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Edition: PACOPAR • Texts: Dina Sebastião • Graphic Design: Sérgio Temido / Gatilho • Printing: FIG - Industrias Gráficas, S.A. Copies: 2.500 ex. • Photography: © Sérgio Temido: p. 5, 6, 8, 10, 13, 15, 16, 17, 18, 20, 22, 23, 24, 26, 28, 30, 31, 32, 33, 34, 36, 38, 39, 40, 41, 58 • © All Rights Reserved: p. 42, pág. 53 • © Paulo Caetano; Marisa Machado: p. 52 • © ISCIA: p. 54 • © Santa Casa da Misericórdia de Estarreja: p. 55 • © Estarreja City Council: p. 56, 60, 61 • © Cerciستا: p. 59

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REINVENTING THE FUTURE, GOING BACK TO THE ORIGINS

DIOGO ALMEIDA SANTOS
HEAD OF THE SECRETARIAT AT PACOPAR
AQUATRO ADMINISTRATOR / PROJECT
DIRECTOR AT CUF

The crisis we have been going through in recent years has caused impacts of all kinds: financial, economic, social, greatly affecting the most weak and vulnerable sectors and people. This has also been the case in Estarreja.

However, in this edition of the PACOPAR magazine, the emphasis lies on a topic that, as part of the deep roots of this municipality and of this community, can these days be an effective response to the difficult times we live in: family farming.

In fact, there is a new sense of the everyday life, which has been asserting itself against the tough demands of the present times, and makes us rethink our choices for a personal, family, and social life. The United Nations proclaimed 2014 as the International Year of Family Farming, intending to create a paradigm shift in the concepts of rural development and fight against poverty.

Like many other municipalities, Estarreja, a municipality with agricultural and livestock tradition in the past, suffered the effects of an urban development that forsook the farming of the land and drove away the youth. There are, however, initiatives that must be highlighted for trying to resist and «swim against the tide», as it is the case with the «arroz Lavrador» (farmer's rice), the «carne Marinhoa» (Marinhoa meat, a special cattle breed), the «mel de Terras do Antuã» (honey from the Antuã lands), and others, to which we devote a good part of this edition.

Other relevant issues are risk prevention and civil protection. Following the occasion of the Oc-

tober municipal elections, we had the opportunity to obtain the testimony from the newly elected president of the City Council on this topic, in particular regarding his expectations and intentions being addressed during his mandate, as well as other relevant issues for the new municipal administration.

Emphasis was devoted to the interview with Lubélia Penedo, a well respected personality whom the Panel has so much to thank for.

Long-time director of activities at the Portuguese Association of Chemical Companies, APEQ, very committed to promoting the principles of the Responsible Care™, Lubélia enthusiastically embraced her role as the Panel's moderator. More than being a moderator, her dynamism, freshness of knowledge due to her international involvement, and the care devoted to this cause are what stood out during her term at PACOPAR. This recognition was registered in the simple, but heartfelt tribute that the Panel dedicated to her and is reported on our website.

APEQ, through its newly appointed general director, addresses the main objectives of this important association in the current context of the Portuguese chemical industry.

Some curious and imaginative leisure suggestions are indicated, all within the farming subject.

Finally, it is recommended that you observe the performance indicators normally disclosed here by CQE companies, providing an account of the evolution of their industrial activity in terms of safety and environment, aiming for the transparency and openness to the community, which have been adopted in a systematic way.

Enjoy reading.





IMPRESSIONS FROM LUBÉLIA PENEDO ON THE "EUROPEANIZATION" OF THE CHEMICAL INDUSTRY PRACTICES AND THE IMPORTANCE OF RESPONSIBLE CARE® FOR THE SECTOR

"IT IS POSSIBLE TO DO 'MORE WITH LESS'"

The chemical industry has the obligation to develop itself by 2050, so that its growth utilizes fewer resources, showing that it is possible to "do more with less." It is one of the messages that Lubélia Penedo, involved in the creation of PACOPAR while active as general director at APEQ (Portuguese Association of Chemical Companies) at the time, leaves as guidance for future activities of the Panel. Responsible for the implementation and development of the Responsible Care® program in Portugal, Lubélia Penedo, with her participation in various international forums in the industry, also contributed to the discussion of the European principles and regulations that are currently observed in the Portuguese chemical industry. Over the past 16 years, she was co-responsible for the internationalization of the national sector procedures and practices, particularly in the environmental, safety, and health areas.

In an interview, Lubélia Penedo leaves us her impression of this experience and what she considers to be the guiding duty of the chemical industry commitment to Responsible Care®.



During your years as general director of APEQ, which major changes in the national chemical industry would you highlight?

There were many and very profound ones. Fundamentally, the adjustment to the new legislation took place in the first years. Portugal had made some adjustments, but companies had several difficulties interpreting and implementing this legislation. One of my main tasks, which lasted five years, was to help companies adjust to this environmental legislation. The first measure was to identify the companies' situation, which was unknown. All members agreed to collaborate on a survey of the situation, which resulted in the identification of the existing flaws and their solutions. All this was done under a Voluntary Agreement on

Environmental Adaptation signed with the Ministry of the Environment, through which the companies were granted an extension of the deadline for compliance with the law until January 1, 2000.

At the same time, Responsible Care®, to which APEQ joined in 1993 as the only representative from Portugal, was implemented. However, its principles were not followed inside the companies. It became necessary to adopt Guiding Principles at each company's highest hierarchical level, designate the respective Responsible Care® Coordinator, and choose and start collecting Performance Indicators for the integration in the annual reports being shared with all partners of the company. As APEQ's General Director, I joined the Respon-

sible Care® Core Group (RCCG) in the European Chemical Industry Council (CEFIC). In Europe, CEFIC was the coordinating entity for Responsible Care®. Thus, APEQ's first international connection was made. It is with great honour that I mention Portugal as the first country in the world to adopt water and energy consumptions as performance indicators, which are very important in terms of sustainability. The government was aware of the water shortages, as well as of the excessive water and energy consumptions. The industry made remarkable efforts and was able to decrease them dramatically using various processes: recycling, direct savings, and several methods according to each manufacturing process.

Another aspect to be highlighted from my first five



years was the discussion of draft European Directives, namely IPPC (Integrated Pollution Prevention and Control). This directive was very important because it forced a profound reorganization that formed the basis for the environmental and industrial licensing of chemical companies. It had been discussed for many years by the industry, by European Commission experts, by consultants, and by the academia, counting with the participation of world-class faculty members. APEQ followed many seminars on the subject and participated in a work that took place all throughout Europe, more frequently in Paris, to define the basis and established the scope of that legislation. Once IPPC was approved, the Working Groups of Seville were created, consisting of government members, renowned academic and CEFIC experts, all under the auspices of European Commission delegates. These groups were assigned to write the BREF-Best Available Techniques (BAT) Reference Documents. I represented APEQ in several of these Working Groups, one of the best professional experiences of my life.

Another directive discussed was the Seveso, whose review was very rudimentary when compared to what is asked in this Directive today.

The Emissions Trading System, commonly known as ETS, was also debated, although its revision was very light according to what is required today by the directive. We had the opportunity to personally discuss this directive with the rapporteur in the European Parliament and with the Portuguese Commissioner in Brussels. We also had the opportunity to speak out directly with the entities making decisions on these matters. It was the first time that a direct dialogue with the decision makers took place.

In the early 2000s following this period, a sectoral group was formed at CEFIC, of which I was the co-founder, director, and member of the administrative board: the ECEG-European Chemical Employers Group. This group was formed because the chemical industry considered it important to have someone talking to the European trade unions, represented by the EMCEF-European Mines Chemicals and Energy Workers Federation, extremely active on all matters relating to the chemical industry.

As Responsible Care® became operational, there was a general improvement of our associate facilities, factories, and even an update of the licensing processes. With the adherence to Responsible Care®, an internationalization of the procedures and behaviours and the perception of the fundamentals of the European legislation within the environmental and emissions fields, among others, took place. Many of our associates subscribed to and began attending European sector groups, which started the dialogue among international peers, representing an openness of mind and horizons that did not exist until then. Sector

groups are organized in CEFIC and each one of them is represented in the administration. People no longer remained silent and started to actively participate in the discussion of the national and European legislation. They began to react even before the legislation was published. From this initial period on, everything started developing following the European and global trends that outlined the future.

Tell us a little about your professional experience serving the chemical industry, your participation in various international forums namely those related to Responsible Care®.

Responsible Care® was relevant to my participation in international discussion groups and organizations with whom I have worked since then, participating in and contributing to workshops, seminars, and study and training activities online and in person. Little by little, I started integrating other CEFIC subgroups, created to handle and

PROFILE

Lubélia Nogueira Penedo holds a degree in Chemical and Industrial Engineering at the Instituto Superior Técnico, with additional education in pharmacy, management, and a specialization in polyolefins. During her professional career, she worked for the pharmaceutical and petrochemical industries, as well as in banking and services. From 1995 to 2013, she was general director at APEQ (Portuguese Association of Chemical Companies), position held while acting as the national coordinator for Responsible Care®, and a member of various international forums, such as the Responsible Care® Core Group, the National Associations Board (groups integrated in the CEFIC); the Responsible Care® Leadership Group (part of ICCA - International Council of Chemical Associations); member of the board and founder of the European Chemical Employers Group. Throughout her career, she was also a member of the Advisory Council for Energy at the CIP (Confederation of Portuguese Industry); member of the National Commission for the Transportation of Dangerous Goods; and United Nations expert in the chemical industry field for hazardous substances with the ILO - International Labour Organization.





develop internal affairs, such as the amendment of Board Statutes and Regulations, as well as to prepare public positions, documents for debate among members, community bodies, or public institutions. At the ICCA-International Council of Chemical Associations level, a close relationship was established among Portugal, Spain, and Ibero-America, and we started speaking Portuguese and Spanish. There was a narrowing of the relations and the debate at international annual meetings turned global. Whenever I could, I participated in the ECEG meetings and in joint meetings with the EMCEF, which are part of the European

Social Dialogue recognized by the Commission, to discuss social issues at the highest level. Employee participation was very positive, not only in labour legislation projects, but also in the discussion of technical issues and in taking joint positions. As an example, I can cite those issued on the REACH –Registration Regulation, Evaluation and Restriction of Chemicals, many of them based on Responsible Care®.

How do you evaluate the competitiveness of the Estarreja Chemical Complex (CQE)?

In a general framework logic of the theme, I can

enumerate some relevant facts that were the basis for the increase of CQE's competitiveness, which allowed the development of its activities in an European and global context of strong competition and demand: technological developments of great significance with eradication of the mercury technology, substitution of naphtha by natural gas, increased efficiency in the consumption of energy, water and gas, among others; significant increase in automation and control systems in industrial operations; significant improvement in industrial maintenance and safety, increasing the actual availability of productive assets.

The integration of the flow of raw materials between companies, accomplished by the CQE efforts, also contributed to the increase in profitability. However, I think that what was done is only a small portion of what is necessary, given the logistical shortcomings in this matter. In other words, the flow of some raw and surplus materials, and of products not used or modified during the process, is now connected through pipelines. However, new connections to Porto de Aveiro (Aveiro harbour) remain to be completed. As a result, the CQE continues to be supplied, in certain cases, by truck or rail road, which are unreliable means of transportation in Portugal. There is still a lot to be done in the logistics area of the national transportation system. I would say that CQE's competitiveness has significantly improved, but it can do even more. On the other hand, as long as the supply and energy cost issues remain unsolved, the competitiveness of the chemical industry will always be compromised in Portugal, given that some chemical products may incorporate in their production cost a share of more than 70% as energy cost.

What is the representation ratio of Portuguese chemical industries in APEQ? Are large companies or rather the SMEs (Small and Medium Enterprises) better represented?

The issue of representation is related to the CAE, the Portuguese Classification of Economic Activities system, which denominates anything and everything as chemical industry. When I look at the statistics from the Ministry of Economy, I cannot understand where all these chemical companies are. I suppose there are mistakes in the classification. All chemical companies are represented by APEQ. The composition has been maintained with minor differences, but it's not due to the size of the largest companies. They are all equal to APEQ. At the European level and according to the Commission, SMEs are the backbone of the industry. They are the ones who are granted aid and special programs. When I say that they are all equal to APEQ, it is from the decision's point of view. In the General Assembly, each company has a vote, regardless of its size: large, medium, or small. It is extremely important that it be so. There were slight variations, but no great changes. Large companies have even left APEQ, but this has to do with the economic situation of the country and the opportunities created in other geographic areas.



Did Portugal's adherence to the then European Communities in 1986 and the consequent entry of Portuguese companies in the large internal market represent a setback or a window of opportunity for the Portuguese chemical industry?

It was not a setback in any way. It was truly a window that opened thanks to the link to the European Union and to international institutions operating in Brussels. It is unfortunate that our Confederation of Portuguese Industry (CIP) has never been as their peer organizations. It is common for such large national organizations to have their own offices in Brussels to work and meet. It was truly a window that opened and it is unfortunate that we have not copied, in the good sense, other countries' practices that have true shadow governments in Brussels.

The Europeanization of the Portuguese legislation has also reached the chemical industry, with an increase of the requirements in terms of environmental protection and human health, for example, with the REACH and the Seveso Directive. How is the national industry responding to this?

Portuguese companies have fulfilled their duty with the valuable help of the employers' and/or business associations. The ones linked most directly to the chemical industry formed their managers. At APEQ, we did the REACH training organized by CEFIC and by the European Commission. We followed the entire REACH discussion and training. We worked alone or in conjunction with CEFIC and transmit everything with which we disagree to the Commission and to REPER. Active participation was very important for it allowed to detect errors, to make improvements, to transmit ideas considered more correct for being well-known and used by the industry - versus the ideas of leaders and legislators who often do not have the practical sense of things nor its knowledge. How did companies prepare for this? A diversity of workshops, thematic or varied, took place, and a monthly newsletter was created, which continued being edited for years. Each time reports are conveyed to Brussels or to Helsinki, we transmit their content to all members who were being integrated by the intensity of the amount of information that was provided to them. We also provide trained technicians who, in direct contact with the companies, inquire whether they were complying with the recommendations, if they have difficulties and, in this case, help them to

find solutions. All this was done practically for free, except for some workshops hosting foreign specialists where participants had to contribute to share the costs.

It was as APEQ's General Director that you introduced the principles of Responsible Care® in Portugal. Since this is a voluntary movement of adherence, what made APEQ apply it to Portugal?

When I came to APEQ, the adherence to Responsible Care® had already happened. It was the foresight of a president of the Association that made him consider adherence as essential and that the programme be put into practice. I did not know Responsible Care® at all. But when I studied the Responsible Care® programme, to introduce it in Portugal, I was delighted and thrilled with the results achieved in countries that had started first. It started in Canada in 1985. When I began to see what had already been achieved in terms of environment, energy efficiency, reduced consumption of raw materials and scarce resources like water, I became very interested, because it is a program for continuous improvement and for appreciating the relationship with the community, who is kept informed on all that is done. I think it was this enthusiasm about the idea of continuous improvement that motivated me.

You were also involved in the creation of PACOPAR as APEQ's general director. What came to your mind when you were presented with the proposal to create a Responsible Care® community panel?

I thought it was a valuable idea and worth investing in and, as we were right in the implementation phase of Responsible Care®, I considered it an excellent project and embraced it with much enthusiasm from the beginning.

Having followed PACOPAR throughout its history until last year, what do you consider to be the most value that the Panel brought to Estarreja and Portugal regarding Responsible Care®?

It is indeed a great value. The Panel members wished that people would change their critical attitude towards the Complex. That was what they expected, but these things cannot be achieved overnight, or in five or ten years. It is a slow process. I think that the personal relationships established by PACOPAR are an inestimable source of values. There was true friendship, recognition between people, even during tough discus-





sions and when opposing points of view were defended. I think this has to be extended in a way to make neighbours really become aware of what PACOPAR and CQE are. Because PACOPAR is the means for something to be achieved. The Panel's goal is for people to truly know CQE and in case of questions or concerns about what takes place in it to allow them to simply approach whoever seems best to clarify or correct what worries them. This is what actually happened when people began to complain about the quality of the water from the wells in their yards and companies ordered samples to be analysed. I think that at this moment, a close relationship began to establish and people started feeling that they were being considered by the companies, who did not turn their backs on them or gave them a default answer. But this is just an example and I believe that this relationship still requires deepening.

Taking the guiding principles of Responsible Care® and PACOPAR's own mission into account, what does the Panel lack? What advice do you have for the future?

Being in favour of continuous improvement, knowing that PACOPAR has a strategic plan that tries to accomplish its goals in a complete and timely manner, knowing also that during the realization of each strategic plan, improvement opportunities have been found that are transposed to subsequent plans, I am confident that they will be able

to find the appropriate answers to the challenges that will continue to appear in the future.

The Panel's goals always concern the continuous improvement of the Responsible Care® companies' performance. When these goals are reached, new ones have already been identified as improvement areas. Therefore, it is now difficult to identify what the Panel lacks. It remains important to demystify the poor image of the chemical industry, trying to identify niches of population in need of education, care... This is something that has not been given much thought and I talk about it because elsewhere it's already being done.

Furthermore, things are perhaps missing which no one has ever thought of. Above all, relationships with third parties, other companies, other groups, to promote exchange. Years ago, the exchange with a panel from Tarragona took place. Perhaps it would be interesting to promote meetings for the exchange of experience, even with other countries. This can be done at the national and local levels, between groups of companies, with any counterpart organization. Another important thing: a study to analyse the knowledge about the CQE to find out what people think of the Complex has never been done. I do not know the results of the "Inspirar" (Inspire) project, promoted by the University of Aveiro, but if the conclusion was that the pollution from cars is worse than



the pollution from the chemical industry in Estarreja, I would like to know how they managed to make that distinction in the samples analysed.

And, as Sustainable Development is an integral part of Responsible Care® since November 2002, when all the leaders of the Portuguese chemical companies, that have signed it, so decided during a public ceremony held at the Torre do Tombo, in the presence of more than 350 guests, I would like to call to our minds that the chemical industry has an obligation to develop itself until 2050 in such a way that its growth needs fewer resources, showing that it is possible to "do more with less", so that billions of people can live well on this planet. Responsible Care® applies to the commitment of the chemical industry in: continuously improving the knowledge about the environment, health, safety, and performance of our technologies, processes and products throughout their life cycle to prevent damage to people and to the environment; efficiently using resources, minimizing waste and openly reporting on performance, achievements and future improvements; listening and working with partners to understand their concerns and expectations, thereby ensuring satisfaction. Here are some additional suggestions that can be added to future programs.

I would like to thank PACOPAR for the opportunity to exchange these opinions with you.



NEW MAYOR'S EXPECTATIONS ON CIVIL PROTECTION

EMERGENCY DRILL TESTS NEW EXTERNAL EMERGENCY PLAN



Estarreja's new External Emergency Plan (PEEE) and a big drill to test its functionality are two novelties in the field of municipal civil protection for 2014. Estarreja's City Council is a member of PACOPAR and a key partner in achieving the objectives of the Panel's risk prevention. With the new PEEE approved earlier this year, Diamantino Sabina, the new mayor, outlines the priorities of the municipal civil protection and unveils ideas to continue to change Estarreja's environmental paradigm.

Elected in September of 2013 by the PSD/CDS PP coalition, Diamantino Sabina follows the line of the previous mayor, for whom he worked as the commissioner responsible for the civil protection, a portfolio that he decided to keep under his purview as mayor. The approval of the new PEEE was the local authority's priority. The document revised by the municipality, awaiting the green light by the National Authority for Civil Protection since December of 2012, was approved on January

28th this year. After the official recognition, the local authority plans to perform a drill, "to test the installed system and investigate possible failures that need correction," said Diamantino Sabina.

Important to any municipality, an emergency plan is "even more important for Estarreja, given its industrial reality", stresses the mayor. The previous plan "had been clearly surpassed by legal acts that were being released and there was the need to adapt to the national legislative reality". The capacity to interconnect with other municipal plans, such as the Municipal Master Plan, is one of the requirements. "I believe that we have a balanced and thorough plan and we have received very favourable feedback," he says.

In his previous roles as a commissioner, Diamantino Sabina was responsible for implementing some new functions in the municipal civil protection service. "We didn't have a professionalized standby patrol dedicated to civil protection and

STRENGTHENING THE EMERGENCY COORDINATION

Since the Estarreja Chemical Complex (CQE) is one of the crucial areas included in the Estarreja's External Emergency Plan (PEEE), the large drill planned by the local authority should have the involvement of PACOPAR, within the scope of objectives of its Risk Prevention Working Group (GTPR). In this context, some actions have been developed with the intent to strengthen the prevention means and the coordination of regional and national entities involved in a potential response to an emergency in the municipality.

One of the initiatives was to provide medical emergency folders to Infante D. Pedro (Aveiro) and São Sebastião (Santa Maria da Feira) hospitals, and to INEM. These documents contain medical records of all chemicals used in the CQE, identifying their respective chemical, physical, and toxicological characteristics, inherent risks, signs and symptoms of human exposure, and measures to be adopted in case of an emergency. The action resulted from more than a yearlong effort, based on updated medical records already prepared a few years ago by PACOPAR and also delivered to hospitals in the area.

Still within the scope of risk prevention, the Panel held a seminar and organized a visit to the chemical companies for the fire brigades' commanders of the Aveiro district, in partnership with the local authority. The initiative aimed to inform about the PEEE and the companies' internal emergency plans. For the current and future years, PACOPAR's GTPR has planned activities to continuously improve the articulation of the various civil protection organizations.

today we have a group of men geared for that. Should the need arise, we now have an organization that can be activated by the mayor or by the responsible professional," he explains.

In environment matters, the new mayor intends to carry on with the motto from his predecessor, José Eduardo de Matos - "virar Estarreja para a Ria" (turn Estarreja to the estuary) - by continuing to invest in environmental enhancement and tourism to reverse the negative paradigm from Estarreja's past. "On the way to transform the negative



stigma," Diamantino Sabina plans to "move forward with an activity still in its infancy - industrial tourism, to be developed with the help of local partners" and "allied with eco-tourism."

This idea will be integrated in a strategic tourism plan being prepared by the local authority, which according to the mayor, in addition to continue emphasizing nature tourism with BioRia, "intends to take firm steps towards the tourism associated with the industry." Although this is not a classic area and lacks roots in the tourism sector, the mayor believes that "Estarreja has potential in this area, if moving forward with a project to be developed in conjunction with various travel agencies and synergies."

Diamantino Sabina will ensure the leadership of the municipal administration in the next four years. Hence, we could not help but ask the new mayor for advice on the future of the Panel. "PACOPAR has more than proven its value, having started and stated itself in the original perspective of a dialogue panel. It would be interesting to do some sort of benchmarking, allowing everyone to bring new inputs and ideas."

BAIXO VOUGA HAS EXCEPTIONAL CONDITIONS, BUT LACKS INVESTMENT TO ENSURE THE FUTURE OF AGRICULTURE

“LAND CREATED BY GOD AND FORGOTTEN BY THE GOVERNMENTS”



International Year of Family Farming, declared by the UN in 2014, in this issue we will portrait Estarreja's farming situation, listening to the various organizations who do not succumb to a sector in trouble.

In the '80s, Estarreja's Agricultural Cooperative (CAE) had over 4,000 members. Today, this number dropped to 900, with an average age of 60 years. “Being Estarreja a smallholding region with family farming characteristics,” a production form that was not recognized by the Common Agricultural Policy, the abandonment has been progressive until today. The analysis is done by Aleixo Patinha, serving CAE for over 30 years and president for the past 12. Portugal's entry into the then European Economic Community prompted the disinterest in agriculture, once “an activity of great expansion and predominant in the region.”

The often reported country's increase of young farmers is not observed in the municipality: “This national trend has been verified especially through new crops of small fruits and vegetables. Since this is a dairy and corn region requiring large areas, we were unable to attract young people other than farmers' children who wish to follow in their parents' footsteps.” Take the cases illustrated in the following articles about the Marinhoa breed and the Salreu rice, for example.

Yet, the abandonment does not necessarily translate into a decrease in production. For example, “cattle numbers have not decreased. We didn't lose animals,” states the president, although the number of farms in the past decade has dropped from “about 300 to just over fifty. And of these, only about 20 will be viable in the coming years.” It

Farming in Estarreja suffers from the same national problems of the sector, with strong abandonment, an ageing population and, despite the publicised growing inclination of young people for the land, low attractiveness to the younger generation. The future can be reversed with the adoption of a cultivation system in larger parcels and with the conclusion of the primary protection and drainage system of the Baixo Vouga. This will allow agriculture to take advantage of the municipality's unique natural features and to be better combined with tourism. Adopting the motto of the

is a reflection of the natural evolution from small yields to more intensive farming. Examples of that are the cases of rice cultivation in Salreu and milk production in Avanca. “We used to have a few hundred farms with 15/20 animals. Today, a farm can never have less than 50 animals,” states the person in charge.

“A territory of choice”

The Estarreja region is dedicated to the production of milk, corn, rice, and meat, requiring cultivation in larger areas to remain competitive. The progressive abandonment by small farmers has led, in some cases, to a natural consolidation of the land and to the start of crop production in large areas (article “From the smallholding to the cultivation in a large area”). However, there is still much to be done in terms of land consolidation, as reported by the Promilker example (article “The largest dairy producer in the north and centre of the country”), which would require growing crops in larger plots in order to become self-sufficient in the production of dairy cow feed and, consequently, independent from the market prices.

INDUSTRY PROMOTES THE FEMINIZATION OF AGRICULTURE

Aleixo Patinha, with a degree in law, but linked to the management of the agricultural sector for many years, emphasizes agriculture's past historical importance in Estarreja and the influence that the industrial installation in the centre of the municipality has in the activity's gender predominance. “Men came to the factory, but women stayed in the field. Therefore, Estarreja is of the few areas of the country where women play an important role in farm decision making. Decisions are made mostly by women.” An indication of this feminization was the fact that, when the industry began to hire workforce, “many women started taking the tractor driver's training course.”





"FARMERS ARE RESILIENT"

The UN declared 2014 as the International Year of Family Farming (IYFF) to assert and alert to agriculture's importance in eradicating poverty and hunger, in the preservation of natural resources, and in promoting sustainable development. In the entire world (developed and undeveloped), it is estimated the existence of approximately 500 million farm families, whose members are part of the workforce and management, and that produce food for billions of people around the world. According to the UN, although the family farm represents "the largest supplier of food for billions of men, women, and children," these farmers are strangely "among the most vulnerable populations of the world." It is here that we compare UN's considerations with Estarreja. "Farmers are resilient," states Aleixo Patinha when asked about the fate of the people from Estarreja, who have abandoned or reduced the size of their farms. "They manage to maintain their livelihood with small farms, through part-time dedication, and survive because they are used to living with meagre livelihoods."

At the launch of the IYFF, the UN Secretary General, Ban Ki-moon, urged the commitment from all: "The governments can provide resources to family farms, especially to women and youth, creating policies that lead to a fair and sustainable rural development. Private investors can ensure commitment, as well as social and environmental responsibility along the value chain, from the field all the way to the table. A lot of food is lost after the harvest, because the small-scale producers are not able to properly store, process, and transport their goods. "We find some of the issues and solutions raised by the UN in the various portraits of Estarreja's farmers presented in this issue of the PACOPAR magazine.

The future of agriculture in Estarreja will depend, on one hand, on this land consolidation and, more strongly, on the use and preservation of the unique soil characteristics. "Estarreja is one of the municipalities with more area in the Baixo Vouga. It is pure and simply an area of choice," says Aleixo Patinha, featuring a highly productive soil for various crops, for grazing animals, and for the production of quality meat (article: "Fair trade and sustainable farming"). But this quality may be compromised by the threat of saltwater.

Urgent project for the protection of the Baixo Vouga Lagunar

Saltwater has frequently invaded freshwater areas traditionally used for farming. The rice grower from Salreu is one of the victims (article "From the smallholding to the cultivation in a large area"). The situation has worsened in recent years, with Porto de Aveiro's (Aveiro harbour) construction project that, according to the president of CAE, "has caused the tides to elevate significantly, prompting seawater to reach farther and farther." The solution to the problem lies in the completion of the primary protection and drainage systems of the Baixo Vouga, a project overseen by the Government, for which funding is pending. The middle section of the dike, with a length of four kilometres, was built between 1995 and 1999. Three sections of nine and a half kilometres still need to be built. In mid-2013, the Parliament adopted two resolutions calling for the raising of funds for the completion of the construction. The then Mayor of Estarreja (CME) was heard on the subject by a

parliamentary committee. On the occasion, the Ministry of Agriculture, Sea, Environment, and Spatial Planning assured to be "working towards the realization of the project within the next Community financing cycle 2014-2020." In September of the same year, the minister Assunção Cristas visited Estarreja to learn about the Baixo Vouga. In addition, the CME made several appeals resulting in the 2013 approval by the City Council of a motion requiring the supervision to integrate the project as a priority in the community funding. According to the local authority, construction is still awaiting a fund reserve.

And thus, "Land created by God and forgotten by the governments" goes on. Aleixo Patinha, the CAE president paraphrases a fellow countryman and

places "the highest expectations" in the project of Baixo Vouga, highlighting "how important it is that authorities become aware of the very strong concern about the region and of the serious risks to its population." If construction is completed and the land consolidation is performed, he believes that agriculture will have a future in Estarreja. "We can talk about full-time or part-time farmers, who are able to combine agriculture with other activities;" for instance, rural and eco-tourism (which is already implemented with BioRia), preserving traditions, and enjoying the fact that Estarreja is located on a coastal region. And perhaps we can "add the Baixo Vouga brand to all this, to identify and value its history, products, and traditions." If this happens, Aleixo Patinha concludes, "We could attract young people to agriculture."



SCIENCE HAS HELPED TO UNDERSTAND AND DEVELOP THE PRODUCTION OF FOOD

CHEMISTRY: FROM THE SOIL TO THE TABLE

The food cycle starts in the soil and ends on our table, where we sit for yet another meal. A possible journey thanks to chemistry. Though its origin comes from popular knowledge, agriculture has in fact become a highly scientific activity, with chemistry assuming great importance in meeting the food needs of a growing population. Besides agriculture, chemistry has also brought new solutions in food packing and preservation, thus allowing us to have high quality food on our tables. Presently, chemistry continues seeking solutions to meet the future challenge: continue to increase yield without necessarily increasing the area of cultivation.

In the last century, for example, corn production approximately quadrupled, corresponding to the continuous population increase, which will not cease in the near future. The United Nations predicts that the world's population will reach 9 billion by 2050, which means that food production needs to almost double. The challenge consists in doing it without increasing the amount of cultivated land

and the consequent consumption of natural resources, or in doing it in the most rational and efficient way possible.

Chemistry plays a central role in scientific and biotechnological research, which has brought the innovation that agriculture has witnessed since the early twentieth century: new products, such as fertilizers, insecticides, fungicides, soil compounds, animal drugs, analysis systems for agricultural plants, and solutions for animal feed. Agrochemical development helped increase crop yields approximately ten times, improving soil capacity and allowing greater and more effective control of pests and weeds that hinder the growth of edible plants.

And after the harvest?

The presence of chemistry in food, however, is not only through the soil. In the twentieth century great progress was achieved in terms of massive access to food allowing for a growing number

of people to buy food products that were produced far away from where they live. New solutions found by chemistry led to the development of new methods in food preservation, packing, refrigeration and freezing systems. How is it possible that tropical fruits end up on the table of people living in cold regions? Through cold storage. If this did not exist, how could Europeans enjoy pineapple or bananas?

It is thanks to chemistry that today we speak of dairy products. The variety of yogurts, cheese and infant food that we find in the supermarket shelves were only possible with the help of fermentation and preservation solutions found by chemical research which has potentiated the usage of beneficial

enzymes and bacteria. This was the basis for the development of highly nutritional milk products.

Chemistry is also in packaging. There is not much use in having a 100% natural fruit juice or a highly nutritional yogurt if it is not possible to bring it in good condition to the end consumers' table. The chemical industry has developed materials which are more and more efficient, such as foils or sealants, which allow insulating the product from the atmospheric conditions they are subject to in order to guarantee the preservation of their natural characteristics. The list of food products that would not survive before reaching our table without the help of chemistry is endless. From the soil to the table, chemistry is always there.





FARMING AID IN THE PAST, TODAY APPRECIATED
FOR ITS MEAT: MARINHOA IS AT RISK OF EXTINCTION

FAIR TRADE AND SUSTAINABLE FARMING

Originally from the Baixo Vouga, it is one of the indigenous cattle breeds, which once helped the farmers and the fishermen, and is currently being threatened with extinction. The emotional attachment that some farmers have with the Marinhoa breed and the efforts of a breeders association have prevented its demise. The meat trading, presented as a product that is sustainable, environmentally-friendly, and promoter of animal welfare, offering economic viability for cattle farmers, should be the future of the breed preservation.

In the entire region where the breed is raised, there are currently 598 breeders in 607 farms, of which 97 are from Estarreja. The total number of animals is 2,697, of which 1,502 are active females. The Marinhoa adjusted well to the beach air and remained there. The marine coastal zone is the breed's zone of origin, constituted by the towns of Ovar, Murtoza, Estarreja, Aveiro, Ílhavo, and Vagos. "The breed is severely endangered and we don't see this trend changing in the short term," states Elisabete Ferreira, technical director of the Marinhoa Breeders Association (ACRM). Abandonment and agricultural mechanisation caused the current situation.

An emotional attachment

The morphological characteristics of the Baixo Vouga region required strong animals for ploughing the flooded fields, namely for growing rice. The size of the Marinhão bovine (box: Marinhoa's characteristics and origin) allowed to fulfil the existing need, leading to its settlement and proliferation not only in the marine area, where it is also used in the Arte Xávega (traditional fishing form based on bulls' strength to recover the nets and which uses rowing boats), but also in the inner coast. In the '40s, records showed the existence of 23,995 animals that once inhabited the municipalities beyond their area of origin, such as Águeda, Oliveira do Bairro, Sever do Vouga, Mira, Cantanhede, among others, constituting the breed's expansion zone.

With the introduction of agricultural machinery, the animal was no longer needed by the farmer. "And we are located in a dairy region, where many people have gone down this path," with a much more immediate financial return than the beef trade," explains Elisabete Ferreira. "People still kept some animals for small jobs and due to emotional attachment. They are extremely docile animals and live with their owners for longer than 20 years." Reason why, presumes the director, the extinction of the breed has been prevented.

Fair and sustainable trade

Despite the abandonment of the agriculture, some people held it as a parallel activity to another profession, raising these animals for meat production. However, due to a decrease in the herd numbers, ACRM was created in 1992 with the goal of preserving the breed's genetic heritage and promoting the economic viability of cattle raising.

The farmers' current average age is around 60 years. It can be observed that "many people managing farm holdings in their eighties start giving up due to age." Consequently, the respective "animals are integrated into farms managed by younger people, some with higher education," who according to Elisabete Ferreira, "have a vision for the agricultural enterprise, dedicated exclusively to the meat production." In Estarreja, farms that have ceased activity have been absorbed by larger ones, "which are not much different from the traditional," since "the animals remain in the field," emphasizes Pedro Ferreira, manager of CARMARDOP (Marinhoa Meat Cooperative PDO), created in 2000.

After the Marinhoa Meat PDO (Protected Designation of Origin) production regulation had been defined through the approval of the Marinhoa Meat Product Specification PDO, an entity that would concentrate the supply and regulate the market was still needed. Therefore, CARMARDOP was created to regulate prices and meat production.

The cooperative guarantees the price to the producer and controls the entire business process from purchase, to slaughter and cut, all the way to sale. "We came to regulate the market. The traders, who had control of the prices, had to rethink their strategy and value the calves differently," says Pedro Ferreira.

Recently, the cooperative has opted to sell to the final consumer (box "From the field straight to the table"), as an alternative to the decrease in catering sales, also betting on local trade. By controlling the entire supply chain, CARMARDOP serves as an outlet for farmers to sell cattle and provides meat to consumers at a fair price and in a sustainable manner. "We think we're on the right track," says Pedro Ferreira, believing in the relationship with the end consumer, who verifies that "the beef price is fair and acceptable to the family household."

The meat trade is the breed's future

The Association's and Elisabete Ferreira's "daily struggle" is "to recruit more people" to raise animals. Only "an increase in value and trading of the meat" will ensure the economic viability for the farmers. Therefore, the Association works closely with CARMARDOP, whose strategy focuses on promoting the meat at a national level.

The efforts from the ACRM and its cooperative can be seen as examples for the UN Secretary General's appeals regarding the International Year of Family Farming, urging governments and organizations to promote sustainable and equitable rural development, helping the family farm, which feeds much of the world's population, have economic viability on the market (article: Land created by God and forgotten by the governments).



The cows that eat carrots



The boy who at seven years old asked “his parents for a yellow cow” became the man who today is a Marinhoa breeder. Manuel Loureiro currently owns ten animals for the production of Marinhoa PDO (Protected Designation of Origin) meat. Self-sufficiency in the food supply is one of the conditions for the profitability of his small livestock farm in Fermelã, where he raises “fancy” cows that eat carrots.

He grew up seeing his parents raise Friesian cattle, but this was not the breed that captivated him. “I always told them that I wanted a yellow cow.” At age seven, Manuel Loureiro still did not know that the yellow cattle were the Marinhões. In 1999, at age 21, he bought the first animal from the breed and, from then on, while his mother cared for their small herd of milking cows, Manuel Loureiro kept buying more “yellow cows.”

When he started raising his cattle, he began working with CARMARDOP. “Their support with everything is important,” says the farmer. The Cooperative linked to the Marinhoa Breeders Association gives comprehensive technical support, which is not limited to questions of this cattle breed. If he

MARINHOA CHARACTERISTICS AND ORIGIN

Being a large-sized animal, Marinhoa was the driving aid in farming and fishing, as the only coastal breed resulting from the crossing of the Mirandês and Minhoto breeds. Due to the environmental and morphological characteristics of the Baixo Vouga Lagunar, the long-legged bovine with great strength, docile and easy to handle, proved to be the ideal breed for growing rice and for the Arte Xávega. In 1992, given the need to preserve the existing genetic heritage, the Marinhoa Breeders Association was created and became the only legal entity responsible for the breed’s herdbook and for ensuring its preservation.

Additional information: www.marinhoa.com

didn’t sell the animals to CARMARDOP, Manuel Loureiro could also sell them on his own, but he “wouldn’t be paid the price that CARMARDOP guarantees all year round.” This guaranty is important for extensive farming, where the animals are raised naturally, according to their natural biological cycles.

FROM THE FIELD STRAIGHT TO THE TABLE

The CARMARDOP cooperative is dedicated to trading Marinhoa PDO (Protected Designation of Origin) meat. This qualification was granted in 1996 by the European Union, following a strict regime of traceability and compliance to standards, from the animals’ birth up to its consumption. The Marinhoa meat is sourced from sustainable production, respecting environmental and animal welfare principles. A fair price offer to both producer and consumer is one of CARMARDOP’s objectives, ensuring the economic viability of raising and preserving the breed. This cattle normally requires extensive production methods, in which the calves follow their mothers to the fields, where they stay for most of the year and feed on natural vegetation. They return to the stables at the time of delivery, in case of cold weather, or flooding of the fields. CARMARDOP makes direct deliveries to consumers in the Aveiro and Coimbra areas. In 2012, Marinhoa meat won the gold medal in the Vitelão (veal) category at the First National Portuguese Contest for Traditional Meats alongside renowned names, as part of the National Agriculture Fair in Santarém. For pricing and purchasing details, please contact the cooperative: www.marinhoa.com • info@marinhoa.com

by chance. Having the opportunity to buy carrots at a bargain price (due to calibration issues, they don’t get to enter the human consumption market), he tried to introduce them to cattle feed. The menu not only pleased them, but also increased their growth. “What is certain is that when Manuel started giving them carrots, a growth spurt was registered,” confirms Pedro Ferreira at CARMARDOP.

The satisfaction expressed by Manuel when talking about and showing us his animals demonstrates what he admits: “I always loved farming and it makes me happy.” At age 35, besides being a farmer, he also has a full time job at the Estarreja’s City Council, but in the future he will have to make a choice. “I’m an only child. While my parents are still active I can work both jobs, but when they can’t make it anymore, I will have to take action. I have machines, land... ” reflects: “I will probably devote myself exclusively to raising Marinhoas.”

Manuel’s case illustrates the scenario outlined by Estarreja’s Agricultural Cooperative: on one hand, the survival of farming through part-time dedication; on the other, the existence of young farmers from the transition of ownership to the next generation. Currently, Manuel Loureiro does not increase the number of Marinhão cattle he owns, because it is also necessary to feed the Friesian cattle his mother maintains for milk production. They are able to feed all animals with their own grain production, this being one of the conditions allowing independence from market prices and the consequent profitability of livestock farming. “Any farm that is not about 80% self-sufficient will have difficulty rendering profitable,” said Pedro Ferreira.

“When the weather is nice, the cows go to the field. You just have to go there in the morning and in the evening to see if everything is okay,” tells the young farmer. “When it rains a lot and gets cold, they come up,” meaning that they come to the stables. Then they eat corn silage, green pasture, hay, and carrots. Carrots? “Yes! My cows are fancy,” he answers jokingly, telling what he discovered





ANTÓNIO ROLA – THE ONLY RICE GROWER IN SALREU

FROM THE SMALLHOLDING TO THE CULTIVATION IN A LARGE AREA



António Rola, the only rice grower in Salreu, is a reflection of the natural land consolidation that took place over time by force of the circumstances. He grows about 85 hectares of rice annually on a continuous extent of land constituted by former smallholdings that he managed to bring together. He thinks of registering his trademark, “Arroz Lavrador” (farmer’s rice), to continue an activity that became profitable thanks to his knowledge of mechanics, which helps him reduce the purchase and repair costs of agricultural machinery.

António Rola already owns 30% of the approximately 85 hectares that he cultivates, which he has been progressively acquiring for 30 years, when he started to grow rice in just 600 square meters. “I started as a machinery lessor, working for the farm owners. When they left, I began to cultivate these lands,” he recalls. The Baixo Vouga area combines favourable conditions for growing rice and was traditionally cultivated by smallholder farmers.

António Rola produces between two and a half and three tons per year, reaching up to five tons “in good years.” “Here, the production is not as large as in the South, because we don’t have as many hours of sun,” he explains. He warns about another problem that is typical of the Baixo Vouga Lagunar and can jeopardize the future of the rice cultivation in this area: “The inflow of salt water in the fields.” (news “Land created by God and forgotten by the governments”) “In the past two years, the production was low and I was unable to sell to the industry,” he says. When this happens, António Rola sells directly to consumers, “to people from various parts of the country who come to buy rice from Salreu. It has been increasing from year to year.”

To meet this demand, the farmer has a rice huller and does the packaging in his own facilities. “Arroz do Lavrador”, farmer’s rice, can be read on the five kilogram bags that he sells. It is the trademark that he will register. And why not “Rola’s Rice” or

“Salreu’s Rice”, we suggested, thinking that these marks could be more identifiable. “I think it will be Arroz Lavrador. BioRia and the Council suggested Arroz BioRia, but at this moment I don’t see the need for it. I would become dependent on some rules.”

March to October is the busiest period for rice farming. “In late March begins the preparation of the land, ploughing, grading, irrigating, and sowing of the seeds in April.” The harvest takes place from late summer until October. The farmer has six tractors and two mowers to cultivate approximately 85 hectares. The investment in machinery was necessary to render the production profitable. The fact that it is a family activity, to which António’s wife and son are also dedicated, helps reduce the cost of labour. This type of expenditure is the reason why the farmer does not want to increase the production area. “I would need more people working with me and it would not be worth it,” he admits.

The investment and effort are worth it? “It is because I don’t spend money repairing machines and mowers. I buy them second hand in France, cheaper, and then repair them,” explains the farmer, who’s also a mechanic. The important thing is not to increase the production area, but to enhance the productivity of the land. “It is necessary to install irrigation and drainage systems, canals, level the land,” necessary adjustments given the morphological and geological characteristics of the region.

Since António Rola is the only rice grower in Salreu, we wonder, who will follow his steps? Will his son do it? “Maybe. He dedicates himself to this with determination and pleasure...” If his son will choose agriculture for his future, it will be one of the examples for the situation depicted by the president of the Estarreja’s Agricultural Cooperative: the future viability of young farmers in Estarreja is in the continuity of their parents’ farming activity.



BIOBAGA PRODUCES BLUEBERRIES IN AVANCA

THE YOUNG EXCEPTION IN ESTARREJA'S AGRICULTURE

When we arrived at the Biobaga farm, we almost caught Ana Fonseca working on pruning, if it wasn't for some bureaucratic issues needing her attention that made her step away from her blueberry trees in Avanca. Pruning and harvesting are the most laborious tasks required to obtain the famous fruit, queen of the antioxidants (see box). As it captivates consumers in Portugal, the blueberry has also captured the interest of farmers who engage in its production, such as Ana Fonseca and her husband. Biobaga's case is an example of the exceptional dedication of young people to agriculture in Estarreja. It's a rare thing, according to the experience of Estarreja's Agricultural Cooperative (article "Land created by God and forgotten by the governments").

On Biobaga's 1.5 hectare property, Ana Fonseca's company, there are about 2,000 blueberry trees, planted in 2009. In 2014, the farm should start producing at its full capacity. It is from the fourth year on that the plant reaches "steady production." Ana Fonseca expects to harvest between "eight to ten tons" and thus start making a profitable monthly earning from her investment. In the first year, she produced 300 kilograms; in the second, a ton and a half, and in the third, three tons.

The young farmer already knew it would be a medium-term investment return. What she didn't know back in 2002, when she received her degree in Agricultural Engineering, was that she would be devoting herself to the production of this berry. "I wanted to own land for farming as a supplementary activity, but I was thinking of aromatic herbs or wine," she confesses. The idea of the antioxidant fruit came from her husband. And why? "Even he doesn't know. He always liked it! He liked the fruit, thought it would provide a good return and that it was an appropriate culture in terms of effort, at our own pace."



For the couple that has other professional activities in parallel, it was important to think of this convenience. After their idea matured and they were able to negotiate the purchase of an area of land, their trees see the daylight in 2009. As a trainer and consultant in the agricultural field, Ana Fonseca was able to use her knowledge for the initial paperwork, including the request for co-financing the project.

Even though she holds a degree in Agriculture, Ana Fonseca had to "study hard" about the crop, a topic that was not addressed during her studies. Af-

ter the theory was learned, "we had to start planting, observing and correcting mistakes." Pruning and harvesting are the most laborious tasks growing blueberries, which Biobaga performs as a certified organic producer. For this purpose, we find a "chicken track" between the plant rows. It is a movable fence where the animals, confined to that space, feed from the weeds, naturally controlling their proliferation while composting that space.

Ana Fonseca's balance sheet is positive. Although it was not easy to find a buyer for a 300 kilogram production in the first year, two years ago she negotiated the export of 80% of her production, a contract that was kept for the next harvest. Besides the harvest that takes place between April and September, given the existence of different plant varieties, fruit packaging and conditioning is also performed on the Biobaga property.

Ana Fonseca and her husband work other professional jobs in parallel with farming, but their future will always be linked to the land. The immediate plans are "to plant four to five additional rows of blueberries until the entire area of the property is filled." Later, if the crop "remains profitable, to expand the production" or perhaps even bet on another kind of crop. One thing is certain: the future will be "to continue to invest in agriculture", even because, confesses Ana Fonseca, "we are already hooked."



THE BERRY THAT KEEPS YOU HEALTHY

The consumption of blueberries is highly recommended as one of the foods with the highest content of antioxidants, a group of vitamins, minerals, and enzymes that help neutralize free radicals, fighting the ageing of cells, and contributing to the prevention of cardiovascular and degenerative diseases, as well as cancer.

VISITS TO BIOBAGA

Biobaga, a blueberry farm in Avanca, is open to individuals, groups, or institutions who want to learn about the fruit and its cultivation technique. Visits are scheduled by appointment.
Contacts: geral@biobaga.pt • www.biobaga.pt
<https://pt-pt.facebook.com/BioBaga>

A DUTCH PUSH

Blueberries are a wild fruit with a sweet and tart flavour that grow in 1 to 1.5 meter high bushes of the same name. This waxy indigo-coloured berry likes the cold, non-calcareous soils, and partial shade. In Portugal, the largest blueberry production area is found in the middle Vouga region, introduced here in the '90s when the Dutch Lockorn Foundation boosted its cultivation, after realizing that the region had the ideal conditions for its growth. Since then, it has captivated producers in various places of the country.



PROMILKER - THE DAIRY VOCATION OF THE REGION

THE LARGEST DAIRY PRODUCER IN THE NORTH AND CENTRE OF THE COUNTRY

10 years ago, after earning the degree in Zootechnical Engineering, Victor Santos started a dairy cattle farm with 60 cows. Located in Avanca, Promilker is today the largest producer of milk in the north and centre of Portugal, with approximately 1,300 animals. Past conditions were favourable to the expansion. Today, however, with the end of the milk quota system and the continuing rise in the cereal price, the future brings questions to Victor Santos, who nevertheless does not think of converting the farm, but rather of investing in quality as a differentiation factor.

Promilker uses a closed loop production system. All cows are born on the farm, inseminated at the

appropriate age, and start to produce milk after giving birth. Of the 1,300 animals that the company owns, "around 600 are dairy cows," grouped in lots, "according to their productive capacity," explains Victor Santos. Each animal produces an annual average of 10,500 litres of milk, paid "according to their fat and protein content," which amounts to an average annual turnover of two million euros for Promilker.

The numbers could be attractive if it wasn't for the increase in the cost of feeding the cattle. "In the past two years, production costs doubled and the price of milk has not reflected this increase. About 70% of the cost of a litre of milk relates to feed

costs," states Victor Santos. As he explains, to this must be added the cost of 18 full-time employees, including three senior technicians, and the increase of technical legal requirements for safety and health.

These recent years were not the reality of ten years ago, when the newly graduated zootechnical engineer, who decided to invest in his own farm and in his field of expertise, opted for the production of milk. "This activity was the most compatible with the characteristics of the coastline", and the location "is close to large dairy trading and processing companies." Besides, I was "used to seeing cows in collective milking systems," a practice that the European agricultural standards tended to extinguish. After planning the strategy and having chosen the site, Promilker was born, which experienced a phase of expansion by increasing the number of animals from 60 to 1,300.

"We grew because many people were leaving the business. The industry sector was disorganized and there was no investment in this kind of farming. Suddenly, this food crisis arises," which



is not expected to weaken: "With the end of the quota system, the liberalisation of the production, the anticipated increase in world population, and the growing need for cereal, the cattle feed costs will continue to rise. If the milk does not reflect this increase, the only farms surviving are those located where the conditions are extraordinary." This is not the case with Estarreja, a smallholding region. "This region (surrounded by forest) benefits the welfare of the animals, but does not offer land with sufficient production to allow me become independent from the market," admits the entrepreneur.

With the cultivation of 60 hectares, Promilker produces about 4,000 tons of silage per year, buying an additional 4,200 tons from local producers, an amount that keeps the farm dependent on purchasing cereals from third-parties. The difficulties experienced by the company show the need

for converting smallholding into large area farms. According to the president of Estarreja's Agricultural Cooperative this transformation is important to the future of this activity in the municipality (article: "Land created by God and forgotten by the governments").

Facing the adversities, what is the way forward? Victor Santos' experience in the sector represents a competitive advantage that he recognizes. "This is a 10-year project and I cannot convert it halfway through. We fight to maintain production with a high quality standard and expect to be compensated one day for having a high guarantee of security," he says. Promilker is also looking at ways to make use of the secondary effects of its activity, taking advantage of animal waste through the production of biogas. Some studies have already been developed, but didn't prove to be financially sustainable. In any case, the possibility remains open.



MANUEL JARDIM – PRODUCER OF MONOFLORAL HONEY FROM EUCALYPTUS

HONEY FROM TERRAS DO ANTUÃ HELPS GERMAN MEDICINE

The largest honey producer in the Aveiro region is from Estarreja. The “Monofloral do Eucalipto – Terras do Antuã” trademark, produced by Manuel Jardim, is almost entirely exported to Germany. With an annual honey production of 9 to 10 tons, the beekeeper admits that “it’s enough to pay for work.”

In Avanca, we visited the eucalyptus forest in which Manuel Jardim has some of the 300 hives he keeps. “This is a lot of work, but we cannot devote ourselves exclusively,” he says, stressing the task of having to visit the hives almost daily. Manuel Jardim has been dedicating himself to beekeeping for over 40 years on his spare time from his

jobs as teacher and entrepreneur. “To pursue his passion,” he continued the beekeeping job that he learned from his father, who “had four or five hives.”

He started producing for neighbours who appreciated his honey and gradually increased the number of hives. Being a retiree for ten years gave him more free time to increase the number of hives to its current 300, located in Avanca and Ovar, with a production volume yield of about ten tons a year, enough to export. According to the information he receives, the Monofloral do Eucalipto - Terras do Antuã honey will be used in Germany for “medicinal purposes.”





Manuel Jardim is president of the Cultural and Recreational Association of the Beekeepers from Terras do Antuã, confined to the district of Aveiro, which has 300 members with an age average of 54 years, but with an increase in the number of young beekeepers. Beekeeping has been growing in the region due to rising demand for honey on

one hand, and “because it has benefited from financial incentives,” on the other. It is estimated that there are 120 beekeepers in Estarreja. In the district of Aveiro, there is only one more beekeeper who reaches the production volume of Manuel Jardim. “The others produce between 200 and 300 kilograms of honey” and sell it to the local market, mostly directly to end consumers.

“The activity is not profitable, making it difficult to dedicate yourself exclusively,” tells Manuel Jardim. Given this fact, we insist on knowing, why did you increase production? “The activity is not immediately profitable because it is too much work. If you take all the work into account... you have to constantly visit the hives... it passably pays for the work,” he admits, noting some cost savings when building the hives by himself. Manuel Jardim shares the job with his son, who has another profession. Beekeeping in Estarreja seems to be one of those typical examples of part-time farming, kept in parallel with other professions, as indicated by Estarreja’s Agricultural Cooperative.





URBAN GARDENS CAPTIVATE MORE AND MORE FARMERS IN ESTARREJA

“THE GARDEN ALSO SERVES TO DISCHARGE NEGATIVE ENERGY”



Urban gardens are proving to offer a series of advantages: take advantage of unused land, beautify cities, help residents meet their food needs, promote environmental awareness, encourage residents to socialize, relieve stress and “discharge negative energy.” The initiative has been established in several cities and Estarreja is not an exception. Forty residents are already cultivating an urban garden provided by the local authority in the municipality.

With an area of three thousand square meters located near the volunteer fire department building, Estarreja’s City Council (CME) provides 60 plots of land to its residents for the creation of urban gardens. The goal is to contribute to savings on household budgets and to promote a traditional agricultural practice. In October 2012, the local authority handed over the first ten gardens, having currently assigned 40. The new item in the municipal proposal led to some initial reluctance of the residents, “but an increasing participation has been registered, especially from those living in more urban areas,” says João Alegria, CME’s councillor.

José Jesus is one of the residents who cultivates a garden. In the winter, he grows “turnips and turnip greens, strawberries, carrots, leek, garlic, fava beans, regular peas, sugar peas, kale, and broccoli.” In the spring/summer, he grows “potatoes, lettuce, several varieties of tomatoes, cucumbers, peppers, creeping and climbing beans, aromatic herbs, and a variety of cabbage,” lists the “new farmer.” To maintain this diversity, he spends an average of eight hours a week in his garden.

The time spent in gardening is saved on trips to the grocery store and in supermarket expens-

es, but these were not the main reasons that made José Jesus, 47, apply for an urban garden. “The reasons why I joined this project essentially relate to the fact that I always wished to have a piece of land where I could sow and plant something new and, thus, observe nature being born and flourishing,” admits, pointing out the advantage of interacting with those who live right next door. “The garden also provides the opportunity to share knowledge and socialize with people who have been my neighbours for many years, with whom I would otherwise have very little or no contact at all,” he says, admitting that he has “learned many farming techniques with neighbours.”

José Jesus’ experience appears to meet CME’s intent when launching the project. In addition to “keeping people busy and supplying their needs in an active and useful way,” explains João Alegria, the purpose of urban gardens is also to provide a means for social interaction. “People are satisfied, they talk, there’s an opportunity for dialogue,” says the councillor.

José Jesus’ experience is an example of this. The garden also serves to “discharge the negative energies that affect us daily,” he admits, referring to the benefits of contact with nature. “It is a therapy lacking to anyone these days, when our lives are governed by a frenetic pace, which sometimes leads to grumpiness and depression. Anyone who wants to improve their mental health and save on the pharmacy bill should look for a vegetable garden, not too big, and therefore easy to take care of. Just hundred square meters are enough.” The advice is from José Jesus: “For those who live ‘in a cage’ like me (for 33 years), there is no better escape.”



APPLICATIONS FOR URBAN GARDENS:

Those interested in growing an urban garden must register with Estarreja’s Municipal Service Office at the City Hall. The registration form can also be found on Estarreja’s City Council website (www.cm-estarreja.pt).



APEQ AND FUTURE PRIORITIES UNDER NEW GENERAL DIRECTION

“THE MAIN GOAL IS TO CONTRIBUTING TO MAINTAIN THE COMPETITIVENESS OF THE CHEMICAL INDUSTRY”

LUÍS ARAÚJO
APEQ'S GENERAL DIRECTOR



The main purpose of APEQ, Portuguese Association of Chemical Companies, is to defend the legitimate interests of its members, contribute to its harmonious and sustainable development, and promote the spirit of solidarity and mutual support among them. Considering the participating members' profiles, we can replace “associated members” with “Portuguese Chemical Industry” without much distortion.

At the present moment, we are interested in understanding how APEQ is able to fulfil these purposes.

The Portuguese Chemical Industry is currently facing major challenges, which do not differ from those faced by their counterparts in Europe.

The main challenge is to remain competitive in the face of competition from other regions of the world that benefit from an important production factor – energy – in much more favourable conditions. It should be noted that one of the traditional competitors of the European Union, the USA, has recently strengthened its leadership through the exploration of unconventional fossil fuels from its domestic reserves, which grant them privileged exploration conditions. What has been called the “shale oil” revolution made gas and electricity available to the U.S. at much lower prices than those charged in Europe. These production factors are especially important for the basic chemical industry, but whoever understands the importance of integration in this industry has no major doubts that the relocation of its basic components away from Europe will cause irreparable damage to the remaining components.

On the other hand, due to interrelationships and overlaps, the numerous regulations that now frame the chemical industry in Europe and the respective taxation combined, although legitimate in its objectives, constitute a burden that does not help in the fight against the major threat that immediately follows the loss of competitiveness: the relocation to other areas of the globe.

Therefore, how can an association like APEQ enable companies to overcome these difficulties?

Fundamentally, in a very summarised form:

- Play the role of interlocutor with the authorities responsible for designing and executing policies and regulations, clarifying the real problems that companies face on a daily basis.
- Inform companies about the regulation concerning their activities and disclose and promote the best application practices.
- Promote mutual understanding between the Industry and the Society of which it is part.
- Contribute, through a collective hiring system, to a good atmosphere of cooperation between the company management and its employees.

To perform these functions, an association such as APEQ must understand its role as part of a network that includes government entities, business associations and federations, businesses and civil society representatives (at the national and European levels), and contribute in a permanent and active way, so that the flow of information among all these entities establishes a balance that everyone can benefit from.

In practical and concrete terms, APEQ has deepened its relations with governmental bodies,

nourished its links with the European Chemical Industry Council (CEFIC), in order to be closer to the decision-making entities of the European Union, worked closely with the Confederation of Portuguese Industry (CIP), direct interlocutor of the Portuguese Government, and improved connections with its members.

Also important is the effort to move closer to civil society, within the principle that mutual knowledge undoes misunderstandings and creates bonds, both among people and corporate bodies.

With reference to relations with associates, it is worth mentioning the creation of new permanent working groups, operating simultaneously as a vehicle for the transfer of information and as consultants for APEQ, enriching it with the knowledge accumulated in the various companies in areas of common interest. Since October 2013, five new groups have joined the GSSA (Safety, Health and Environment Group) – which has been dealing for many years with aspects related to safety, health and environment, the Human Resources forum, and an industrial gases sector group, four of which (Energy, Industrial Emissions, REACH, and Transport) in areas prioritized in a previous investigation by the members themselves, the fifth being a group aimed at specific issues of medicinal gases producers.

APEQ hopes their work will continue to be a contribution to help decision-making entities and society in general look at the Chemical Industry as a key sector to human progress, and not as a sector that, if not kill, at least to repress and limit.



SAFETY PERFORMANCE OF CQE COMPANIES

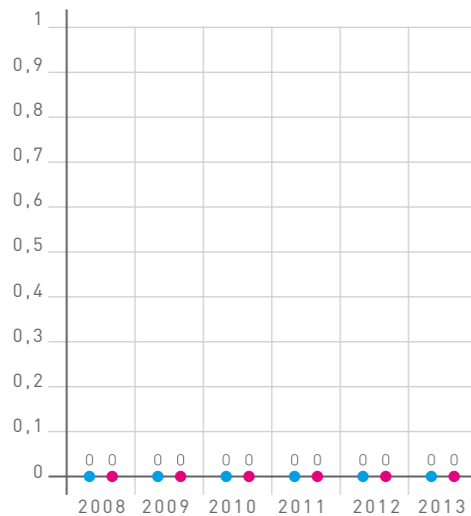
ACCIDENTS INDEXES

In line with previous years' trend, companies of the Estarreja Chemical Complex (CQE) recorded very low rates of severity and frequency of accidents in 2013, most of them null. The results presented express the continuous improvement that companies – either alone, complying with regulations and internal educational programs, or together, creating synergies and conducting joint trainings through the risk prevention work-

ing group of PACOPAR, – perform in their occupational health and safety systems. The expressed indicators reflect the relation between accident and working time. The accident frequency rate represents the number of accidents resulting in absences occurred in a year for each million person hours worked. On the other hand, the severity rate represents the number of workdays lost per year for each thousand person hours worked.

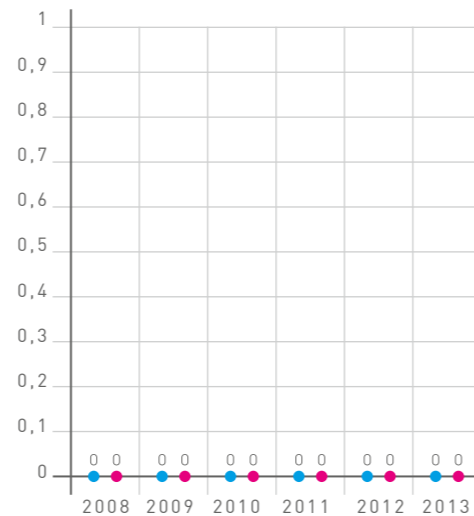
AIR LIQUIDE

In 2013, just like in previous years, no accidents were registered. The value of the indexes is therefore zero.



AQP

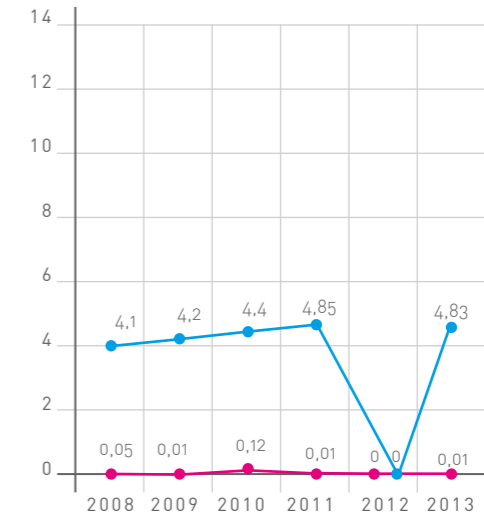
No accidents were registered in 2013.



● Accident frequency index
● Severity Index

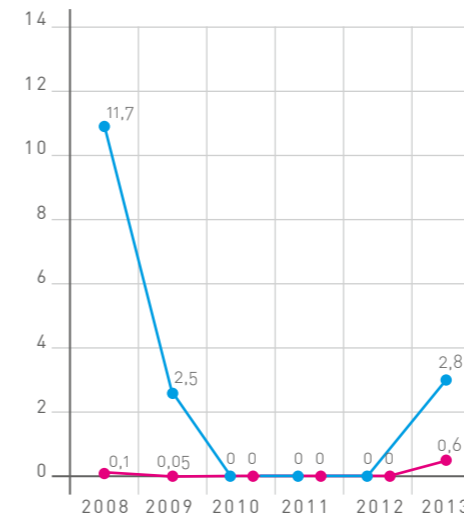
CIRES

One accident with sick leave, resulting from a laboratory technician falling while going down the stairs of the laboratory, was registered.



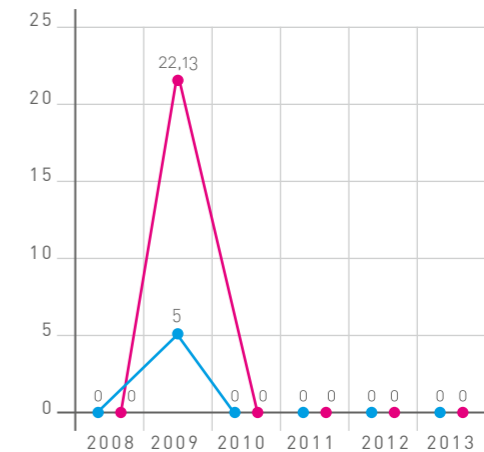
CUF

The indexes dropped slightly in 2013 due to the occurrence of one accident.



DOW

In 2013, no severe accident with personnel was registered at Dow Portugal. We proceed with all our programmes and procedures in order to achieve the "0 accidents" target as a long lasting reality.





ENVIRONMENTAL PERFORMANCE OF CQE COMPANIES

In terms of environmental performance, the rates presented register a particular decrease in energy consumption and atmospheric emissions for most companies, with the exception of slight increases. In some companies' solid waste production, the particular increases relate to plant shut down situ-

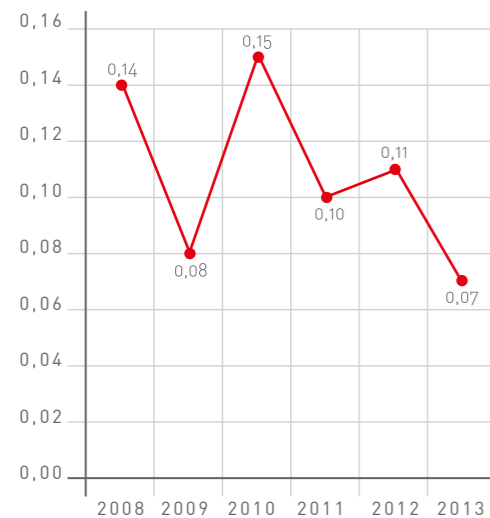
ations for the purpose of maintenance work interventions, and to the change in the waste treatment form. The case of the registered increase in atmospheric emissions follows the increase in production. Note that, despite the verified increases, all values are within the legal emission limits.

The environmental performance rates are calculated by relating the production quantity to the emissions and consumption amount. Air pollutant emissions relate the total emissions of particulates, nitrogen oxides, carbon monoxide, and volatile organic compounds to the production total. The solid waste indicator represents the relation between the production total and the waste production total. The water and energy consumptions are respectively represented by the relation between water (m3) and energy (MJ) consumed and the production amount (in tons). You can check all the environmental performance indicators for the CQE companies on PACOPAR's website (www.pacopar.org).

AIR LIQUIDE

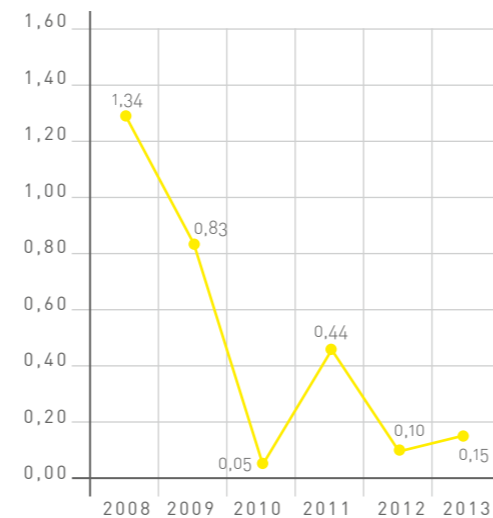
ATMOSPHERIC POLLUTANT EMISSIONS

In 2013, a decrease in gaseous emissions was registered compared to the previous year, as a result of the annual shutdown in September. A reduction of 2.16% in produced tons was registered.



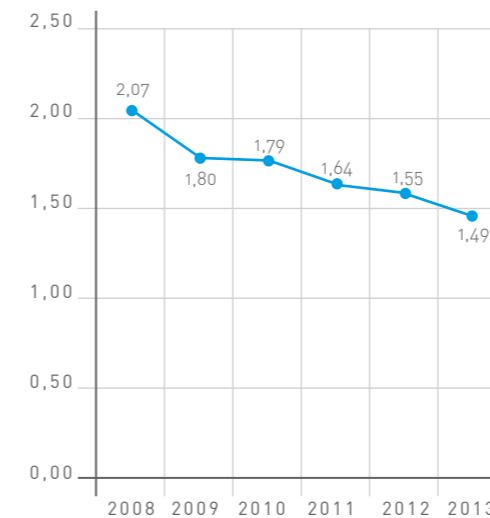
SOLID WASTE

In 2013, generated solid waste increased by approximately 49%, due to the annual shutdown.



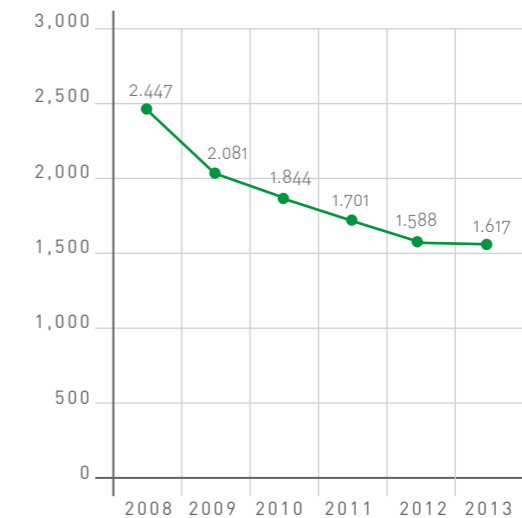
WATER CONSUMPTION

In 2013, due to the annual shutdown, water consumption decreased by 3.8% compared to the previous year.



ENERGY CONSUMPTION

In 2013, despite a decrease in production, an increase in energy consumption is observed. This is due to the proportion of the manufactured products.

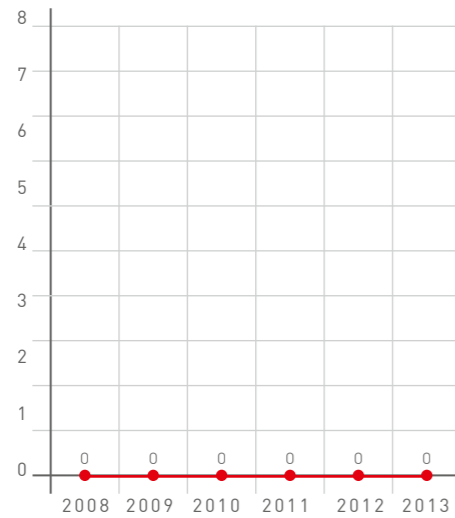




AQP

ATMOSPHERIC POLLUTANT EMISSIONS

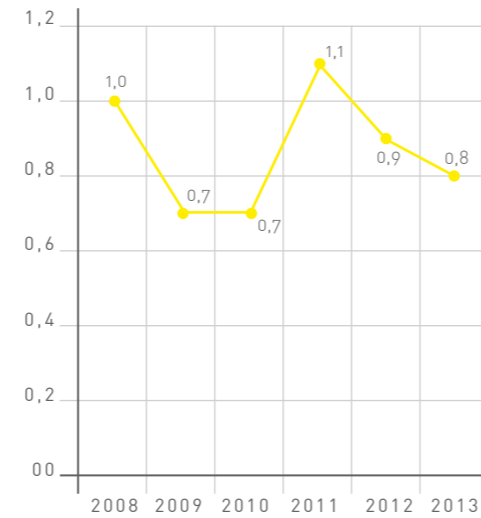
In 2013, emissions continued at very low levels.



● Emissions Kg / production ton

SOLID WASTE

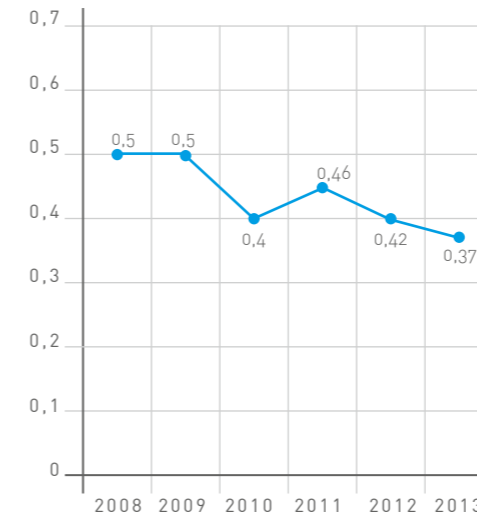
In 2013, a small decrease of the quantity of produced waste was registered, compared with the previous year.



● waste Kg / production ton

WATER CONSUMPTION

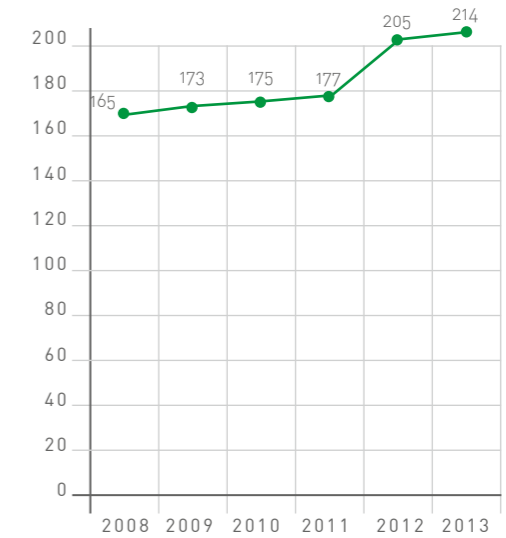
Following the previous years trend, a small decrease in water consumption is registered.



● Water (m3 / ton)

ENERGY CONSUMPTION

The increase in energy consumption is due to a higher consumption of natural gas in the steam production, by the company producing this energy.

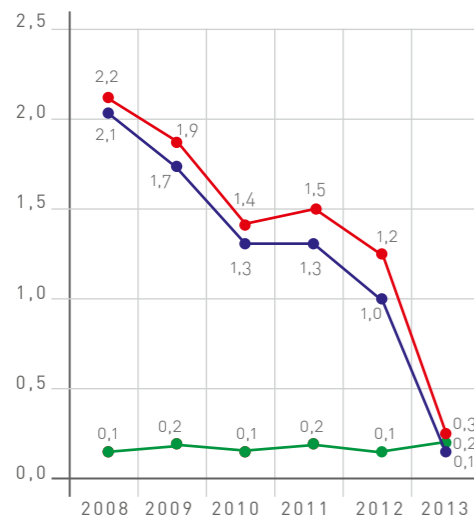


● Energy (Mj / ton)

CIRES

ATMOSPHERIC POLLUTANT EMISSIONS

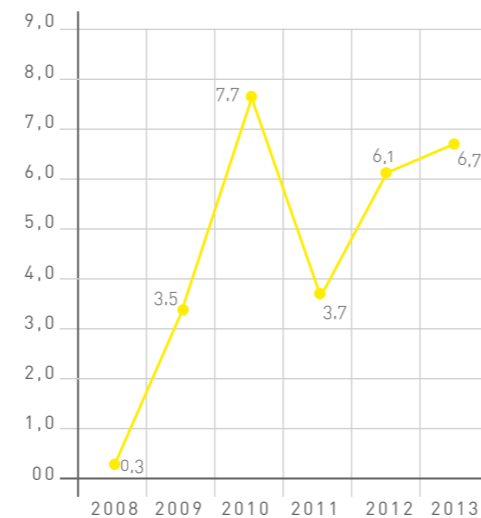
The cessation of electricity production by cogeneration justifies the great reduction of the emissions at BAMISO, which are now only related to steam production.



● Emissions Kg / production ton
● CIRES contributions ● BAMISO contributions

SOLID WASTE

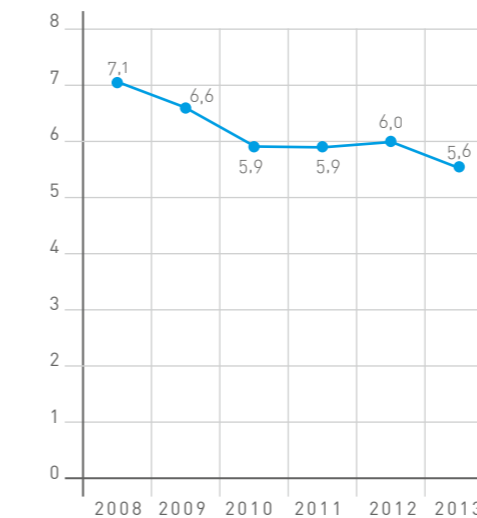
Around 96% of generated waste, mostly innocuous PVC waste, are sent for recovery.



● waste Kg / production ton

WATER CONSUMPTION

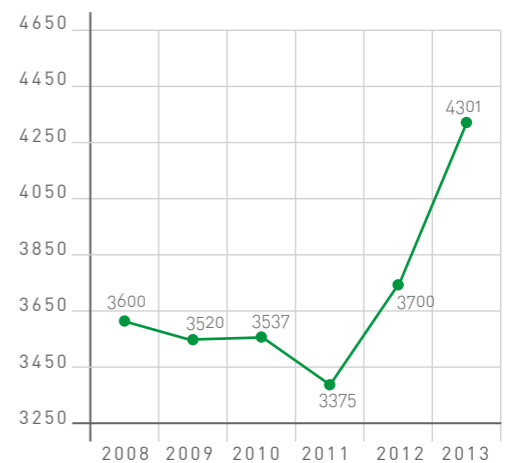
The achieved reduction in specific water consumption resulted from the partial recycling of the effluent for reuse in the process.



● Water (m3 / ton)

ENERGY CONSUMPTION

The increase of specific energy consumption, which translated into a higher natural gas consumption, was due to the cogeneration unit's shutdown (partially in 2012 and totally in 2013). The higher energy consumption corresponds to a pollutant's emission decrease.



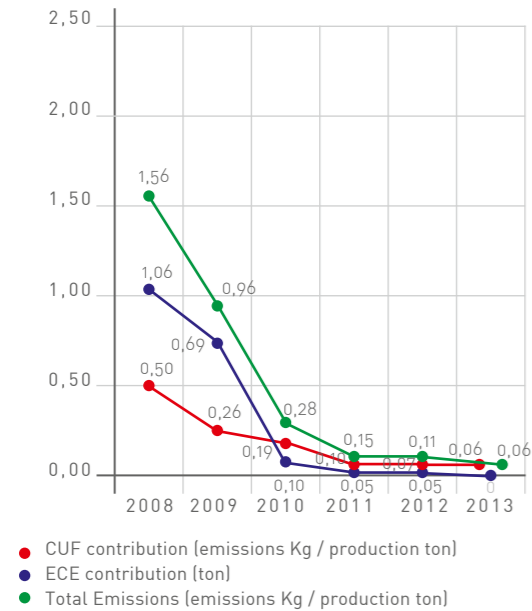
● Energy (Mj / ton)



CUF

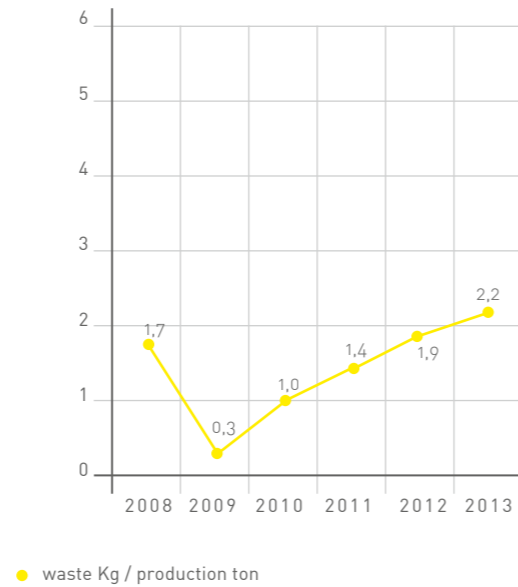
ATMOSPHERIC POLLUTANT EMISSIONS

The specific emission of pollutants, despite very low in recent years, also noted a slight improvement in 2013.



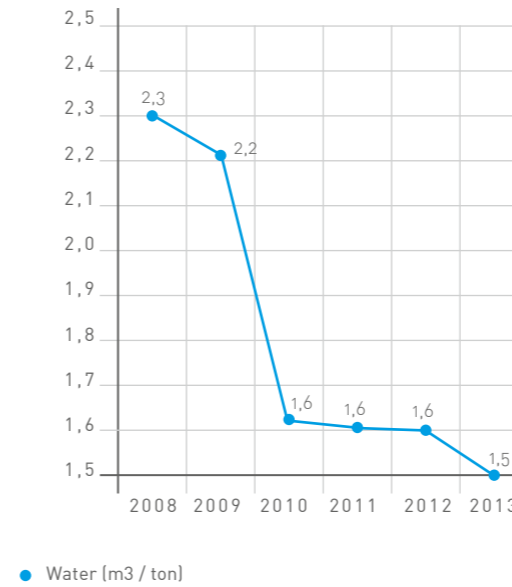
SOLID WASTE

The increase of the solid waste index, in 2013, is due to the sending of one waste to external treatment, which previously was subject to thermal decomposition in CUF-QI facilities.



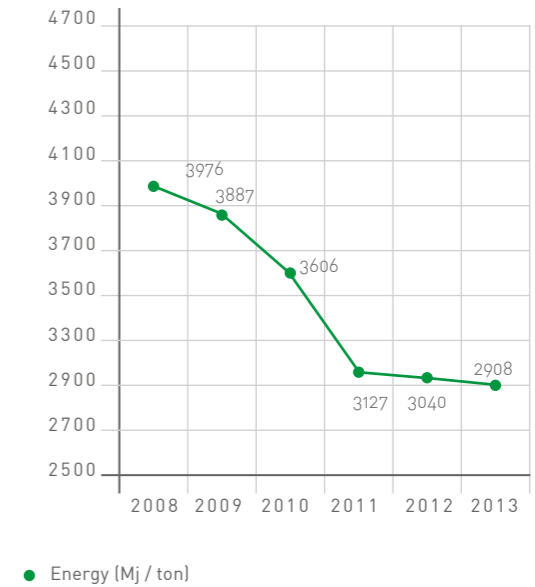
WATER CONSUMPTION

The specific water consumption continues to show low values, having even recorded an improvement in 2013.



ENERGY CONSUMPTION

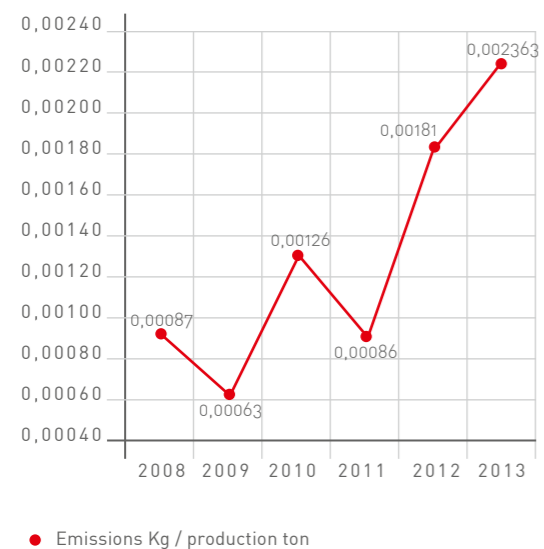
The specific energy consumption registered a new decrease in 2013.



DOW

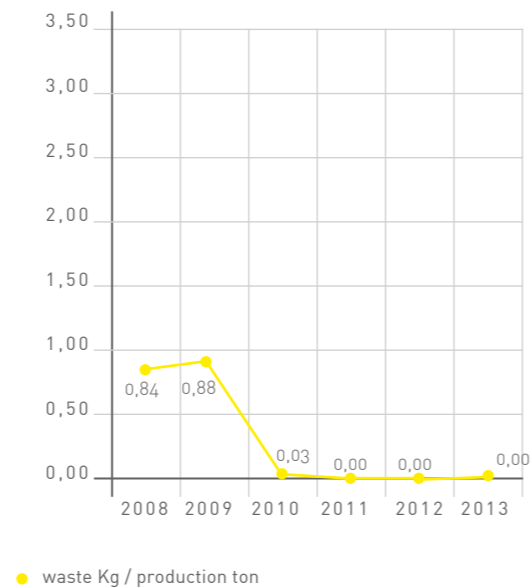
ATMOSPHERIC POLLUTANT EMISSIONS

The emission's increase reflects the growth of the production volume. Dow has a monitoring programme in place that allows to control the emission of pollutants into the air and no case of exceeding the limits allowed by law has been registered.



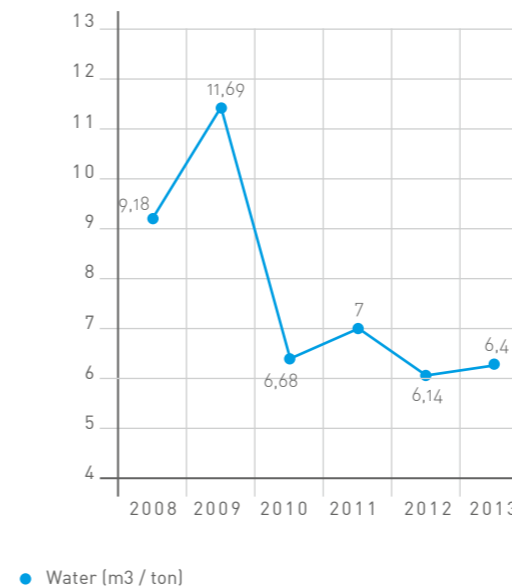
SOLID WASTE

Waste management is more and more optimized, giving priority to waste recovery solutions. Consequently, in 2013, no hazardous waste was deposited in the landfill.



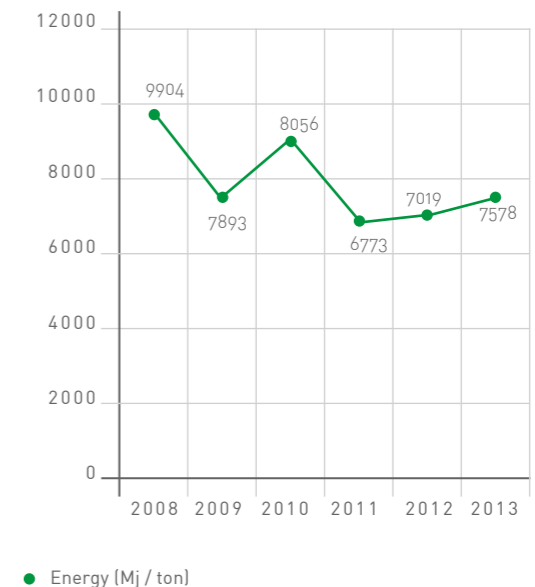
WATER CONSUMPTION

Specific water consumption has been optimized in the process. Improvements regarding this ratio are expected to come in the next years.



ENERGY CONSUMPTION

Despite a slight increase, the consumptions of natural resources, as natural gas, have been optimized.





BREVES DO PACOPAR

PACOPAR COMPANIES SUPPORT 19 PROJECTS WITH 73 THOUSAND EUROS

Fulfilling PACOPAR's annual donation program, Air Liquide, AQP, CIRES, CUF-QI and Dow chemical companies delivered, on March 14th, 2013, financial support in the amount of EUR 72,770 to 15 entities in the municipality of Estarreja. The donation was allocated to 19 projects in the social, educational, and civil protection areas, with the goals of contributing to the pedagogical improvement of schools, service improvement and equipping of private institutions of social solidarity, of civil protection capacities, and to the construction and maintenance of social housing.



AVEIRO'S FIREFIGHTERS VISIT PACOPAR

In May 2013, PACOPAR received Aveiros's fire brigade authorities for a seminar and visit to the chemical companies. Held in partnership with Estarreja's City Council, the initiative sought to contribute to the improvement of the articulation between the Estarreja Chemical Complex (CQE) and the district civil protection in terms of emergency response. The seminar addressed Estarreja's External Emergency Plan and the internal emergency plans of the chemical companies, being followed by a visit to the production units of the latter.



UPDATED MEDICAL EMERGENCY FOLDERS

PACOPAR delivered medical emergency folders containing safety data sheets of all chemicals used in the Estarreja Chemical Complex (CQE) to hospitals in the region. The documentation, delivered in May 2013 to the Infante D. Pedro (Aveiro) and São Sebastião (Santa Maria da Feira) hospitals, and to the INEM, is the result of a project developed in over a year within the scope of the Panel's risk prevention goals. All chemicals handled in the CQE, with their respective chemical, physical, and toxicological characteristics, inherent risks, signs and symptoms of human exposure, and measures in case of an emergency, are identified in the folders delivered. The delivery took place during a seminar held to the medical community on the chemicals handled in the manufacturing plants.



PACOPAR'S FAMILY WALK HELPS CERCUESTA

Organized in partnership with Estarreja's City Council, PACOPAR's Family Walk was held in May 2013, combining a supportive goal with the incentive to the practice of physical exercise. The money raised with the event's entry fees, about 400 euros, was donated to Cerciesta. The initiative brought around 230 people together, who left the Antuã Municipal Park towards Salreu to walk the BioRia course. The participants received a t-shirt, a cap, and a bag for the walk, which ended with a picnic lunch. The initiative was part of PACOPAR's 2013 activities plan, with the support of the logistical organization from the Municipal School of Sports.





FIRST SAFETY AND CIVIL PROTECTION CYCLE OF CONFERENCES

Dedicated to the theme "Safety in Sites covered by the Seveso Directive," the First Safety and Civil Protection Cycle of Conferences was held in November of last year, organized by ISCIA (Superior Institute of Information and Administration Sciences), in partnership with PACOPAR. Among the speeches from several specialists in environmental protection, industrial risk prevention, civil protection, and regulation affected by the Seveso Directive, was the speech from the Risk Prevention Group "PACOPAR: involvement with the community of an industrial reality." The event was attended by approximately 90 people. After the morning seminar, some participants were greeted at Dow Portugal, which they visited, followed by visits to Air Liquide, CIRES, and CUF-QI.



PACOPAR LAUNCHES PRACTICAL GUIDE TO GREEN SPACES

Last year, PACOPAR launched the digital edition of a Practical Guide to Green Spaces with the goal of giving advice and promoting practices for the maintenance and preservation of green spaces. The guide was prepared by the Working Group on Environment Landscaping. Throughout its 34 pages, it provides guidelines for the various steps of maintaining a green space, from how to make the analysis and site selection, soil preparation, to planting a lawn, trees or shrubs, irrigation and drainage, fertilization, pruning, including guidelines for the disposal of garden waste using burning or composting methods. The Guide can be viewed and downloaded from the PACOPAR website, "Community" page, "About PACOPAR" menu.

PACOPAR WELCOMES SPECIALIST IN RISK MANAGEMENT

Last year, PACOPAR received the visit of an expert from the Technical University of Ostrava (UTO), Czech Republic, who came to Estarreja to learn about the civil protection system in which the Chemical Complex is integrated. Marek Smetana is a UTO professor and expert in the area of emergency and risk management, conducting studies on the subject in many countries. CIRES, under the leadership of the then coordinator of the Working Group for the Prevention of Risks, was the hosting company that received the University of Aveiro (involved in the professor's visit to Portugal) and Marek Smetana, to whom the community Panel and its activity in the Responsible Care® and risk prevention contexts were presented.

SANTA CASA DA MISERICÓRDIA HONOURS PACOPAR

Last year, in celebration of its 78 years, Santa Casa da Misericórdia honoured PACOPAR as benefactor entity of the institution. The honour was given in the nursing home lobby, with the unveiling of a plaque listing the institution's donor entities. "Your continuous donations allow us to provide a better quality of life and well-being to our patients," said the care provider Rosa de Fátima, highlighting the importance of the "commitment of the volunteers, who, with heart and soul, dedicate themselves in a spirit of mission," and "the generosity of benefactors and donors, who minimize the most difficult economic conditions with their contributions."



SEMA ADDS CER AVEIRO PARTNERSHIP

SEMA was one of the signatories of CER Aveiro (Business Council for the Aveiro Region), a consortium comprised of nine business associations of Aveiro's NUT III region. The agreement was signed on December 13th, 2013, intending to constitute a network and partnership among business associations, intermunicipal communities, and scientific entities. SEMA's integration in the CER Aveiro is more an expression of its mission, evidenced in the continuity of a work developed over 18 years, for the benefit of the local and regional economies, with special emphasis on monitoring the activities of its members. In 2014, SEMA supports the growth of the business association movement, through the partnership established with CER Aveiro, proceeding with the practical business support activity, namely: continuing to provide training according to the needs of the companies, adjusting the offer to the demand expressed by economic agents, focusing on obtaining value from employee training; giving administrative, legal and financial support, helping economic agents find appropriate solutions to meet needs and solve problems; maintaining and enhancing the provision of services in the fields of environment and quality, particularly in Food and Environmental Quality levels.



WORKING FOR AN INCREASINGLY MODERN AND SUSTAINABLE MUNICIPALITY

The new mayor wants to “make Estarreja an increasingly modern and sustainable municipality in economic, environmental, and social terms.” Diamantino Sabina took office on October 18th, 2013, aware of the “hard times” but “with great hope and desire to work.”

In the eyes of the new municipal leader, elected by the Querer Mais (Want More) PSD/CDS-PP coalition, “The hard times are the ones that create the greatest challenges and opportunities, give us even more encouragement to work... Do more with less, that is the final goal!” The new mayor faces “days in the municipal management that require creativity and imagination, an entrepreneurial and sustainable sense, earning increased attention from people. A regimen that I shall comply with, thereby building together an increasingly better community.”

Highlighting the “cultural, sports, and educational offerings” and indicating the strengths that characterize the municipality from the “glow of our associativism, of BioRia’s modern Eco-Business Park, of the quality of the road network connecting municipal parks and Civic Centres in the neighbourhoods,” Diamantino Sabina concludes that “It is good to live in Estarreja!” This challenge

now requires increased effort, because “We want more for our municipality. Always more!” Addressing all the elected, he wished “a successful term.” “Let’s have an exemplary term, let’s all do it for our land! Let us lift up the name of this municipality of Estarreja.”

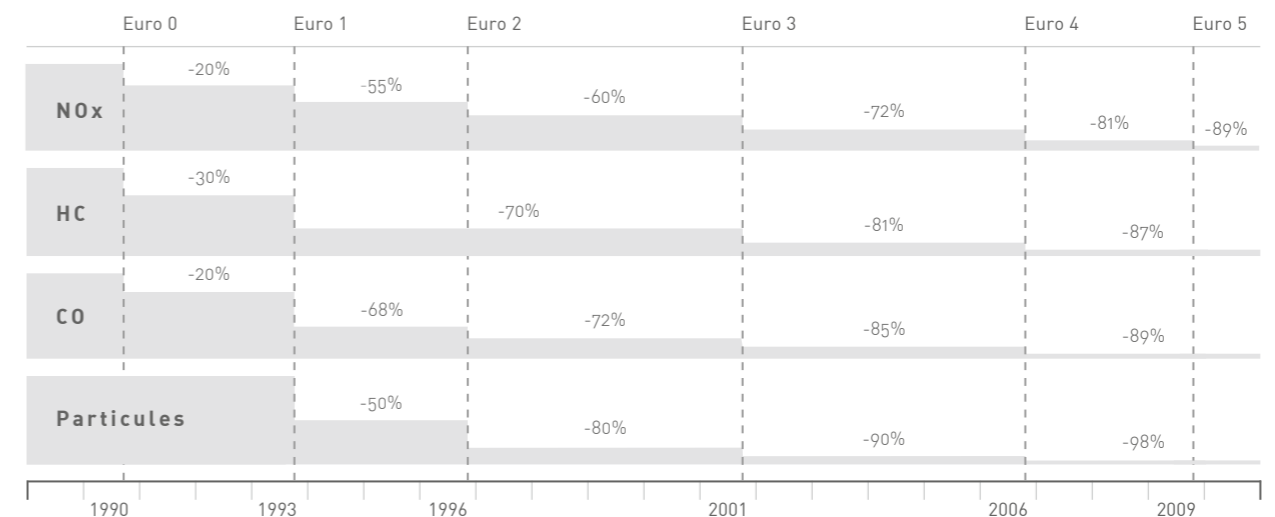
The City Hall was small to accommodate the people from Estarreja who wanted to attend the inauguration ceremony of the Municipal Organs, Assembly, and Council for the 2013-2017 Municipal Mandate, following the elections held on September 29th.



TJA TESTS VEHICLES ACCORDING TO THE EURO 6 STANDARD

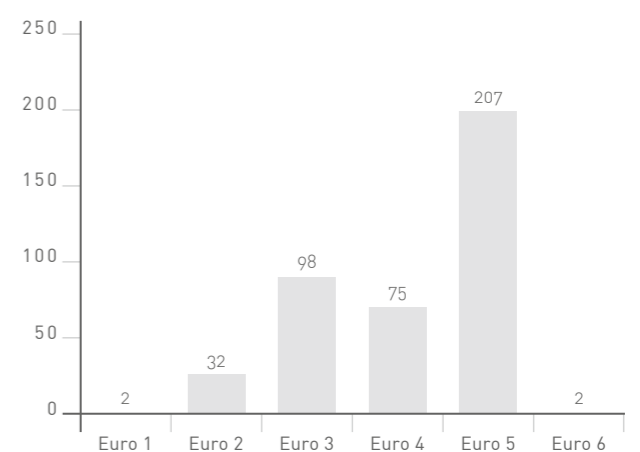
The validity of the Euro 5 European emission standards (in effect since October 2009) has expired. In January 2014, the Euro 6 standard came into effect, requiring the vehicles registered from that date on to comply with the new noise, pollutants, and greenhouse gases emission regulation at the European level, an element of the community transportation policy. In partnership with Renault-Trucks, the TJA has two Euro 6 pre-series test vehicles in its fleet (white vehicles still camouflaged).

It’s been a long way since the introduction of the Euro 0 standard in the early ‘90s, with the main purpose of reducing pollutant emissions of certain gases and noise produced by engines. Consequently, technical improvements allowed a better utilization of the vehicles in terms of actual consumption and dynamic performance. The reduction of main pollutants is visible in the graphics presented (NOx – nitrogen oxides; HC – hydrocarbons, CO – carbon dioxide).



European goals regarding the reduction achieved according to pollutant and Euro standard (up to Euro 5).

With the Euro 6 technology, the intention is to further reduce these indicators, leading to the “marriage” between two major technological lines adopted to meet the standards up to Euro 5. The integration of the two systems (EGR - exhaust gas recirculation + DPF – particulate filter, and SCR – selective catalytic reduction through the reaction with adblue) will raise various issues regarding the vehicles acquisition cost, maintenance and consumables, as well as those related to the increased complexity of electronic control systems for the engine and other parts of the vehicles. However, these solutions also aim to monetize the actual consumption of the vehicles and improve their dynamic performance.



Composition of the TJA fleet, according to the vehicles complying with the various European standards. In total, the company owns approximately 420 vehicles.



QUINTA DO RIBEIRO DA LADEIRA'S EDUCATIONAL FARM

“A SOCIAL AND ECOLOGICAL UNIT FOR ALL”



The harsh winter did not allow the landscape to be seen in all its splendour, but the enthusiasm of those who dedicate themselves to the implementation of the Quinta do Ribeiro da Ladeira's Educational Farm suggests a mix of colours, smells, and sensations that will transform it into an “educational space and a social and ecological unit for all.” The Educational Farm is an initiative of Cerciستا, with the goal of providing the community with an alternative for education, work, and leisure, through an approach to agriculture, ecology, and practices and traditions of the rural lifestyle.

“Here, we will grow vegetables, we already have some,” explains Maria de Lurdes Breu, president of Cerciستا. In the brook that runs through the

farm, “we will grow watercress.” On the other bank, “we will be planting cereals to recreate the bread cycle. From sowing the corn seeds, to harvesting, husking, taking it to be ground, and having our bread made here.” We are passing through the area of the future sensory garden, “with elevated crops, so that older and disabled people can touch, smell, and realize that they have more than five senses.”

Several fruit trees dot the landscape. “We must grow kiwis fast, children love this fruit,” says Lurdes Breu, revealing that one of the project's intentions is for Cerciستا to become self-sufficient in terms of horticultural supply. There is also a place for composting, which receives all the organic waste from the institution. “We are producing organic compost to be used here. We intend to practice ecological farming, as was once done with the use of moliço (Portuguese word for the submerged aquatic vegetation collected for use in agriculture as fertilizer), while promoting an educational ecology,” says Duarte Esmeraldo, volunteer responsible for coordinating the farm's agricultural project.

Located in Salreu, Quinta do Ribeiro da Ladeira was donated by Father João Antão to Cerciستا, which intends to transform it in an educational farm. The project for its 6,000 square meters includes the creation of a green house, sensory garden, educational garden, orchard, stall for goats



ready develop weekly activities on the farm. “It is a very difficult class. Besides learning, it is a therapy for them. They learn everything from producing, pruning, separating, weighing, and taking home,” explains the institution's president. The ultimate goal of the farm is to “turn it into an educational and ecological space, open to the community. The farm belongs to everyone who enjoys being here in contact with nature.”

The plans for the future are to open the space to the general population for moments of leisure. For “birthday parties or other small celebrations, to anyone who wants to spend their free time in contact with nature, for parents to bring their children. For sports activities, our teacher can be made available, to anyone who wants to learn how to plant a garden, or has something to teach in this subject,” suggests Maria de Lurdes Breu. The project is still being implemented, and thus not all features are yet accomplished, but in the future, whoever plans to “live” this space, shall contact Cerciستا.

PLANNED ACTIVITIES

Regular:

Organic farming; greenhouse crops; educational garden; sensory garden; composting; bread workshop; jams workshop; pottery workshop; discover the farm animals.

Seasonal:

Building scarecrows; building bulrush mats; construction of straw dolls; traditional husking; making the folar da Páscoa (Easter cake); Magusto de São Martinho (a fall festival celebrated on November 11th, St. Martin's day).

and pigs, cages for birds, wood oven, a meadow, and several workshops. Assumed as an inclusion project, the Educational Farm will work together with school groups and IPSS (social solidarity private institutions) of the municipalities of Estarreja and Murtoşa. The main goal is to contribute for the inclusion and education of young people and adults of Cerciستا and other educational and social support institutions, “developing their professional, social, and personal skills through contact with nature and the practice of agriculture,” says Maria de Lurdes Breu.

Open to the community

Arrangements with school groups have already been made and some students from Estarreja al-

CONSTRUCTION OF TEMPORARY SHELTER

Quinta do Ribeiro da Ladeira, part of the estate that Father João Antão donated to Cerciستا, contains yard/garden, vegetable garden, and aromatic garden spaces. Cerciستا plans to build a temporary shelter for social purposes on the land adjacent to the farm. The home will have 6 bedrooms and will receive customers and others with weak family support. The shelter project is almost finished. The campaign to raise funds for its construction is already taking place.



INTEGRATED IN THE CITY FESTIVITIES

OLD MARKET BRINGS BACK MEMORIES OF THE LOCAL TRADE



Held every year in June, it intends to portray local buying and selling traditions, as well as habits of everyday life in the Estarreja community of the first half of the last century. The Old Market, recreated annually by the Estarreja City Council (CME), brings historic period costumes and typical regional products, from food to crafts, to the heart of the city. The recreation of the Old Market offers us the simple and spontaneous solutions that the community would find in the local market, at a time when people didn't talk about sustainability, but simply practised it.

Integrated into the program of the Festivities of Santo António, the town's patron saint, the Old Market is held in June, on the same site where it originally took place, in front of the City Hall. The Francisco Barbosa Square becomes filled with vendors, between 70 and 80 of them, who invite visitors to travel back in time, offering traditional products from Estarreja and period costumes. There you can buy everything grown in the region, from fruits and vegetables to cereals. Honey from

Terras do Antuã, rice from Salreu, liqueurs, bread and broa (corn bread) are available to buy and take home. The products are displayed in wicker baskets, since plastic didn't exist in the commercial exchanges of the beginning of the twentieth century. After all, even though the Market is Old, it leads the way in the environmental movement by teaching a lesson to the current marketing of the supermarkets that try to reduce the availability of plastic bags.

The weighing is done using twin-pan or lever arm balances, since digital scales do not enter this Market, which has taken a key role in the local economy and in the sale of surplus agricultural products. It was a time when the vendor would put the money in the cloth bag hanging from the wrist or in the apron's pockets. Time when men's and women's clothes were made of burlap and linen, when blouses were adorned with lace, headscarves and "gold necklaces" were worn, showing the feminine vanity inhibited by the farm chores, but encouraged in public events.

The craftsman is also there, selling baskets of straw and wicker, and enclosing demijohns in wickerwork. Wooden wheelbarrows and various leather utensils are sold. There, you can also find the rug weaver. You can buy yourself a "gigo" (wicker basket) or a "mona" (large spinning top). And there are plenty of snacks, since a visit to the market was also an excuse for a little chat here and there, to stay informed about the latest local news. Moreover, the Market was a meeting point for socializing, and therefore, it was necessary to "matar o bicho." This is a well-known Portuguese expression that means to swallow a glass of aguardente with a big sip in the morning while fasting to "kill the bug that is tingling in the stomach." What a commercial centre from the old times! The typical cuisine is at your disposal: eels, rojões (seasoned pieces of fried pork loin) made with steak, cod cakes, black pudding and meat chorizo are delicacies that abound there.

"Estarreja, until recently, lived mainly from the agriculture and there was compatibility between agriculture and industry. These activities are being recalled in the Old Market, where in addition to the sale and display of typical products, there is also the recreation of the most important agricultural activities, such as the harvest of maize and reed, the making of mats," explains João Alegria, commissioner of cultural affairs at the CME.

The recreation of the Old Market is accompanied by a parade in which, besides the historic costumes, we can see a herd of Marinhoa cows, of great importance to the agriculture (article "Fair trade and sustainable farming"), and the peasants with farming utensils demonstrating the manual techniques for the harvest of cereal, now replaced by mechanized activity. The goal of recreating the Old Market is to revive and offer people an active role in the recovery of the collective memory," says João Alegria, pointing out the importance of the local businesses to the municipality's economy.

Being one of the "biggest attractions of the town's festivities," the Old Market counts with the participation of farmers, vendors, artisans, and several local communities, attracting not only residents, but also visitors from outside the municipality. In June, on the occasion of the Santo António festivities, switch from the commercial centre to Praça Francisco Barbosa, in Estarreja.





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