	Supply chain	§ Close to the community; Creating shared value
102-10	Significant changes in the organisation and its supply chain	No significant changes are reported
102-11	Precautionary principle or approach	In evaluating and managing economic, environmental and social risks, CVA adopts an approach based on the precautionary principle
102-12	External initiatives	§ Our most important resource; Landscape protection § Close to the community
102-13	Participation in associations	In 2020, the total amount attributable to membership fees is € 477,568.20
Strategy		
102-14	Statement from the highest decision-making authority	§ Beyond 2029
102-15	Key impacts, risks and opportunities	§ Beyond 2029 § We are the energy of the future; Green Energy
Ethics and integrity		
102-16	Values, principles, standards and rules of conduct	§ About us; Governance tools
102-17	Reporting mechanisms and interest in social responsibility/code of ethics issues	§ About us; Governance tools

GENERAL DISCLOSURE		REFERENCES AND NOTES
Governance		
102-18	Government structure	The Parent Company has the following governance structure: • Board of Directors • Board of Auditors • Supervisory Body
102-22	Composition of the major governing body and its committees	The Board of Directors of CVA S.p.A. is composed as follows: • Marco Cantamessa • Enrico De Girolamo • Monique Personnettaz • Marzia Grand Blanc • Fabio Marra*(partially* reported, only the composition of the Board of Directors of the Parent Company was reported)
102-23	Chairman of the major governing body	Marco Cantamessa is the Chairman of the Board of Directors
102-24	Appointment and selection of the major governing body	Fiduciary criterion
Stakeholder engagement		
102-40	Group Stakeholders	Next table
102-41	Collective bargaining agreements	All Group employees are covered by the National Collective Labour Agreement for Electrical Workers, with the exception of employees on temporary contracts
102-42	Stakeholder identification and selection process	Next table
102-43	Approach to stakeholder engagement	§ It Takes Listening Next table
102-44	Issues that emerged from stakeholder engagement	Next table

STAKEHOLDER ENGAGEMENT [GRI 102-40; GRI 102-43; GRI 102-44]

STAKEHOLDER CATEGORY	ISSUES OF INTEREST	KEY DIALOGUE AND ENGAGEMENT INITIATIVES
Environment	• Protection of the environment and biodiversity • Responsible water use	• Memorandum of Understanding with the Fishing Consortium • Participation in round-table working groups to monitor the effects of climate change
Industry companies and competitors	• Respect of the rules • Transparency	• Press releases • Website • Sustainability report • Financial statements
Business partners	• Compliance with contractual commitments • Relationship continuity • Local investments	• Press releases • Website • Sustainability report • Financial statements

[72] The table shows the categories of Stakeholders most relevant to the CVA Group, represented in alphabetical order, the issues of greatest interest to each category of stakeholder and the activities conducted with them in 2018 and 2019. Stakeholders to be involved in the initiatives have been selected on the basis of their relevance to the activities carried out by the company.

GENERAL DISCLOSURE	REFERENCES AND NOTES

STAKEHOLDER CATEGORY	ISSUES OF INTEREST	KEY DIALOGUE AND ENGAGEMENT INITIATIVES
Customers	• Customer satisfaction • Transparency and responsible marketing • Privacy and data security • Asset security • Security of supply	• Customer service and other initiatives for dialogue with consumer Associations • Social communication channels • Branches on the territory • Advertising campaigns • Sustainability report
Community	• Asset security • Support for solidarity initiatives • Relations with the local area • Local investments and support for the entrepreneurial environment • Quality employment	• Press releases • Initiatives dedicated to the local area (e.g. Village Energique) • Guided tours of the plants • Sustainability report • Financial statements
Control and regulatory bodies	• Customer satisfaction • Security of supply	• Communications to ARERA • Website • Financial statements • Sustainability report
Suppliers	• Compliance with contractual commitments • Relationship continuity • Local investments	• Supplier area portal on the website • Sustainability report • Financial statements
Institutions	• Compliance with the law • Privacy and data security • Economic and financial sustainability	• Press releases • Website • Sustainability report • Financial statements
Average	• Economic and financial sustainability • Respect of the rules • Attention to worker health and safety • Environmental protection • Asset integrity • Relations with the local area • Transparency	• Press releases • Website • Sustainability report • Financial statements
Market	• Economic and financial sustainability • Value creation • Corporate governance • Respect of the rules • Attention to worker health and safety • Environmental protection • Asset integrity • Relations with the local area • Transparency	• Press releases • Advertising campaigns • Sustainability report • Financial statements
People	• Economic and financial sustainability • Skills enhancement • Work/life balance • Equal opportunities • Occupational health and safety • Transparency • Public competitions	• Training • Intranet • Together • Sustainability report • Financial statements

GENERAL DISCLOSURE		REFERENCES AND NOTES
Reporting principles		
102-45	Bodies included in the consolidated financial statements	§ How this document was created
102-46	Defining the contents of the sustainability report and limits on issues	§ How this document was created Next table
102-47	List of material issues	Next table

THE ISSUES OF MATERIALITY [GRI 102-46; GRI 102-47]

MATERIAL ISSUES	SPECIFIC GRI STANDARDS	WHERE THE IMPACT IS GENERATED	THE ENGAGEMENT OF THE ORGANISATION	WHERE TO TALK ABOUT IT
Attention and well-being of our people	GRI 401-1: New hires and terminations and employee turnover rate GRI 404-1: Average hours of training per year per employee GRI 405-1: Workforce diversity 403-1: Occupational illnesses 403-2: Occupational accidents, occupational illnesses, absenteeism and work-related fatalities	In all those who work for or with the CVA Group (employees and their families, third party personnel)	Direct	§ Full of energy
Climate change	302-1: Internal energy consumption of the organisation 302-3: Energy intensity	In the territories and communities surrounding the plants	Direct Since the production of CVA comes totally from renewable sources, emissions are not only avoided in the production phase, but also in the consumption phase	§ We are the energy of the future
Service continuity and risk management	There are no specific GRI standards related to this material issue	On final consumers and in the communities surrounding the CVA Group's plants	Direct and indirect *The continuity of service is guaranteed thanks to real-time monitoring of plant operations and to the implementation of emergency management plans in collaboration with the civil bodies active in the area*	§ Reliable and resilient
Ecological runoff and water management	303-3: Water withdrawal 307-1: Non-compliance with environmental laws and regulations 306-5: Bodies of water impacted by water discharges and/or runoff	In the local areas surrounding the plants	Direct *CVA has an ongoing commitment to responsible use of the water resource, from intake works to release*	§ Our most valuable resource
Trust and reputation/ Territorial roots and shared value	201-1: Direct economic value generated and distributed 204-1: Share of purchases made by local suppliers	In relation to all stakeholders with whom CVA deals with	Direct	§ Close to the communities
Technological and service innovation	There are no specific GRI standards related to this material issue	Throughout the value chain	Direct	§ Able to innovate
Landscape protection	304-2: Significant impacts of activities, products and services on biodiversity	In the local areas surrounding the plants	Direct *CVA is committed to the release of DE to maintain the natural biological and physical processes of the river ecosystem*	§ Our most valuable resource
Asset integrity and resilience	There are no specific GRI standards related to this material issue	In the local areas and communities surrounding the plants, as well as for all those who work for the company (employees and third-party personnel)	Direct and indirect *The maintenance and renewal plans, as well as the respect of high safety standards (guaranteed by the certified QSA Integrated Management System) are aimed at minimising risks*	§ Reliable and resilient

GENERAL DISCLOSURE		REFERENCES AND NOTES
102-48	Redefining information from the previous report	The table relating to the availability indices of hydroelectric plants (§ Reliable and resilient) has been updated to extend the data to the entire consolidated scope, including Valdigne Energie
102-49	Changes in material issues and their scope	Material issues did not change from those published in the previous year
102-50	Reporting period	§ How this document was created
102-51	Date of the most recent report	2019
102-52	Reporting frequency	Annual
102-53	Contacts related to report requests	For any clarification or further information, you can contact the CVA Group at the following e-mail address marketing@cvaspa.it
102-54	GRI standard compliance statement	§ How this document was created
102-55	GRI content index	§ GRI content index
102-56	External certification	The 2020 Sustainability Report has not been subjected to an external *assurance* process

Disclosure Specific Standards 2016

GENERAL DISCLOSURE		REFERENCES AND NOTES
Climate change (GRI 302: Energy 2016)		
GRI 103 Management methods 2016		
103-1	Explanation of the material issue and its boundaries	§ We are the energy of the future; Why it is important
103-2	The managerial approach and its features	§ We are the energy of the future; Green energy
103-3	Evaluation of the management approach	§ We are the energy of the future; Green energy
302-1	Internal energy consumption of the organisation	§ We are the energy of the future Next table
302-3	Energy intensity	§ We are the energy of the future Next table

INTERNAL ORGANISATIONAL ENERGY CONSUMPTION [GRI 302-1] AND ENERGY INTENSITY [GRI 302-3]

FY	GROSS ENERGY PRODUCTION [MWH]	INTERNAL ENERGY CONSUMPTION OF THE ORGANISATION [MWH]	ENERGY INTENSITY = CONSUMPTION/PRODUCTION
2018	3,276,528	35,012	0.01
2019	3,067,400	30,815	0.01
2020	3,344,000	37,332	0.01

[73] The organisation's internal energy consumption includes auxiliary consumption required to operate the hydroelectric power plants. Energy consumption is not a material issue for the Group and therefore is not included in this calculation.

GENERAL DISCLOSURE		REFERENCES AND NOTES
CVA indicators	CO_2 emissions avoided thanks to production entirely from renewable energy sources	§ We are the energy of the future; Green energy
Ecological runoff and water management (GRI 303: Water 2016; GRI 306: Water discharges and waste 2016; GRI 307: Environmental Compliance 2016)		
GRI 103 Management methods 2016		
103-1	Explanation of the material issue and its boundaries	§ Our most valuable resource; Why it is important
103-2	The managerial approach and its features	§ Our most precious resource; Ecological Runoff
103-3	Evaluation of the management approach	§ Our most precious resource; Ecological
303-3	Water withdrawal	§ Our most valuable resource Next table

WATER WITHDRAWALS [GRI 303-3]

FY	WATER WITHDRAWAL [M³]	OF WHICH FROM WATER STRESSED AREAS [M³]	OF WHICH FRESH WATER [M³]
2018	11,943,417,386	0	11,943,417,386
2019	10,749,767,314	0	10,749,767,314
2020	12,102,396,248	0	12,102,396,248

306-5	Bodies of water impacted by water discharges and/or runoff	The CVA Group holds the following sub-concessions in the Autonomous Region of Aosta Valley for the derivation, and consequent release, of water: • Dora di Valgrisenche and tributaries; • Chalamy stream and tributaries; • Lys stream and tributaries; • Evançon stream and tributaries; • Marmore stream and tributaries; • St. Barthélemy stream and tributaries; • Dora di Rhêmes; • Savara stream; • Grand Eyvia stream and tributaries; • Ayasse streams and tributaries; • Buthier stream and tributaries; • Dora di La Thuile and tributaries. St. Barthélemy stream
307-1	Non-compliance with environmental laws and regulations	No episodes of non-compliance with environmental laws and regulations were recorded during the reporting period
Landscape protection (GRI 304: Biodiversity 2016)		
GRI 103 Management methods 2016		
103-1	Explanation of the material issue and its boundaries	§ Our most precious resource; Landscape protection
103-2	The managerial approach and its features	§ Our most precious resource; Landscape protection
103-3	Evaluation of the management approach	§ Our most precious resource; Landscape protection
304-2	Significant impacts of activities, products and services on biodiversity	§ Our most precious resource; Ecological Runoff § Our most precious resource; Landscape protection

GENERAL DISCLOSURE		REFERENCES AND NOTES
Asset integrity and resilience (There are no specific GRI standards related to this material issue)		
GRI 103 Management methods 2016		
103-1	Explanation of the material issue and its boundaries	§ Reliable and resilient; Why it is important
103-2	The managerial approach and its features	§ Reliable and resilient; A commitment to safety
103-3	Evaluation of the management approach	§ Reliable and resilient; A commitment to safety
CVA Indicators	Investments in plant maintenance and upgrades	§ Reliable and resilient; A commitment to safety
CVA Indicators	Producibility, load factor, availability index, scheduled and unscheduled unavailability index	§ Reliable and resilient; A secure network for a steady supply of energy
Continuity of service and risk management (There are no specific GRI standards related to this material issue)		
GRI 103 Management methods 2016		
103-1	Explanation of the material issue and its boundaries	§ Reliable and resilient; A secure network for a steady supply of energy
103-2	The managerial approach and its features	§ Reliable and resilient; A secure network for a steady supply of energy
103-3	Evaluation of the management approach	§ Reliable and resilient; A secure network for a steady supply of energy
Trust and reputation / Territorial roots and shared value (GRI 201: Economic performances 2016; GRI 204: Procurement practices 2016)		
GRI 103 Management methods 2016		
103-1	Explanation of the material issue and its boundaries	§ Close to the community; Why it is important
103-2	The managerial approach and its features	§ Close to the community; Creating shared value § Close to the community; Attention to our customers
103-3	Evaluation of the management approach	§ Close to the community; Creating shared value § Close to the community; Attention to our customers
201-1	Direct economic value generated and distributed	§ Close to the community; Creating shared value
204-1	Share of purchases made by local suppliers	§ Close to the community; Creating shared value
Attention and well-being of our people (GRI 401: Employment 2016; GRI 403: Occupational health and safety 2016; GRI 404: Training and education 2016; GRI 405: Diversity and equal opportunities 2016)		
GRI 103 Management methods 2016		
103-1	Explanation of the material issue and its boundaries	§ Full of energy; Why it is important; About us
103-2	The managerial approach and its features	§ Full of energy; About us; § 2020: Close despite the distance
103-3	Evaluation of the management approach	§ Full of energy; Safety first, About us; § 2020: Close despite the distance

GENERAL DISCLOSURE		REFERENCES AND NOTES
401-1	New hires and terminations and employee turnover rate	§ Full of energy Next tables

NEW HIRES AND TERMINATIONS AND EMPLOYEE TURNOVER RATE [GRI 401-1][74]

NEW HIRES AND TERMINATIONS BY GENDER	2018			2019			2020		
	Men	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**
Hires	2	2	4	36	11	47	11	7	18
Terminations	3	0	3	9	0	9	7	2	9
Hiring rate			**0.75%**			**8.19%**			**3.09%**
Termination rate			**0.56%**			**1.57%**			**1.54%**

HIRES AND TERMINATIONS BY AGE GROUPS	2018				2019				2020			
	< 30 YEARS OLD	**→ 30 & ← 50**	**> 50 YEARS OLD**	**Total**	**< 30 YEARS OLD**	**→ 30 & ← 50**	**> 50 YEARS OLD**	**Total**	**< 30 YEARS OLD**	**→ 30 & ← 50**	**> 50 YEARS OLD**	**Total**
Hires	2	2	0	4	16	29	2	47	4	14	0	18
Terminations	0	1	2	3	1	5	3	9	1	1	7	9
Total	**2**	**3**	**2**	**7**	**17**	**34**	**5**	**56**	**5**	**15**	**7**	**27**

HIRES AND TERMINATIONS BY COMPANY	2018				2019				2020			
	CVA	**CVA Energie**	**Deval**	**Total**	**CVA**	**CVA Energie**	**Deval**	**Total**	**CVA**	**CVA Energie**	**Deval**	**Total**
Hires	2	2	0	4	16	29	2	47	17	0	1	18
Terminations	0	1	2	3	1	5	3	9	9	0	0	9
Total	**2**	**3**	**2**	**7**	**17**	**34**	**5**	**56**	**26**	**0**	**1**	**27**

403-1	Occupational illnesses	§ Full of energy; Safety first; About us
403-2	Occupational accidents, occupational illnesses, absenteeism and work-related fatalities	§ Full of energy; Safety first
404-1	Average hours of training per year per employee	§ Full of energy; Key facts and figures
405-1	Workforce diversity	§ Full of energy Next tables

DIVERSITY OF GOVERNING BODIES AND WORKFORCE [GRI 405-1]

BOARD OF DIRECTORS OF CVA S.P.A.	GENDER		AGE GROUPS			TOTAL
	Men	**Women**	**< 30 YEARS OLD**	**→ 30 & ← 50**	**> 50 YEARS OLD**	
CVA S.p.A.	3	2	0	3	2	**5**

BOARD OF STATUTORY AUDITORS CVA S.P.A.	GENDER		AGE GROUPS			TOTAL
	Men	**Women**	**< 30 YEARS OLD**	**→ 30 & ← 50**	**> 50 YEARS OLD**	
CVA S.p.A.	3	2	0	3	2	**5**

[74] The data include employees, but not temporary workers.

GENERAL DISCLOSURE	REFERENCES AND NOTES

SUPERVISORY BODY OF CVA S.P.A.	GENDER		AGE GROUPS			TOTAL
	Men	Women	< 30 YEARS OLD	→ 30 & ← 50	> 50 YEARS OLD	
CVA S.p.A.	3	0	0	1	2	**3**

NUMBER OF EMPLOYEES BY CATEGORY AND GENDER	2018			2019			2020		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Executives	100%	0%	2	100%	0%	2	100%	0%	**2**
Managers	78%	22%	54	79%	21%	58	81%	19%	**62**
White collars	63%	37%	363	61%	39%	366	60%	40%	**368**
Blue collars	100%	0%	174	100%	0%	176	100%	0%	**172**
Total employees	75%	25%	593[75]	75%	25%	602	74%	26%	**604**

NUMBER OF EMPLOYEES BY LEVEL BY AGE GROUPS[76]	2018				2019				2020			
	< 30 YEARS OLD	→ 30 & ← 50	> 50 YEARS OLD	Total	< 30 YEARS OLD	→ 30 & ← 50	> 50 YEARS OLD	Total	< 30 YEARS OLD	→ 30 & ← 50	> 50 YEARS OLD	Total
Executives	0%	0%	100%	2	0%	0%	100%	2	0%	0%	100%	**2**
Managers	0%	67%	33%	58	0%	67%	33%	58	0%	66%	34%	**62**
White collars	7%	71%	21%	366	7%	71%	21%	366	6%	70%	24%	**368**
Blue collars	8%	77%	15%	176	8%	77%	15%	176	5%	79%	16%	**172**
Total employees	7%	72%	21%	602	7%	72%	21%	602	5%	72%	23%	**604**

Technology and service innovation (There are no specific GRI standards related to this material issue)		
GRI 103 Management methods 2016		
103-1	Explanation of the material issue and its boundaries	§ Able to innovate; Why it is important; About us
103-2	The managerial approach and its features	§ Able to innovate; Towards a new paradigm; About us § Able to innovate; Electric mobility; About us
103-3	Evaluation of the management approach	§ Able to innovate; About us

Technology and service innovation (There are no specific GRI standards related to this material issue)		
GRI 103 Management methods 2016		
417-2	Cases of non-compliance regarding product/service information and labelling	No instances of non-compliance were recorded during the reporting period
417-3	Cases of non-compliance related to marketing and communication activities	No instances of non-compliance were recorded during the reporting period

[75] In addition to the total number of employees, there are 3 people who work with the Group but who do not fall into any of the four categories.

[76] The figure includes employees and temporary workers.

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