SmartGreen Post
News from the environment

SUSTAINABLE CHRISTMAS: AN OXYMORON?

LIFESTYLE
How to reduce energy waste at Christmas

CULTURE
A journey into the world of trees through past, present and future

GREEN TECH
All colours of hydrogen

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SmartGreen

News about the environment **Post**

SmartGreen Post is a blog on the green world, from climate change to separate waste collection. You will always be updated on news from Italy and the world, on the environment, green economy and new technologies. In addition, you can find our tips for a more eco-friendly and healthy lifestyle, as well as a section dedicated to sustainable tourism.

SmartGreen Post is part of a larger Green project that includes SmartRicicla, the separate collection app available in Italy, the United Kingdom, Ireland, Australia, Canada and the United States of America. You can download the app directly on the Play Store. For more information visit the website www.smartricicla.com

SmartGreen Post wants to be a small contribution to the protection of our planet, because to prevent catastrophe it is necessary to know and then act, each in his own small way, with simple but highly effective gestures.

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Sustainable Christmas: an oxymoron?

Today is Christmas and we at SmartGreen Post give you the tenth issue of our magazine, full of food for thought on various green issues and in particular on how to live the Christmas holidays in an eco-friendly way. At Christmas, in fact, people eat a lot, buy a lot and throw away a lot. Many good intentions, such as avoiding waste, are neglected more than ever at this time of year. So, is a sustainable Christmas possible? Of course, it is! We simply need to change some of our wasteful habits.

Marisa Silvestri

Translator and interpreter (IT, EN, DE, FR, ES), professor of German language at the University of Basilicata and at the Scuola Superiore per Mediatori Linguistici della Basilicata. She graduated in languages in Italy and in journalism at the Eberhard Karls Universität Tübingen. She wrote for German newspapers, worked as a multilingual copywriter for advertising agencies, collaborated with important publishing houses and with companies in the renewable energy sector. The 15 years of life abroad, in environmentally sustainable countries, such as Switzerland and Germany, shaped her green nature.

What appears to be an oxymoron is actually not. It is possible to live Christmas to the full without making any sacrifices and without damaging the environment that surrounds us by, for example, encouraging the use of organic Christmas trees, eco-sustainable Christmas decorations, low-energy lighting, do-it-yourself gifts, possibly with recycled packaging, and preparing Christmas Eve dinner and lunch on 25th December using local products.

Organic, regional or rented Christmas trees

Millions of Christmas trees are sold every year. To meet the demand, insecticides, pesticides and mineral fertilisers are often used to make the fir trees grow as fast as possible.

Unlike conventional trees, organic Christmas trees grow in mixed cultures. This makes them less susceptible to pests and the areas are not treated with pesticides. Sheep graze on many of these mixed cultures and their manure serves as a natural fertiliser. The organic Christmas trees come from farms certified according to the criteria of organic farming (e.g. Bioland and Naturland) or ecological forestry (e.g. FSC).

The Nordmann spruce is by far the most popular Christmas tree in Europe. But what hardly anyone knows is that the seeds come from Georgia. These are collected from the tops of fir trees, a dangerous job that causes deaths every year. Therefore, when buying Christmas trees, it is best to choose regional tree species. This also supports local forestry operations and avoids long transport routes.

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For some years now, it has been possible to hire Christmas trees from nurseries, garden centres or online. The principle is simple: you choose a beautiful tree, it is delivered to your home or you collect it yourself, the tree is set up and decorated in your home and collected after an agreed time.

100% natural Christmas decorations

If you take a walk in the nature, as well as being good for your physical and mental health, you will find many materials that can be used as natural Christmas decorations: twigs, fruit, moss, nuts, chestnuts, fir branches and pine cones. Christmas tree decorations are also easy to make yourself: dried orange and apple slices, homemade straw stars and salt dough biscuits. Why not add a Christmas scent to your home with cloves, cinnamon sticks or oranges?

Low energy Christmas lighting

During the Christmas period, it is impossible to give up the magic of Christmas lights that make us all dream and warm our hearts, bringing back memories and dreams of our childhood. However, the waste of electricity from the beginning of December until the Epiphany is excessive and should be avoided.

The lights we love so much disturb nocturnal animals, migratory birds and even insects in their natural behaviour.

By using LED lights with smart sockets and timers and setting a reasonable on/off time or, even better, using solar batteries we are doing good for our souls without harming the planet.

Christmas gifts: giving time instead of things, giving homemade items or giving a gift to the Planet

What does sustainable gift-giving actually mean? Giving a sustainable gift means giving someone an object that they can enjoy for as long as possible and that does not harm the mankind or the environment. Many people have too much stuff. In the wardrobe, in the cellar or in the attic, we have too much everywhere. That's why we don't need the tenth pair of socks or the fifth scarf at Christmas. Give the gift of time: give some of your time to others by sharing pleasant moments. Why not simply give the gift of a gourmet dinner with local produce, a nature walk or a day at the spa?

A homemade gift is a personal gift that everyone will love. With a little creativity and time, you can make wonderful Christmas gifts for family and friends. Whether these gifts are for the palate, the body or to preserve good memories is up to you. Culinary gifts can be sweet and savoury spreads, chocolates, or snacks such as roasted almonds. But also home-made body care products such as lip balm or body butter are usually appreciated. Homemade scented candles, bookmarks or photo calendars are always a welcome gift.

With a donation you can help others and also our planet. In principle, it is very simple: you choose a project, make a donation in the name of the recipient, and the recipient then receives a 'donation receipt'. For example, you can donate a tree via Treedom, a beehive via 3Bee, an endangered animal via WWF or a small area of glacier via GLAC-UP.

Sustainable packaging: reuse wrapping paper, recycle old paper, use alternative packaging

An enormous amount of waste paper is produced every year at Christmas. There are no official statistics on how much waste is produced at Christmas. However, assuming 100 grams per Italian citizen, 6000 tonnes of packaging waste is too much. Moreover, not all paper is the same. Packaging paper is often coated with aluminium or plastic, which requires a lot of energy during production and also a lot of effort to recycle.

Why buy wrapping paper when it's super easy to reuse? Just open the gift carefully so as not to tear the wrapping paper and reuse it the following year. Unsightly edges can be folded or cut off. Old newspapers, maps, calendar pages, book pages or sheet music can be used as wrapping paper in an original and economical way. Decorated with a nice bow and a bit of fir or mistletoe, the old paper becomes a beautiful gift box.

If you are a craft enthusiast and have some time on your hands, you can easily make your own wrapping paper. Baking or wrapping paper is great for printing and painting. Potato stamps can be used to create beautiful patterns, but watercolour can also be used to turn any wrapping paper into a small work of art.

Clothing such as socks, scarves, hats and shirts are particularly suitable for "wrapping" or better containing smaller gifts, perhaps with the simple addition of a pretty bow - a kind of gift within a gift. Old biscuit tins or jam jars can be quickly and easily converted into gift boxes. This saves time and money and is good for the environment.

Christmas Eve dinner and Christmas lunch

As far as the menu of 24th and 25th December is concerned, it is advisable to look at the seasonality of foods, for example lasagne with radicchio, pumpkin or artichokes; with red turnips you can make sauces in which to dip croutons for a tasty appetiser; with broccoli you can make tasty savoury muffins or again with pumpkin you can make mouth-watering flans. If you don't want to neglect a healthy, balanced diet, just follow the valuable advice contained in Greenpeace's Ecomenù.
Last but not least, an eco-conscious person should set the Christmas table with traditional ceramic, porcelain or glass tableware and categorically avoid paper or plastic plates, glasses and cutlery.

We wish you a green Christmas!

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Computer scientist, sensitive to environmental issues, he has carried out various green projects including SmartRicicla, the app for separate collection. He has always been looking for the perfect union between science and art.

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Graphic Design: Stefano Pallitto

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Graphic Design: Stefano Pallitto

Low-emission Christmas: fewer cars in the city, more sales in local shops

As Italians face the possibility of another 'Covid Christmas', a new analysis by the Clean Cities Campaign finds that fewer cars on the road could throw a lifeline to local economies already hard hit by the pandemic.

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Data collected by the European Sustainable Mobility Campaign shows that urban policies that reduce car use in general or specifically aim to reduce the use of the most polluting vehicles – restricted traffic zones and low-emission zones, respectively (1) – can increase Christmas sales. In Madrid, for example, overall spending increased by 8.6% in the area covered by the low-emission zone, compared to +3.3% for the city as a whole during Christmas 2018.

Contrary to what shopkeepers think, customers who walk, cycle or use public transport tend to spend more than motorists. In Berlin, a recent survey found that shoppers who used active or public transport contributed 91% of total weekly expenditure (walking: 61%, public transport: 16.5%, cycling: 13.5%).

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Claudio Magliulo, Italian coordinator of the Clean Cities campaign, commented: "Policies that discourage car use can be a boon for the local economy. Cities where people pollute less and walk, cycle or use public transport more are more popular places to live and where businesses thrive. A triple win for clean air, climate and local businesses.

There are currently more than 250 Low Emission Zones (LEZs) in operation across Europe. Data analysed by the Clean Cities campaign show that when such restrictive policies are combined with strong investments in active and shared mobility, the results are even more positive. A study in Bern showed that converting car parking spaces into bicycle parking spaces led to a 13% increase in retail expenditure per square metre of parking space.

"The experience of small and medium-sized Italian cities – where historic town centres have been preserved for people walking or cycling and local commerce has been promoted – must guide us to take back possession of urban spaces in large cities too, and to do so more and more for the benefit of citizens, commerce and the city itself. Anyone who has to choose where to shop prefers to walk in pedestrian areas or areas with few cars rather than in areas dense with traffic, pollution and noise. Unfortunately, as data from our latest monitoring campaign show, pollution in the shopping streets of Milan, Rome and Naples reaches very high concentrations that are harmful to health. The data presented today show that it is time to change course," explained Anna Gerometta, president of Cittadini per l'aria.

The expansion of low-emission zones has not been halted by the pandemic, quite the opposite. As of 1 January in Brussels, all Euro 4 cars within the city's low-emission zone will be phased out (2). Spain and France have also set the end of 2022 and 2024 as deadlines for all major cities to introduce low-emission zones (3).

Italy, on the other hand, is lagging far behind: despite the establishment over the years of limited traffic zones in many city centres, almost none of these also impose restrictions on the circulation of the most polluting vehicles. Cities such as Milan, where the Move-In service allows polluting vehicles to circulate if they purchase an annual pass, and Turin, where the limited traffic zone is still suspended until the state of emergency continues, can and must be more courageous.

Italy is still subject to several European infringement procedures for poor air quality in our cities. A recent analysis by the European Environment Agency (EEA) confirmed that in 2019 there were almost 64,000 premature deaths in Italy due to the main pollutants: nitrogen dioxide, PM2.5 and ozone. About one in six Europeans who died prematurely due to air pollution was Italian. According to the EEA analysis, if the WHO guidelines on PM2.5 alone had been respected in Italy, 40,000 lives would have been saved.

Youth4Climate 2021: young people as protagonists of their future

There is no planet B, and no planet "Blah". Blah, blah, blah. Our hopes and dreams are drowning in all these empty promises and words". These were the words of Swedish activist Greta Thunberg at the opening of Youth4Climate, the climate conference held in Milan from 28th to 30th September, which opened Pre-Cop 26 and saw the participation of around 400 young people under 30 from the 197 member countries of the UN.

Editorial Board

"Climate change is not only a threat, but above all an opportunity to create a healthier, greener and cleaner planet that will benefit us all. We must strive for a smooth transition to a low-emission economy. There is no Planet B, no Planet "Blah". Blah, blah, blah. Blah, blah, blah. Our hopes and dreams are drowning in all these empty promises and words". These were the words of Swedish activist Greta Thunberg at the opening of Youth4Climate, the climate conference held in Milan from 28 to 30 September, which opened Pre-Cop 26 and saw the participation of around 400 young people under 30 from the 197 member countries of the UN.

During the first two days, the young people, finally involved in the decision-making processes, voiced their concerns, discussed and worked together to draw up a document (which will then be presented at COP26 in Glasgow) consisting of four key points: climate ambition, sustainable recovery, the involvement

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of non-governmental actors and a society more aware of climate challenges. The first point foresees a real involvement of young people in decision-making processes and in the drafting of climate policies, as future policy-makers, administrators and negotiators.

The second point emphasises the need to keep global emissions within the critical threshold of 1.5°C by 2050 (as envisaged by the Paris Agreement) and the urgency of regulating CO2 emissions and supporting the poorest and most vulnerable countries. It also refers to the need to develop and implement nature-based solutions, renewable energies, climate change adaptation policies and the creation of green jobs.

The third point highlights the importance of involving all sectors of industry, starting with fashion, sport and art, which must make a concrete commitment to definitively abandon fossil fuels by 2030, while ensuring a fair transition that guarantees any jobs lost. The focus is therefore on a complete stop to all investments in fossil fuels.

The fourth and final point calls for a society that is more aware of the climate challenges that await us in the immediate future and with which we are already dealing, through correct information and education, aimed primarily at children, but also at teachers and the private sector.

These are certainly ambitious goals, some seemingly impossible and others almost certainly unattainable, but they fully express the desire and determination of young people to take the reins of a change that can no longer just be hoped for or talked about, but must finally be implemented and put into practice by everyone at all levels.

All parties need to be involved and world leaders need to take a stand and raise their awareness, especially the most polluting countries, which must commit to helping the poorest and most vulnerable, such as Africa (responsible for only 3% of global emissions), which are already suffering the adverse effects of climate change.

Obviously climate justice must go hand in hand with social justice, as MiTE Minister Cingolani said in his opening speech: "It is impossible to separate climate change from global inequalities". The summit was attended by 50 other environment and climate ministers, Italian Prime Minister Mario Draghi, Italian President Sergio Mattarella and Cop26 President Alok Sharma. In his speech on the final day, Prime Minister Draghi himself said that he was aware of the seriousness of the situation and wanted to develop long-term strategies consistent with the goals that had emerged during the two days of work; he also stressed how

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closely the climate crisis, the health crisis and the food crisis were interrelated and how important it was to act more quickly and more effectively to address them. Then, addressing the young people present, he said: "This generation, your generation, is the one most threatened by climate change. You are right to ask for empowerment, to ask for change. The ecological transition is not a choice – it is a necessity. We have only two options. Either we face the costs of this transition now. Or we act later – which would mean paying the much higher price of a climate disaster.

Youth4Climate may not change the fate of our planet, but it will certainly go down in history as an event in which young people, the real protagonists of their future, put their ideas forward and gave a great show of maturity to the "less young", demonstrating that they are aware of problems much bigger than themselves and asking to be really listened to by the so-called leaders, who for too long pretended to involve and understand them. Young people are tired. Tired of empty words. Tired of "Blah, blah, blah". No more "Blah, blah, blah".

Waste: MiTe €27 million for plastic-eating eco-compactors

Twenty-seven million euros have been allocated to Italian municipalities to reduce the production of plastic waste through the use of eco-compactors, promote separate collection and improve recycling with a view to the circular economy: this is what the so-called "Mangiaplastica" decree signed last September by the Minister for Ecological Transition, Roberto Cingolani, has earmarked and the call for tenders has now been published on the ministry's website (https://www.mite.gov.it/bandi/programma-sperimentale-mangiaplastica-contributi-ai-comuni-al-fine-di-ridurre-i-rifiuti).

An eco-compactor is a machine for the separate collection of PET beverage bottles, which selectively recognises this type of bottle and reduces its volume for recycling.

For 2021, a budget of EUR 16 million is foreseen, of which EUR 9 million is allocated to residual accounts. For 2022, €5 million is foreseen, for 2023 €4 million and for 2024 €2 million.

The application must be submitted exclusively through the appropriate IT platform (https://padigitale.invitalia.it/). It is first necessary to have a Spid identity and a Cup code, which can be obtained from the following link: http://cupweb.tesoro.it/CUPWeb/. A call centre dedicated to technical assistance in filling out the application will be activated.

The municipalities undertake to keep the eco-compactors in their possession and in use for the benefit of the users for at least three years from the moment of activation, and to provide the Ministry of Ecological Transition, on an annual basis and for at least three years, with useful information to verify the effectiveness and sustainability of the "Mangiaplastica" experimental programme.

Farm to fork: falling production and rising costs

Silvia Benati

The agri-food chain has a significantly negative impact on the environment, but also suffers the effects of what it contributes to causing. Farm to Fork is the European Union's response strategy, but its implementation is not cost-free. The price to be paid could be an increase in the cost of meat, the reduction of which in terms of both production and consumption could also be desirable for our health.

Agri-food chain and environment

It would be unthinkable and irresponsible to discuss environmental sustainability today by leaving out the agri-food chain, given the significantly negative impact it has on climate, soil and biodiversity depletion, as well as on the use of scarce resources such as water and land (already extensively argued by FAO in its 2006 report "Livestock's long shadow").

However, the analysis becomes more complicated if we consider that agriculture is both an active and passive participant in many of the environmental disruptions we are witnessing. While it influences climate change through the release of greenhouse gases into the atmosphere through the use of organic fertilisers, nitrogenous minerals, and the production and spreading of animal manure, it also suffers from it, depending heavily on both water and soil quality and weather conditions. Nevertheless, the agricultural sector contributes largely to the generation of renewable energy through the production of biogas, thus reinforcing the circular economy paradigm.

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The effects of agriculture and livestock farming in the European Union

Agriculture, which accounts for almost 40% of European soil, accounts for 12% of greenhouse gas emissions and 94% of ammonia emissions in the EU, mainly due to the storage of manure, slurry spreading and the application of nitrogen fertilisers. In addition, the increase in carbon dioxide emissions due to soil thinning for agricultural and forestry uses makes the EU the second most critical area worldwide, after Indonesia, for this phenomenon (Source: Commission Staff Working Document Evaluation of the impact of the Common Agricultural Policy on Climate Change and Greenhouse Gas Emissions of 21 May 2021).

F2F: the EU answer for a healthier and more sustainable food supply chain

Adopted on 19th October by a large majority, the non-legislative resolution Farm to Fork (F2F) represents the EU policy makers' articulated response to the need to implement a food system that is more respectful of the environment, but also healthier and fairer for consumers and producers. F2F aims in particular to:

- Generate a neutral or positive environmental impact;
- Contribute to mitigating climate change and adapting to its impacts, reversing biodiversity loss;
- Ensure food security, nutrition and public health by providing access to sufficient, safe, nutritious and sustainable food for all;
- Preserve food affordability, generating fairer economic returns, promoting the competitiveness of the EU supply sector and fair trade.

F2F strategy highlights

In order to achieve the Goals listed above, the Farm to Fork strategy is broken down into other specific sub-goals such as:

- Reduce the risk and use of chemical pesticides by 50% by 2030, including the most dangerous ones;
- Reduce by half the excess of nutrients responsible for air, water and soil pollution, without compromising soil fertility;
- Reduce fertiliser use by at least 20% by 2030;
- Reduce sales of antimicrobials for farm animals and aquaculture by 50% by 2030, as antimicrobial resistance is responsible for around 33,000 human deaths in the EU every year;
- Achieve 25% of total agricultural land in organic farming by 2030.

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Other points related to the orientation towards healthier food and animal welfare include:

- The implementation of measures to reduce the consumption of meat and highly processed foods rich in salt, sugar and fat;
- Greater caution on opening up to new GMOs;
- The phasing out of cage farming;
- The establishment of common and scientifically valid animal welfare indicators.

Other innovations related to greenhouse gas reduction are included in the 'Fit for 55 by 2030' package. (Fit for 55), which includes suggestions for legislative proposals to tackle emissions from agriculture and related land use, as well as strict criteria for renewable energy production from biomass.

The possible effects of F2F and the criticisms made

The European Union's efforts to curb such serious and widespread environmental problems are laudable but not without criticism. According to Professors Henning and Witzke in their recent study, if F2F were to reach its targets, agricultural production would be significantly reduced, which would inevitably increase both the prices of agri-food products and the volumes of imports of such products into the EU from third countries.

Specifically, the availability of beef would be reduced by 20%, milk by 6.3%, cereals by 21.4% and oilseeds by 20%. According to the study, the estimated price increases would even reach +58% for beef, almost +48% for pork and +36% for raw milk. Vegetable products would not be exempt from price increases, but the impact on them would be quantitatively lower: +15% for fruit and vegetables (including permanent crops and grapes), +18% for oilseeds and +12.5% for cereals.

Towards a greener, more ethical and healthier diet

Despite the fact that many interest groups linked to the meat industry are quick to deny it, even by funding timely scientific research, there is a clear correlation between the frequent consumption of meat (particularly red, processed, heavily cooked and toasted meat) and the onset of cancerous diseases. This is what the Veronesi Foundation claims, going so far as to say that 'three quarters of what we eat overall should be vegetable foods'.

Consumption of less meat therefore leads to a reduction in environmental impact and clear benefits for health, as well as making a positive contribution to the EU's trade balance: in addition to production and consumption, the proportion of meat imported from third countries would also fall.

As far as price increases are concerned, given that plant products would be affected to a lesser extent, is this not the price to be paid to overcome the inevitable negative externalities generated by agricultural activities?

Are ESG investments being made in Italy?

Ingrid Leka

The acronym ESG stands for Environmental, Social, Governance and is used in the economic/financial sphere to indicate all those activities linked to responsible investment that pursue the typical objectives of financial management taking into consideration aspects of an environmental, social and governance nature. But are ESG investments being made in Italy?

Da un paio di anni a questa parte la sigla ESG (Environmental Social and Governance) sinonimo di "sostenibile" è diventata tra le più sentite. Ma in Italia gli investimenti ESG ci sono? Per rispondere a questa domanda dobbiamo prendere in considerazione da un lato gli investitori e dall'altra gli emittenti di strumenti finanziari sostenibili.

Ci viene in aiuto il Rapporto 2020 sulle Scelte di investimento delle famiglie italiane uno studio annuale della Consob (l'organismo di vigilanza sui mercati) che fa una fotografia della situazione nel nostro paese. Nella sezione dedicata agli investimenti sostenibili dobbiamo fare i conti con una scarsa conoscenza di cosa significhi il termine "investimenti sostenibili e responsabili" da parte delle famiglie italiane: in generale infatti meno del 18% del campione è ben informato o ha una conoscenza base di questa tipologia di investimenti nel 2020.
Un po' meglio la situazione tra coloro che investono: in tal caso la percentuale è superiore di 10%, rimanendo comunque sotto la soglia del 30%, decisamente poco rispetto all'evoluzione del mercato. Infatti c'è una rilevante percentuale degli investitori (quasi il 35%) che non ne ha mai nemmeno sentito parlare. Rimangono bassissime anche le percentuali effettivamente investite in investimenti ESG, come possiamo vedere dalla Figura 7.3 qui sotto (area blu del primo grafico), sebbene ci sia un crescente interesse da parte soprattutto degli stessi investitori che prendono l'iniziativa e chiedono al consulente finanziario di investire proprio in questo tipo di strumenti.

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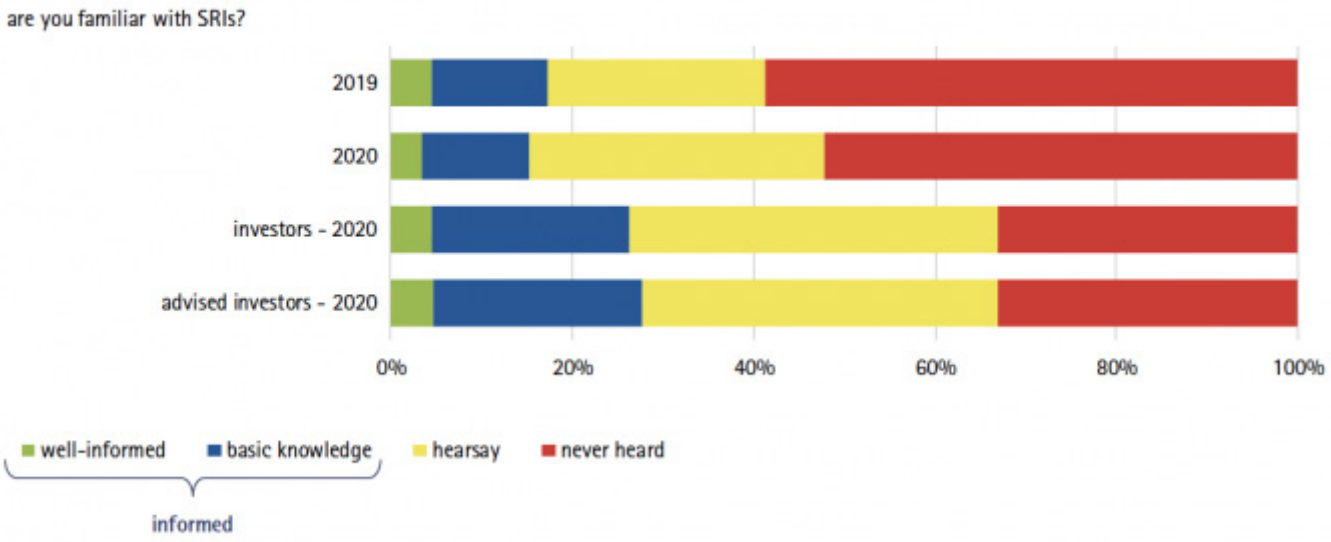
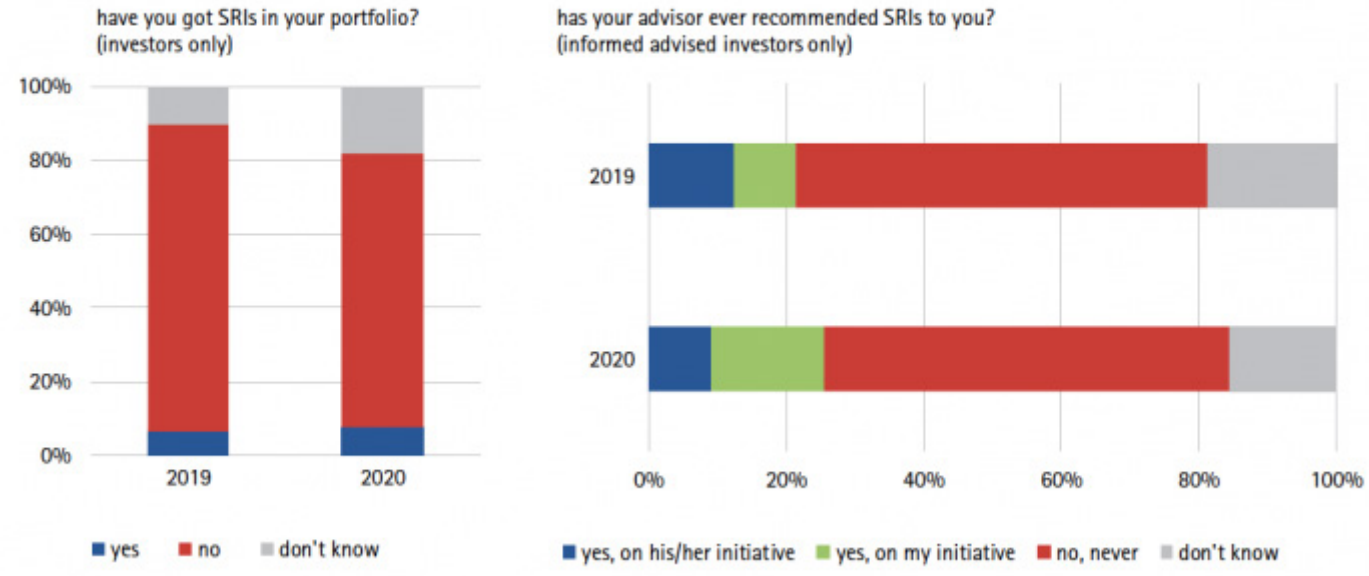
Fig. 7.1 – Familiarity with sustainable and responsible investments (SRIs)



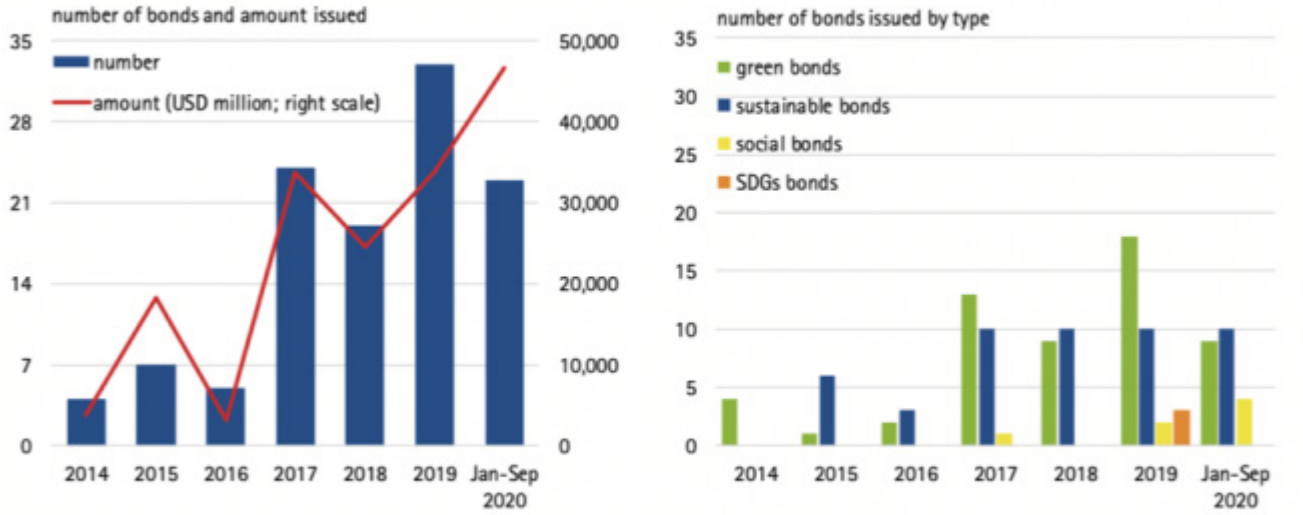
E dal fronte emittenti invece? Nel 2020 le emissioni di obbligazioni ESG censite da Borsa Italiana hanno segnato una forte accelerazione (Fig. 7.7 – 7.8). Gli emittenti sono rappresentati principalmente da organismi sovranazionali, mentre il coinvolgimento del settore privato sembra, purtroppo, ancora piuttosto limitato; le società italiane infatti sono poco rilevanti in termini di ammontare emesso. Questi titoli vengono quasi tutti quotate sul mercato MOT (Mercato Telematico delle Obbligazioni) di Borsa Italiana a volte con tagli di emissione minimi (1.000 euro).

Fig. 7.3 – Holding of SRIs



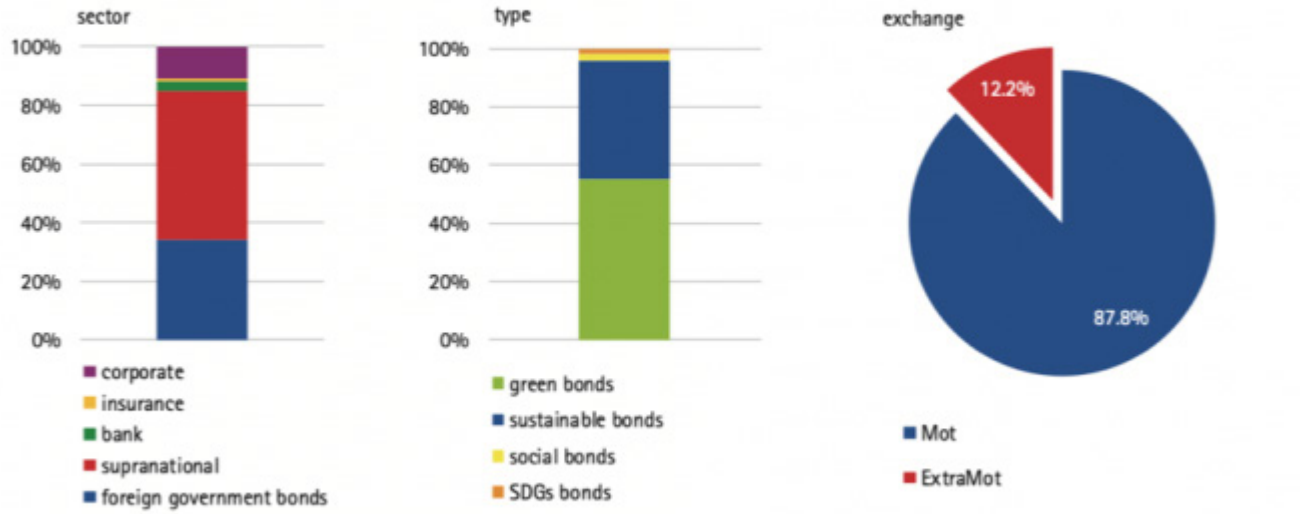
Per concludere, l'Italia è ancora indietro rispetto al resto d'Europa in termini sia di volumi emessi di strumenti ESG/sostenibili, sia in termini di conoscenza di questi da parte degli investitori. Fortunatamente il trend è di una crescita decisa su entrambi gli ambiti anche grazie agli sforzi di chi cerca di fare informazione su questi temi importanti.

Fig. 7.7 – ESG bonds listed on Borsa Italiana



Source: our elaborations on Borsa Italiana data. SDGs stands for Sustainable Development Goals bonds. Data as of 30 September 2020.

Fig. 7.8 – Amount issued by type of issuers, bonds and trading venues



Source: our elaborations on Borsa Italiana data. SDGs stands for Sustainable Development Goals bonds. Data as


Don't waste energy,
not even at Christmas.
SmartRicicla
The App for waste collection.
GET IT ON
Google Play
Photo by Carlotta Roda

Exclusion strategies in sustainable investments

Ingrid Leka

In the sustainable sphere, investments are selected using various investment strategies. Exclusion strategies are the first step in creating highly sustainable portfolios.

In the sustainable sphere, investments are selected using various investment strategies. The first and simplest approach to creating a sustainable portfolio is to apply filters against benchmark indices (each fund generally has a benchmark index in the market against which the performance and riskiness of the fund can be compared). This exclusion approach is also known as "negative screening" because it eliminates from the universe of securities available on the market those that do not meet certain criteria. Let's see which ones.

Black-list or faith-based filtering

This strategy follows the principle of 'do no harm' and in fact originated long before the term sustainable was coined. In fact, these are filters that were applied in investment funds that were called 'faith-based': these funds do not invest in companies that profit from alcohol, firearms, tobacco, abortion products,

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adult entertainment, unconventional weapons, gambling, furs, etc. They were in fact the first ethical funds that emerged in the 1960s and 1970s to offer even those who were believers the opportunity to invest in ethical products. They were in fact the first ethical funds created in the 1960s and 1970s to offer believers the opportunity to invest in products that respected the principles of their religion. The same criteria were later extended to so-called ethical funds (no longer linked to a specific faith).

Norm-based screening

In this case, companies that do not adhere to international norms and/or conventions/standards, such as UNICEF (Convention on the Rights of the Child) – UN Global Compact Principles – OECD Guidelines for Multinational Enterprises – UN Guiding Principles on Business and Human Rights, are excluded from the set of companies belonging to a given index: – UNICEF (Convention on the Rights of the Child) – United Nations Global Compact Principles – OECD Guidelines for Multinational Enterprises – International Labour Organisation Convention – United Nations Guiding Principles on Business and Human Rights – UNHCR (United Nations Refugee Agency). The exclusion of companies that do not adhere to these principles takes place a priori, without even having assessed the economic aspect of the investment.

SRI filter (socially responsible investment)

Screening in this case consists of analysing the behaviour of companies in a portfolio of securities according to environmental and/or social criteria. Environmental factors are examined, analysing various parameters such as how much carbon/greenhouse gas a company produces or how much and what kind of waste it produces. On the other hand, the social impacts and working practices of a company are analysed by looking at the health and safety of workers, how different genders, LGBT and minorities are treated in the workplace, and the working practices of the suppliers they use. In addition, some filters can measure the impact of a company's products or services on society as a whole. If the company's impact on one or more of these areas is negative, it may be decided to exclude it from the portfolio even if it is a company with a significant market weight.

Exclusion strategies are the first step in creating highly sustainable portfolios: once the filter has been applied to the reference index, a portfolio with fewer names but a higher level of sustainability is obtained compared to the starting index.

Benefit corporations: protagonists of sustainable transition

Maria Concetta Rizzo

Benefit corporations represent an evolution of the concept of a company: they integrate in their corporate purpose, in addition to profit objectives, the aim of having a positive impact on society and the biosphere. In other words, benefit companies are the companies of the future.

Citizens and businesses in their daily lives can contribute to improving the world to leave to future generations; we must be aware that we are all responsible and that radical and lasting change must come from below.

Sustainability may have different faces but it has a single objective: to improve the way we live, consume and produce for an increasingly sustainable planet.

The need for concrete actions in the direction of sustainable development and a more inclusive, sustainable, regenerative and fairer economy in the redistribution of wealth has emerged dramatically with the pandemic. We need to act in the present with the impact of our actions in the future in mind. The new dimension of the 'civil' economy is to create profit to be shared with all stakeholders in a system where economic value is also projected with a social and environmental dimension.

In addition to the change in citizens' consumption styles, the role of companies is fundamental. Today, thanks to the introduction of Benefit Corporations in our legal system, they can consciously and intentionally choose to include in their Articles of Association 'not only' the aim of maximising profit, 'but also' that of creating value and positive impacts for the environment and the community.

The benefit corporations is a new way of looking at business with different eyes, with an orientation towards strategic social and environmental innovation in order to generate shared value and have a competitive advantage.

These are for-profit companies aware of their responsibility towards future generations, whose peculiarity is to focus on three interconnected dimensions: the good of the individual, the good of the company and the common good. The need for a new way of doing business to improve the world shifts its centre of gravity from business as usual towards an integral eco-sustainable model that focuses on the individual and his

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or her satisfaction and wellbeing, the human value of economic development and the sharing of values and the wealth produced.

In particular, benefit corporations have been introduced into our legal system to address the need of many companies to be able to formalise in their articles of association, and therefore in their corporate purpose, an additional purpose by providing for the common benefit purposes inherent in their core business.

Benefit corporations represent a new conception of business, today and tomorrow, which is not only a reality that produces income, employment, quality, innovation and pays fair taxes, but also a civil enterprise that takes care of the common good of its territory and the community, with a new role in relations with internal and external stakeholders and putting the person at the centre. The civil entrepreneur, while focused on profit, is also involved in solving the problems of the community, the territory, recognising opportunities that, together with the development of the business, increase the common good. It is part of the meaning of the civil economy to participate in the value created by the company, which in turn contributes to the well-being of the territory, espousing the thesis of economists such as Fisher and Keynes, according to whom an initial intervention that incentivises spending increases the circulation of wealth with an increase in income for all. In this way, companies contributing to the common good, with public intervention as well, can reshape the distribution of wealth in the territory.

Today, therefore, there is a need for a new economy that respects man and the environment, an inclusive economy; a model of development that is healthier, more humane, more social and more integral in order to overcome a system that forgets the common good. An awareness that has emerged even more strongly with the health crisis and its economic consequences, which requires us to take action: we are all called to a civil responsibility towards future generations in order to bequeath a better world. Companies can and must play a driver role in this process of change, and sustainability is the only possible way to rethink change and design a possible future.

In order to pursue a new economic model with a view to sustainable development, it is necessary to abandon the old corporate models and embrace a new way of doing business, as envisaged with the introduction of benefit corporations, which are not intended to be a niche but the natural choice for entrepreneurs to operate in a sustainable, responsible and transparent manner and to be competitive on the market; but also because, in addition to profit, today a company must necessarily respond to the demands of civil society both on the environment and on social needs in order to be able to manage the risks to which it may be exposed. Benefit companies are the companies of the future, protagonists of the sustainable transition.

FSC promotes responsible management of the world's forests

Katia Sepe

Environment and economy: The Forest Stewardship Council (FSC) works to identify products that contain wood from forests managed according to strict environmental, social and economic standards.

Have you ever looked at the labels of any product (e.g. milk carton) and noticed the FSC logo? Have you ever wondered about the effects of our economic choices on the environment? FSC's mission starts with the desire to find an answer to this and takes the form of socially useful, environmentally friendly and economically sustainable forest management.

The acronym FSC stands for Forest Stewardship Council: an international, non-profit, non-governmental organisation founded in 1993. In Italy it originated in 2001 and since 2011, Diego Florian, a graduate in Forestry and Environmental Sciences, has been directing the FSC National Office with the task of coordinating the staff and activities of FSC Italy in accordance with international guidelines. There are about 900 members of the organisation: individuals, technicians, researchers, NGOs, environmental, social and large-scale retail groups, forest owners, wood and paper companies. FSC is structured as follows: a General Manager, the General Assembly of Members, i.e. a body divided into three chambers representing environmental, social and economic interests (this division guarantees a fair distribution of voting power and decision-making balance between the countries of the North and South of the world) and finally the General Executive Committee (the permanent governing body of the Assembly of Members) made up of 9 representatives elected by the three chambers of the Members and with a 3-year term of office.

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FSC affirms itself as an advocate not only of sustainability, but also of the legality of products derived from forests. Just think that – according to estimates extrapolated from Interpol data of 2012 – 30% of the wood in the world is traded illegally and generates a profit of about 8.5 billion euros, while in Italy the estimated illegality is 10% with a revenue of 2.1 billion euros. The profitability of dirty money is the cause of unfair competition and strong competitiveness at the expense of certified and sustainable production processes. According to Interpol (International Criminal Police Organisation), illicit trafficking in wood and timber products ranks second, in terms of profitability for the benefit of organised crime, after the drug trade. Combating this phenomenon becomes essential: lawlessness, deforestation and degradation threaten the world green lung with all the risks and serious consequences that result. The only instrument capable of countering the undue timber market is certification.

Proper forest management can be achieved by voluntarily adhering to an independent, third-party, universally valid certification system specific to the forestry sector. There are three stakeholders involved:

1. Accreditation body: it supervises the certification body
2. Accredited certification body: it verifies good forest management and checks traceability of products
3. Organization: who wants to obtain certification

There are two types of certification: Forest Management (FM) and Chain of Custody (Coc). The first, the Certificate of good forest management, is aimed at forest and plantation owners and can be individual, group or small forest properties or community forests SLIMF (Small and Low Intensity Managed Forests). To obtain this type of certification it is mandatory to comply with the 10 Principles and related Criteria (P&C) of good forest management defined by the FSC internationally and applied specifically to different local realities, characterized by typical ecological and administrative characteristics. Overcoming the steps related to obtaining the Coc it is possible to sell wood and derivatives as actually "certified". The Chain of Custody Certification (individual, group, project, multisite) ensures that wood and forest products (wood and non-wood) come from forests managed according to FSC Principles and Criteria. The labels, with which certified goods are distinguished, are world-wide approved and approved by the Forest Stewardship Council; different in size, languages and colors, they are divided into three categories, according to the percentage of certified or recycled wood contained in the products:

- FSC 100% contains only material from FSC certified forests.
- FSC Mist includes FSC certified materials (at least 70%), "controlled wood" and/or post-consumer recycled materials. The controlled wood must not come from: forests used illegally or whose management violates civil or traditional rights; forests not certified to High Conservation Value; natural forests converted into plantations or other forms of land use or forests with genetically modified trees.

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- FSC Recycled contains only recycled materials (of which at least 85% post-consumer, ie no longer usable).

The activity of the FSC is in line with the development strategies set out in the 2030 agenda and in particular with objective 12: responsible consumption and production. The responsible economy is based on conscious economic choices. Information plays a crucial role in determining the consumer's demand and the convenient supply that the manufacturer decides to launch. Consumers, properly informed and educated, could make a difference in a market whose existence (and competitiveness) is largely determined by the ethical propensities and economic choices of buyers.

Shaking citizens' consciences and raising awareness of sustainable goods and services are the prerequisites for positive developments.

"Do you think the adults will have put the world back when they pass it to us?" Bill Watterson

The paradox of electric cars

Pierluigi Argoneto

In terms of energy transition, focusing political communication and energy choices on the use of electric cars is a positive element, but only if seen as the start of a much more difficult path and choices.

Electric cars: a buzzword

One of the current fads in energy transition, one of the buzzwords if you will, is electric cars. This could be a good start, or just a way of hiding behind a finger, clearing one's conscience, and perhaps saying that one has done everything possible to avoid the climate disaster we are heading for. For two reasons.

The first is linked to a simple numerical statement: if you want to talk about a plan to tackle climate change, you have to take into account all human activities that cause greenhouse gas emissions: according to the latest estimates (IPCC data: https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data) focusing on cars means, at best, acting on about 8% of global greenhouse gas emissions. Very, very little. At the top of the list, though decidedly against our perception, are agriculture, livestock farming and industrial power generation.

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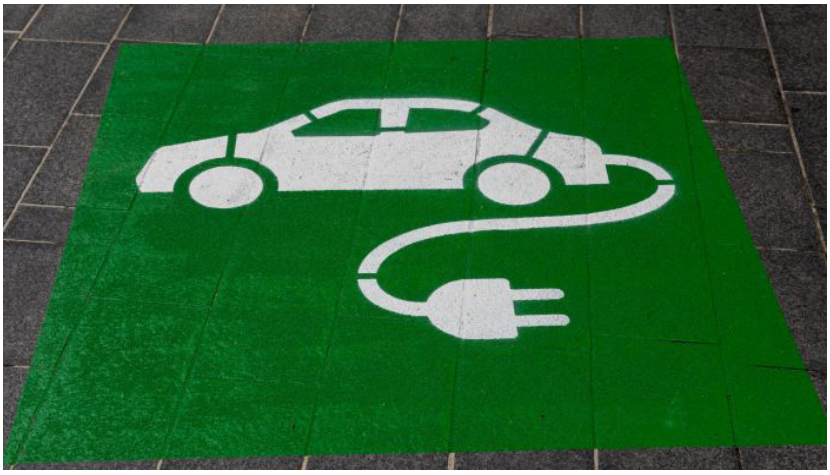
The second reason is linked to the failure to address the choice of electric cars with an integrated and supply chain strategy: it is true that these cars are powered by electricity, but most of this energy is still derived from power plants that are (still) based on coal. Just to be clear: the Drax power station, the largest in the UK and one of the most polluting in Europe, uses about 0.3 kg of coal to produce 1kWh, which is the amount of electricity absorbed in half an hour by a hair dryer. The most modern batteries for a full charge of an electric car require about 140 kWh of electricity, which is the equivalent of 43 kg of coal to cover a distance of about 400 kilometres. What about conventional cars? On average, a petrol car requires about 20 kg of petrol to cover the same distance.

To cut a long story short: if you look at the whole chain, an electric car releases twice as much CO2 as a petrol car.he whole chain, an electric car releases twice as much CO2 as a petrol car.

The social cost of this choice

So there is no point in making electric cars and investing in them? It does make sense, but not addressing the issue in its entirety risks doing more damage than it is trying to solve. Not least because there is a major social problem with this 'trend', one that I would like to focus on: the high prices of electric cars today risk making the car a luxury for the wealthy class alone.



To push for this green turn in mobility, governments have introduced penalties for car manufacturers at an international level: if the cars you produce exceed the tolerated pollution standards, you pay a penalty. However, if you are a manufacturer whose cars have a lower impact on the environment, you earn so-called regulatory credits. The nice, legal thing is that between car manufacturers these regulatory credits can be bought. Tesla made $1.58 billion in 2020 alone this way by selling its green credits to other carmakers. FCA, now Stellantis, for example, paid – in Europe alone and in 2020 alone – 300 million euros for the purchase of these certificates, and most of this money went to Tesla.

And what does that imply? It means that while a 60,000-euro Tesla can be afforded by a very wealthy person, who has probably also benefited from several thousand euros in public incentives to buy that kind of car, many car manufacturers are passing the cost on to non-electric cars, aimed at a wider section of the population that is seeing the cost of buying a simple car rise disproportionately. This is a perverse redistribution of income, which, moreover, is not justified by the small climate improvement achieved.

So what?

Not all solutions are the same: taking action on the energy transition is a much-needed necessity, but one has to 'count' and choose the most effective interventions; one cannot travel by slogans or pander to a few short-lived trends. Much of the work on climate change today focuses on relatively simple ways to reduce emissions, such as using electric cars and getting more energy from solar and wind power. This approach makes sense, because showing progress and demonstrating the initial success of a project helps to get more people involved. And it is important, because we are still a long way from employing these relatively simple methods on the scale we need, and so there are ample opportunities to make great progress now. But we cannot limit ourselves to these handy countermeasures: we must also focus on more complicated solutions such as electricity storage, fuels, cement, steel, green fertilisers and so on. This will require a different approach to policy decisions. In addition to using the tools we already have, we will have to invest more in research and development of less immediate technologies, and frame this dynamic by considering technology, politics and, not least, the social cost of such choices.

All colours of hydrogen

Pierluigi Argoneto

If it were easy to achieve a 'hydrogen economy', it would have been done long ago. It has been talked about for at least 20 years, with little result (at least until now). And yet all sorts of things are said about hydrogen, from grey to blue, from purple to green. Here are a few insights.

Stars are made of hydrogen, as is 75% of all matter.

Let's start with the basics: hydrogen, which chemists like to identify with the letter H, is the most common element in the universe: almost 75% of all matter is made up of hydrogen. It may sound poetic, and perhaps it really is, but to paraphrase Dante, one could say that it is hydrogen that moves the sun and other stars, because it is precisely hydrogen that makes up the sun, just as planets such as Jupiter and Saturn are largely made up of hydrogen. On Earth, however, this element does not like to be alone, it is as sociable as it is abundant: when it bonds with oxygen we get water, if it bonds with carbon we get hydrocarbons (from methane to coal), when it bonds with both oxygen and carbon we get the various organic compounds. Finding it on its own is virtually impossible: there are no hydrogen mines on Earth! And yet we need it, and lots of it: before we even imagine green transition uses, we need to be aware that hydrogen is used a lot in agriculture today: we need hydrogen to make ammonia, and therefore ammonium salts, and fertilisers. We literally eat hydrogen.

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Hydrogen is used to make the most widely used fertilizers in the world.

The colours of hydrogen: a question of production

On earth, hydrogen has to be produced, and here's where the problems start, because to get it, you literally have to detach it from the molecules in which it is combined. And doing this requires energy, sometimes a lot of energy. In order to quickly describe how hydrogen is produced, people have started to use 'colours', although this is not the actual colour of the element, which is completely transparent and, in its gaseous state, invisible to the human eye.

Black. The first molecule from which hydrogen can be 'detached' is water. We all know, more or less from primary schools, that the water molecule is in fact made up of two hydrogen atoms (H) and one oxygen atom (O): the famous H2O. By running a very powerful flow of electric current through the water, i.e. using a process called electrolysis, I can detach the individual atoms from each other and obtain hydrogen on one side and oxygen on the other. The question is: how do I generate the (much) electricity needed for electrolysis? If I get it from coal- or oil-fired power stations, I pollute. And a lot of it: to make 1 kg of hydrogen with this technology requires an amount of energy equal to the needs of an average Italian family for a whole week. Since it is very polluting, the hydrogen produced in this way is identified as black.

Grey. Most of the hydrogen produced, 97% to be precise, is grey. The technological process used is known as reforming, i.e. starting not from water but from methane – consisting of one carbon atom and four hydrogen atoms (CH4) – or other hydrocarbons. During this operation a lot of carbon dioxide is released into the atmosphere, the infamous CO2 which, being odourless and colourless, was never a problem until a few years ago: we have always released it into the atmosphere without great concern, creating the climatic disaster that we are now beginning to perceive.

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Lignite. It is used to produce so-called 'brown' hydrogen.

Brown. Hydrogen extracted through the gasification process of hard coal (lignite) is brown, again producing a large amount of CO2 which is released into the atmosphere.

Blue. Hydrogen produced in the same way as grey hydrogen is called blue, but the process does not throw the CO2 produced directly into the atmosphere, but captures and stores it. In practice, however, it is not so simple: storing CO2 has a very high cost, not only in energy terms. To date, the only use is by the oil industry, which uses this carbon dioxide for secondary oil recovery: CO2 is pushed into the reservoirs with the aim of bringing to the surface the residual oil from the wells which otherwise would not have been extracted. But this means not releasing CO2 – generated to produce hydrogen – into the atmosphere in order to obtain oil, which then burns and generates more CO2 that is released into the atmosphere. A nonsense (from a green transition perspective, certainly not from an economic point of view for the oil industry). And then: to pump carbon dioxide into wells 1,000 metres deep requires energy: a power plant, and how is it powered? If I use fossil fuels, there is a double nonsense. If I use renewables, well, then I could have used them directly and polluted less. So, blue is a beautiful colour, but for hydrogen it is just a beautiful idea that in practice generates more problems than it solves.

Green. Green hydrogen is generated from water, like black hydrogen. Only in this case, the electricity needed for electrolysis is not obtained from fossil fuels, but from renewable energy such as hydroelectric, solar or photovoltaic power. To produce hydrogen in this way, therefore, a surplus of renewable energy is needed. At present, Italy – which is among the top European producers of renewable energy – produces 40% of its needs. This means that we consume all of it for ordinary purposes and have none left over to produce green hydrogen.

Violet. Violet hydrogen is generated from water, like black hydrogen. Only in this case, the electricity needed for electrolysis is obtained not from fossil fuels, but from nuclear energy. And so it is necessary to envisage the construction of nuclear power plants which, as we know, are very efficient, technologically advanced, do not produce carbon dioxide, but radioactive processing waste which is very difficult to dispose of and treat, and has a high social impact.

© NASA Imagery – The Space Shuttle's External Tank contains liquid hydrogen and oxygen used during take-off.

And once hydrogen is produced, how is it distributed?

Whatever technology is used to produce hydrogen, with the pros and cons we have tried to summarise, hydrogen has another very serious problem: it is difficult to store and transport. Hydrogen is the lightest element in nature, and is the smallest molecule in the universe.

To try and store it, I can currently do mainly two things:

- I could compress it, but I'd have to take it to very high pressures and that's not at all trivial (about 700 bar) and put it in tanks;
- I could liquefy it, but to do that I'd have to be able to bring it to – and maintain – minus 253 degrees below zero, so I'd have to use a lot of energy. It's no coincidence that to date you can only do that for the space shuttle.

There are other ways of storing it (in the form of ammonia, metal hydrides, using highly porous solids, and so on), but in many cases we are still talking about basic research that cannot be used on the market. It would quickly corrode the existing pipes, and the valves and compressors would have to be changed; they would have to be different from those used for methane, and would need to be at least three times more powerful. This would require very sophisticated tests to devise a hydrogen distribution network and very expensive investments in infrastructure.

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Temporary conclusions

The path to energy transition is not trivial and is fraught with technological, social and economic obstacles and difficulties. It is easy to be misled by "coloured" simplifications, which often conceal pitfalls or markedly partisan interests, and this is what decision-makers must avoid at all costs. As yet, there is no clear path to follow: they all need to be explored with patience and common sense to identify the best one and achieve the decarbonisation targets that have been set. So, a few thoughts and questions:

Research in the field of hydrogen storage and distribution is crucial and should be funded: it makes no sense for our country or Europe not to invest in research and then buy technology from third parties: what are we doing in this regard?
We need to focus strongly on the electrification of end-use consumption, on energy efficiency and energy recovery, so that we all become energy prosumers. Today, conventional thermal power stations convert about 30% of the fuel's energy into electricity and the remaining 70% is lost in heat. If we add to this the heat loss downstream (buildings, cars, appliances, etc.) we realise the enormous absurdity we are experiencing. Efficiency. Efficient. Efficient. What is being done in this regard?

To conclude: the end of the oil age and the advent of a society where energy for a large part of mankind will be derived from hydrogen is a rather dated intuition. Cesare Marchetti, a researcher at the International Institute for Applied Systems Analysis in Luxemburg, spoke about it for the first time in the 1970s. The economist Jeremy Rifkin also described all the positive aspects in a book about twenty years ago entitled 'The Hydrogen Economy'. But if it were as easy as Rifkin claimed, we would have done it already. But it is not easy. That is why we must commit ourselves, as usual, starting from the awareness that the future can only come from courageous political choices based on data, evidence, science and technology. Letting ourselves be swayed, saying all sorts of things, especially about hydrogen, distances us from what should be our real goal.

Mediterranean old-growth forests exhibit resistance to climate warming

A recent study published in the international Journal Science of Total Environment reveals that the old-growth forests that grow in the Mediterranean mountains are resistant to climate change.

Michele Colangelo

The old-growth forests constitute a heritage of inestimable ecological and environmental value, as they represent small vestiges of how Europe's past primeval forest may have looked. The characteristics that distinguish an old-growth forest are typical of the final stages of the development of the vegetation, i.e. the presence of plants of considerable size, many of which are senescent, an abundant presence of standing dead trees and dead wood on the ground, an elevated and complex structural heterogeneity, absence of anthropogenic disturbance for many decades and composition of native species.

Serra delle Ciavole (Pollino National Park) - © Gianluca Piovesan

European old-growth forests are estimated to occupy only 0.7% of the total forested area and that are of prime ecological value, as they represent small vestiges of how Europe's past primeval forest may have looked. Old-growth mountains forests are dynamic ecosystems characterized by a high level of structural and biological diversity. In addition, old-growth forests provide various and important ecosystem services, such as biodiversity maintenance, long-term carbon storage and landscape uniqueness. These forests represent valuable natural laboratories for evaluating how they respond to global change drivers, including climate warming and land use changes. Therefore, we need to understand how carbon uptake and long-term growth in these ecosystems respond to climate warming. Although there is an increasing attention on these ecosystems, the knowledge about the long-term impacts of climate change in Mediterranean environment is still limited.

A recent study published in Science of The Total Environment, led by Italian and Spanish scientists found that in Mediterranean mountainous area old growth forests exhibit a remarkable resistance to climate warming showing a stable or even more sustained growth at high altitudes, despite the worsening of extreme

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phenomena linked to climate change and the considerable age of the older trees.

The work examined some of the last remaining stands of old growth forests located in the Pollino National Park, to assess how the growth of young and old conspecific trees has responded to climate change. The Pollino N.P. area represent the largest protected area in Italy, some of the longest-lived trees were found, e.g. Italus (P. leucodermis) with its 1235 years is the oldest dated tree in Europe, also Michele and Tenore of over 620 years, the very old beech trees of the "Pollinello" forest recently declared world heritage. A further example is given by the ancient beech forest of "Cozzo Ferriero", recognized in 2017 as a "Unesco World Heritage Site" which represents one of the sites covered by this scientific study.

Terranova di Pollino – © Michele Colangelo

These stands are restricted to mountain sites characterized by irregular topographic conditions (i.e., steep slopes and shallow soils), which allowed them to be nearly untouched for centuries. The very few cases of traditional livestock and silvicultural activities were abandoned over the past century, contributing to their transition to increasingly natural conditions. The sites were selected for their biological and ecological values, representing an exceptional example of an intact and ancient forest in Europe which has allowed these systems to reach the characteristics of old-growth forests.

In this study we analyzed two conifer species (Abies alba and Pinus leucodermis) and two hardwood species (Fagus sylvatica and Quercus cerris). We sampled one stand per species along an altitudinal gradient, ranging from a drought-limited low-elevation hardwood forest to a cold-limited subalpine pine forest. We used a dendrochronological approach to characterize the long-term growth dynamics comparing the old (age > 120 years) versus young (age < 120 years) trees.

The results show that the more complex systems are structurally and functionally, such as old trees, the more they are able to resist climate change than those in which man has intervened with management. This result constitutes a relevant finding in contrast to what is happening in the Mediterranean environment where various forest ecosystems are threatened by climatic extreme events showing clear signs of growth

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decline and dieback phenomena with negative consequences in terms of carbon sequestration, biodiversity and ecosystem services.

This study could have important implications on the knowledge of the dynamics of climate change mitigation, in support programs for the conservation of biodiversity and for the restoration of the naturalness of forests. The importance to study old-growth forests is a priority that has emerged in several international conventions aimed at protecting biodiversity. The presence of these precious natural open-air laboratories within the Pollino National Park, represented a unique opportunity to evaluate how these ecosystems respond to the factors of global change, including climate warming and land use changes.

Bosco Magnano (Pollino National Park)
© Francesco Ripullone

One of most objectives is the protection of those European forest types that represent part of the remaining oldest secondary forests, so that certain forest ecosystems typical of some species, that require extensive and undisturbed habitats, can be preserved.

Among the objectives at a regional and local scale, a key point can be sustainable and adaptive management, which aims at the protection and conservation of old-growth forests, real heritage of the southern Mediterranean region, in order to guarantee the continuity of these complex systems which, moreover, represent enormous potential for various scientific studies.

The conservation and restoration of mountain ecosystems is an important goal in conservation policies, therefore investing in ancient forests is also a good strategy in the ecological transition underway to ensure a livable planet for future generations.

Ecological-economic imbalance in grassland management

A study published in the international journal Land Degradation and Development (Wiley), conducted by researchers of the LCD&D (Land Cover Dynamics and Degradation) group of CNR-IMAA together with researchers from the Universities of Basilicata and Macerata, investigates the consequences that different pasture management systems have had on the current state of agro-pastoral landscapes in an Apennine context (Castelsaraceno, Southern Italy).

Vito Imbrenda

Depopulation and economic marginalisation of rural areas in Southern Europe have led to a progressive abandonment of agricultural land. The areas at highest risk of abandonment are those characterised by extensive grazing management which is highly dependent on the presence and economic consistency of incentives and subsidies dedicated to the promotion of more sustainable land uses.

In the South of Europe, undergrazing is the main cause of land degradation (i.e. loss of biological and economic productivity of ecosystems) of pasture areas (spread of woody species, increase of necromasses, floristic simplification, etc.). In such regions, preserving the resilience of pastures through appropriate management means gaining more detailed knowledge on the impacts that different grazing practices have imposed on ecological systems and understanding the socio-environmental mechanisms that govern the choice of those practices.

The consequences of different grazing management regimes on the status of agro-pastoral systems currently present in the mountain municipality of Castelsaraceno (Southern Apennines, Basilicata, Italy) were analysed in this work. The multiscale analysis made use of different types of data (remote, in situ, economic, social) and statistical techniques to identify within 5 homogeneous sub-areas (Figure 1) three main land use trajectories that have characterised the investigated area with different outcomes in terms of

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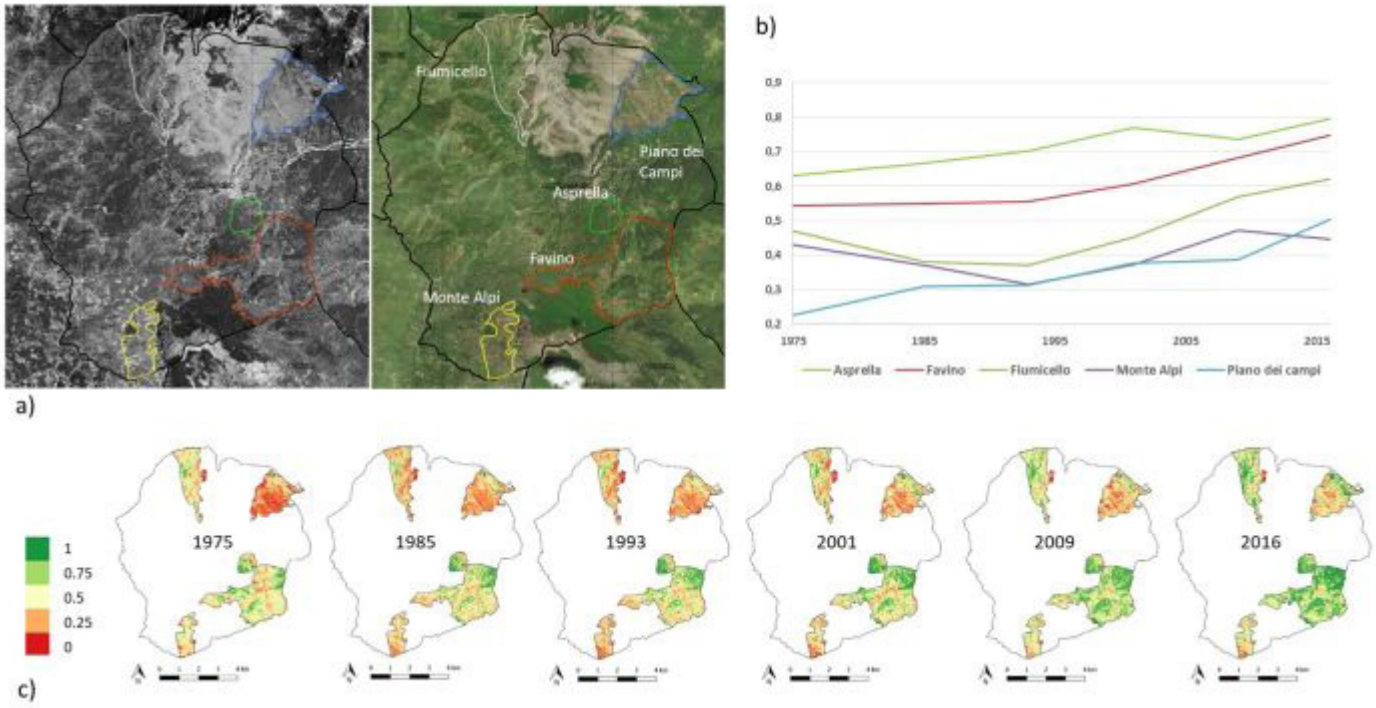
induced land degradation phenomena: (a) completely abandoned areas; (b) or areas with a decrease in grazing intensity where management practices remained unchanged over time; (c) areas with a decrease in grazing intensity characterised by significant changes in management practices.

The results of the study show how, in certain circumstances, the mutual interaction of regional and local factors can lead to an ecological-economic imbalance that neither meets the needs of the productive market nor promotes the conservation of ecosystem services. The work proposes some recommendations in terms of practices to be adopted in order to favour the sustainable development of rural, mountainous and marginal areas in the Mediterranean basin on the basis of the results obtained for the area investigated.

In this direction, future research efforts should focus on the comparison of similar systems of livestock farms operating in mountain-rural contexts similar to that of the present work and distributed within different Mediterranean countries. In this way, it would be possible to identify optimal management solutions that can combine a sustainable exploitation of pasture resources with satisfactory farm performance that can inspire future policies at both national and European level.



© Quaranta, G., Salvia, R., Salvati, L., De Paola, V., Coluzzi, R., Imbrenda, V., & Simoniello, T. – Evolution of the sub-areas present in the Castelsaraceno territory (Basilicata, Italy) with different environmental characteristics and different grazing management trajectories: a) orthophotos with the toponyms of the 5 sub-areas, b) mean value of the density of vegetation cover (D) for each grazed sub-area, c) and the corresponding spatial patterns in the time series investigated (1975-2016) using satellite data from the Landsat mission.

New frontiers in forest vegetation monitoring

In such a changing environment, there is an increasing need for innovative technologies to support forest management decisions. Satellite remote sensing is considered an essential tool for analysis at a broad spatial scale, for the production of thematic maps at low costs and for monitoring the evolution and change of forest vegetation.

Maria Floriana Spatola

Climate change is a complex phenomenon involving a wide range of interactions between extreme climate events and natural and anthropogenic components. Severe weather events affected large forest areas in the last decades, changing the ability to provide ecosystem services and in many cases altering forest stand structure. Climate change disturbances with anthropogenic contributions, make sustainable forest management increasingly difficult, in the mid- and long-term. In a changing environmental context, the need to use innovative technologies to support forest management decisions is growing.

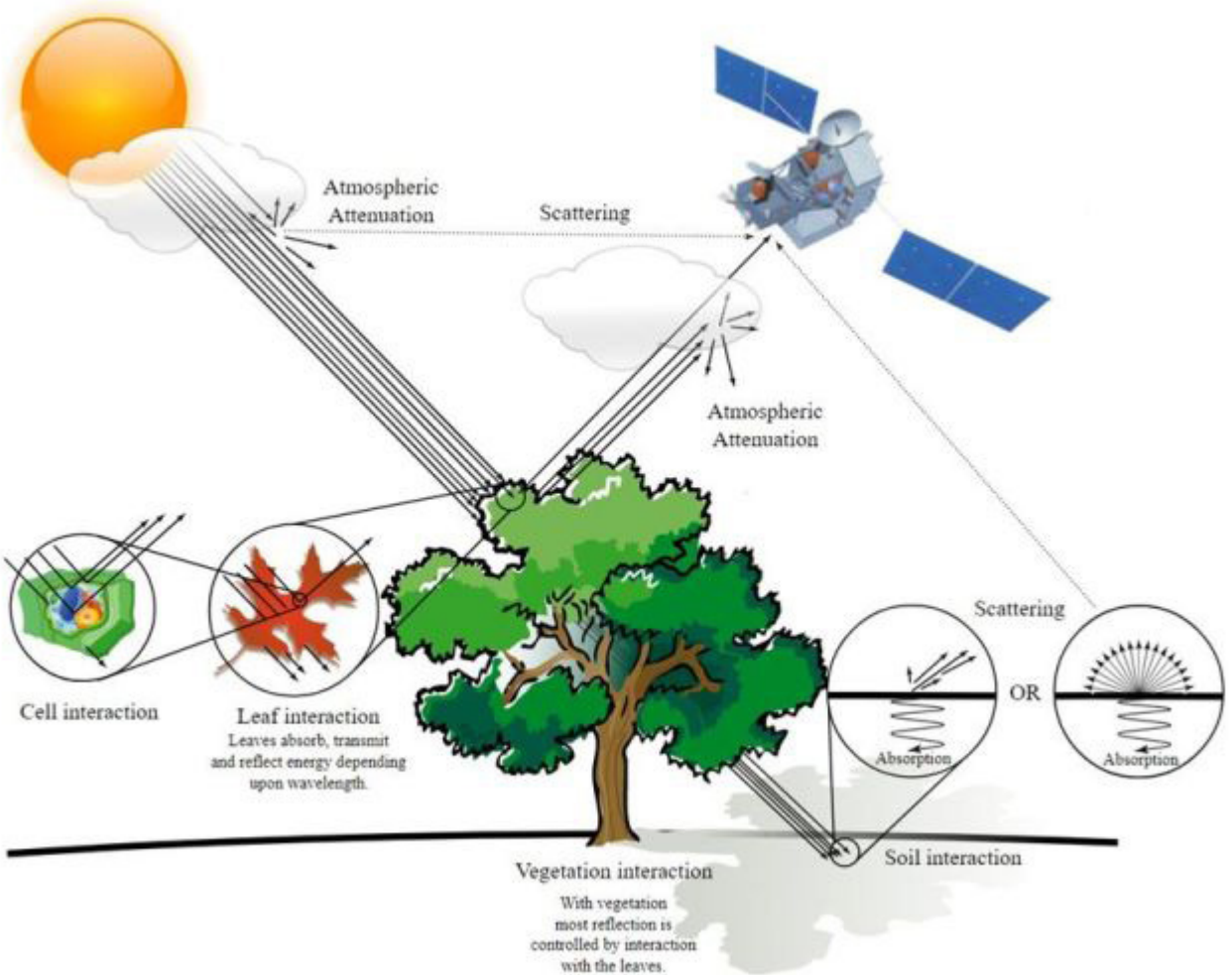
Compared to the several technologies available to study ecosystem processes and dynamics, remote sensing is considered an essential tool less expansive, for providing thematic maps, analysis at wide local scale, and monitoring the evolution and change of forest vegetation cover. These informations can be used to assess the damage to the forest stands, plan post-disturbance restoration, enhance tourist-recreational function, and many other aspects related to forest ecosystem management.

What is remote sensing?

Remote sensing is an Earth observation remotely, based on spectral response of objects and surfaces of different nature. The basic principle is to capture at distance electromagnetic radiation reflected or emitted from objects observed.

Therefore, in remote sensing three elements are fundamental:

1. an object or surface to be observed (in our case: forest vegetation);
2. a platform to hold instrument;
3. an optical sensor able to detect the quantity and quality of electromagnetic radiation reflected or emitted from objects or surface.



Principle of operation – © Arbeck, CC BY 3.0 https://creativecommons.org/licenses/by/3.0, via Wikimedia Commons

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For example, even taking a picture of a tree with smartphone, is remote sensing. A tree is a target object, we are the platform, the camera is the sensor that detects electromagnetic radiation reflected from tree canopy.

Scientists use remote sensing to assess and study, composition and nature of objects on Earth's surface remotely, using several platforms containing sensors such as satellites, drones, or aerial vehicles. The sensors can be passive (use solar radiation as an illumination source) and active "illuminate" the object through an artificial source emitting electromagnetic radiation at certain frequencies and recording the signal, as in the case of the environmental disturbances impact systems.

How vegetation forest is monitored?

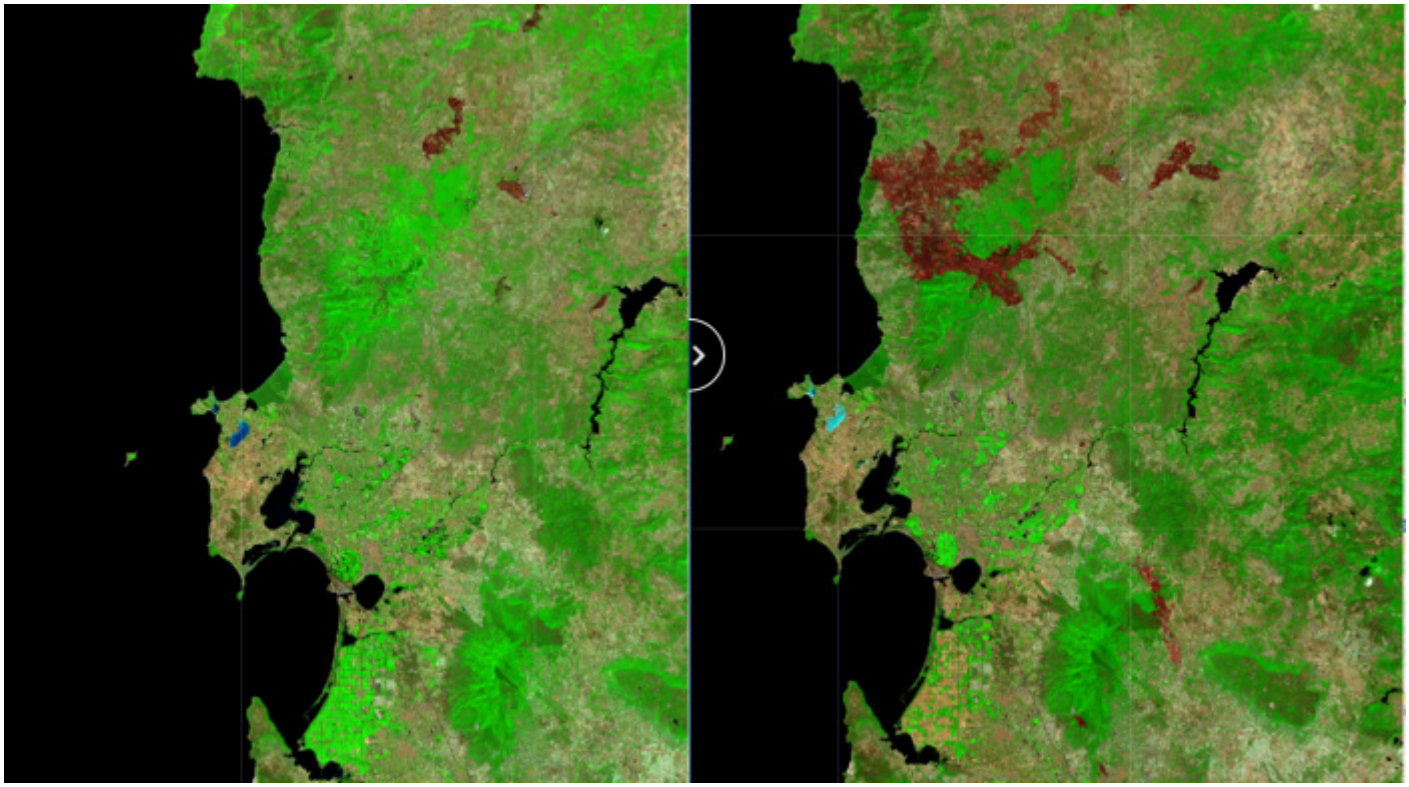
Passive sensors measure the radiation sunlight emitted or reflected by vegetation in the different portions of the electromagnetic spectrum called bands, returning for each band an image with different levels of reflectance, i.e. reflected energy. The electromagnetic spectrum portion that ranges visible region (blue, green, red) to the near-infrared region, is sensitive to the vegetation.

Specifically, red and near-infrared bands provide insights of vegetation conditions. In the case of healthy vegetation, i.e. photosynthetically active, plant pigments absorb radiation incident in the red, while near-infrared strongly reflects by leaf spongy mesophyll. While, in unhealthy vegetation, radiation absorbs less in the red band due to reduced chlorophyll activity.

These vegetation response variabilities in incident radiation can be estimated through a combination of spectral reflectance between red and near-infrared bands of one of vegetation index: Normalized Differenced Vegetation Index (NDVI).

Numerous satellite constellations acquire data available on commercial sources or open-source tools. Remote sensing platforms such as European Copernicus (ESA – European Space Agency) and United States National Aeronautics and Space Administration (NASA) – Landsat e Terra/Aqua are well-known. These data may be used to monitor forest resources at local, regional, national/continental scales, due to their spatial resolution (pixel size of an image representing the size of the surface area on the ground).

Nowadays, Landsat and Sentinel are widely usedto assess forest vegetation change cover, detecting forest logging, wildfires, snow, and wind crashes, and more generally the healthy forests condition and environmental disturbances impact.



Fire in Sardinia – Sentinel2 pre- and post-fire images – © Maria Floriana Spatola

In addition to the satellite data, recent technologies opened new frontiers using 3D information offered by active sensors such as LIDAR (measure distances through pulsed laser) or Unmanned Aerial Vehicle (UAV) (e.g. drones), providing high-precision data.

The use of satellite data with innovative technologies integration, provide new opportunities in the land governance and applications site-specific field. This novel approach can play an important role in promoting efficiently sustainable management of forest resources within a climate change scenarios.

Earth provides enough to satisfy every man's needs, but not every man's greed.
(Mahatma Gandhi)

I forget why I eat

Metabolic health also requires a good memory. A study coordinated by the Institute of Biomolecular Chemistry of the CNR in Pozzuoli describes a functional alteration in the neuronal circuitry that regulates episodic memory in a mouse model of obese subjects.

Editorial Board

The mammalian brain continues to generate neurons throughout life, from neural stem cells, in two specific areas called neurogenic niches: the dentate gyrus of the hippocampus and the subventricular area. The production of neurons particularly affects episodic memory, which is the ability to recall personal events and, consequently, to plan future individual actions. Episodic memory is stored in the hippocampus, where highly conserved circuits reside on the evolutionary scale.

A research team from the Institute of Biomolecular Chemistry of the National Research Council (CNR-Icb) in Pozzuoli, led by Luigia Cristino as part of the activities of the Joint International Research Unit with the Université Laval (Quebec), directed by Vincenzo Di Marzo (CNR-Icb), has demonstrated in a mouse model that obese young adults suffer alterations in the structure and function of hippocampal circuits and the ability to perform certain cognitive tasks optimally. The study, published in Nature Communications, shows that aberrant neurogenesis in the dentate gyrus is the cause of episodic memory dysfunction. “Several factors are able to regulate neurogenesis in later life. Our study has identified in particular two molecules, the neuropeptide orexin and the endocannabinoid 2-arachidonoylglycerol, as responsible for altering

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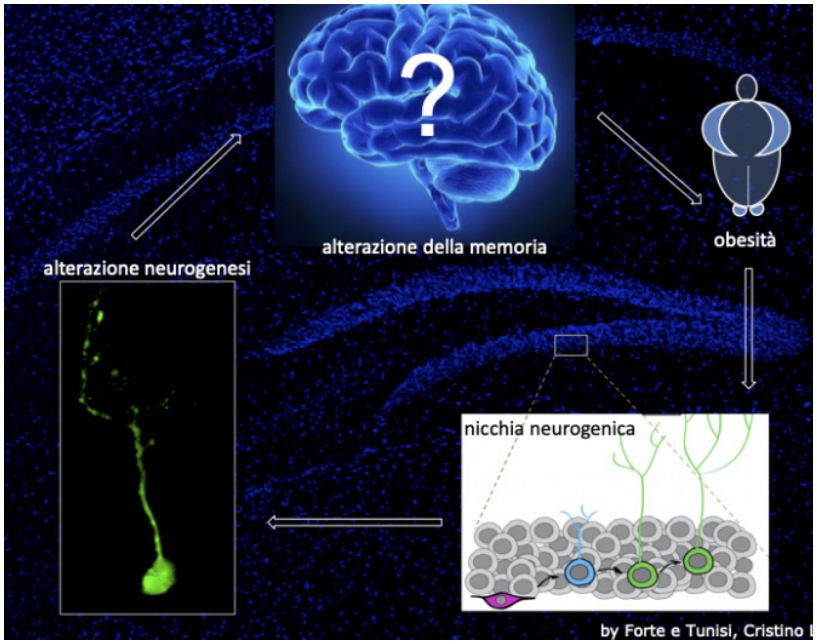
neurogenesis and the normal functioning of the episodic memory circuit," explains Luigia Cristino. "And it provides the anatomo-functional basis for the changes in hippocampal activities found by neuroimaging techniques in young adult subjects with high BMI (Body Mass Index) and reduced ability to form and/or retrieve episodic memories. The effect adds to the growing evidence that cognitive disorders, which accompany obesity, may be present early in adult life'.



According to WHO figures, 1.4 billion adults, 35% of the world's population, are overweight, half a billion adults are obese, and childhood obesity is expected to increase by 60% over the next decade.

"This scenario looks disturbing in light of the fact that episodic memory, which is shown to be altered in the obese subjects in our animal model study, influences an individual's decision-making processes, in the area of behaviour but also food choices," Cristino continues.

"The data from this research confirm that in the balance between hunger and satiety – to a certain extent governed by chemical signals such as hormones, endocannabinoids, neuropeptides, etc. – psychological factors also play a role. – Psychological factors also play a crucial role in the balance between hunger and satiety – to a certain extent governed by chemical signals such as hormones, endocannabinoids, neuropeptides, etc. – and psychological factors also play a crucial role: people tend to eat more in front of a TV screen, when they are distracted and their episodic memory is less involved.

In other words, being overweight may make it more difficult to remember what and how much you have eaten, paradoxically increasing the likelihood of overeating. "Understanding how we instinctively regulate our consumption and eating behaviour is becoming increasingly important, in order to develop anti-obesity therapeutic strategies aimed at regulating the molecules responsible for altering neurogenesis, in particular through the endocannabinoid system which, in its broadest conception, also involves another important player in the aetiology of obesity, the intestinal microbiota', concludes Vincenzo Di Marzo, co-author of the study.

Give a tree, a beehive, a polar bear or a glacier for Christmas

With Christmas only a few days away, here are some tips for truly original green gifts that will surprise your loved ones and certainly do good for the environment. Give the planet a gift this Christmas: a tree, a beehive, a polar bear or a small area of alpine glacier!

Marisa Silvestri

With a donation to one of the many sustainable projects that have sprung up recently, you can help others and our planet, too. In principle, it's very simple: you choose a project, make a donation in the name of the recipient, and the recipient then receives a 'donation receipt'. For example, you can give a tree through Treedom, a beehive through 3Bee, a polar bear through WWF or even a piece of glacier through GLAC-UP.

Give a tree through Treedom

Give a tree with just a simple click! You can do it for the benefits it can bring, for the CO2 it can absorb or to make an original gift. A farmer will plant it in his land. Your tree will be photographed, geolocated and will have its own online page where you can follow the story of the project of which it is a part. The fruits of your tree will belong to the farmer who will take care of it and who will be able to use them as a food resource or income support. As it grows, your tree will absorb CO2, protect the soil and biodiversity. You can choose from many species, countries, meanings, local uses and there are even Horoscope Trees!

Give a beehive through 3Bee

They may be small and seem insignificant to some, but bees are a vital link in the entire food chain. Thanks to their tireless pollination work, they are responsible for about 80% of the food we eat every day. With 3bee you can give the gift of a beehive, helping beekeepers to monitor and protect their bees. And the gift includes honey!

Give a polar bear through WWF

As a Christmas present this year, you can also choose to adopt an endangered species in the name of your loved one and help WWF to protect it from extinction. From whales to snow leopards, from polar bears to elephants, from penguins to lions, from dolphins to giraffes, many animals are in danger of disappearing, but with your gifts you can make a difference.

Give a small glacier surface through GLAC-UP

Give the gift of an ice-pack of the Presena Glacier in Trentino (Northern Italy) and make your contribution to safeguarding the planet! Scientists tell us that 90% of Alpine glaciers will melt by the end of the century. If you want your grandchildren to be able to admire the beauty of these glaciers, choose one of the three different GLAC-UP ice-packs: preserve up to 3, 6 or 15 cubic meters of Alpine glaciers and receive an adoption certificate to monitor the impact of climate change on the glacier and the progress of its rescue.
By following these tips you will be giving a gift not only to your loved ones, but also to the Planet and therefore to yourself!

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How to reduce energy waste at Christmas

Christmas means lights, decorations and ornaments, in the home and on the city streets. At this time of year, however, it is good to pay close attention to the consumption that is produced. At Christmas, in fact, it is well known that energy consumption increases, and consequently costs and waste. So what solutions and measures can be adopted to avoid these "inconveniences" for our pockets and the environment?

Marisa Silvestri

At Christmas time, stars, chains or arches of lights shine on the windows, balconies and in the gardens of many homes. This magic of lights makes the short, dull winter days a little more pleasant. The magic of Christmas lights is undoubtedly undeniable, but have you ever thought how much electricity it takes to make Christmas sparkle in all its glory?

The electricity consumption resulting from domestic and urban Christmas lights is not exactly environmentally friendly. Once again this year, around 57 million households in Italy will be provided with Christmas decorations. Considering only domestic installations, the total electricity used by all Italian households will be around 2.565 billion watts, or 2.56 gigawatts. During this intense festive period, each household will

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experience an increase in daily electricity consumption of around 45 watts, while national electricity consumption will exceed 2000 megawatts. According to Greenpeace, this extra energy could even cover the electricity needs of a city of one million inhabitants at peak times.

Especially nocturnal animals and migratory birds are disturbed in their natural behaviour by outdoor lighting on balconies and in gardens. Insects are attracted to light; if it stays on at night, they cannot rest. Migratory birds orient themselves according to the stars, but if the night is too bright, they can no longer see the stars and lose their bearings.

The most sustainable solution is to do without lighting. But a Christmas without lights is hard to imagine. However, there are alternatives to the old halogen lights.

LEDs consume approximately 90% less energy and last up to 20 times longer than conventional lights. When purchasing, a warm white light is recommended. Cool white is the most energy efficient, but warm white (up to 3000 Kelvin) is friendlier. To create the feeling of a real candle, amber LEDs with a maximum of 2200 Kelvin can be used. These are particularly warm and have almost no impact on animals or the environment.

There are also Christmas light sets that run on the energy of the sun, via a photovoltaic panel. These lights do not use electricity: they switch on when it gets dark and remain on for 8-10 hours, depending on how much energy the solar panel has stored during the day.

It is better not to use battery-powered lights; batteries end up in the trash and pollute the environment through improper disposal. Lights that plug into a socket have less impact on the environment. An environmentally sustainable lifestyle would dictate not installing spotlights that illuminate half the neighbourhood, but, for example, just using a string of lights along the balcony railing.

Also, if we love our Earth we should not leave Christmas lights on permanently. During the day it is still bright and after midnight no one will admire your lighting. Just use a smart socket with a timer and set a reasonable time for automatic switching on and off.

Candles are a must in winter and at Christmas time. But, unfortunately, they are not environmentally friendly and sustainable either. Most candles are made of paraffin, i.e. oil. Oil is an exhaustible resource and is not particularly environmentally friendly when extracted. Moreover, the process of burning candles is also not to be underestimated: this releases CO2 and thus promotes global warming.

Heating home: 10 tips to save money and protect the environment

In order to protect the environment and save on bills, ENEA proposes 10 practical rules for heating homes in the best possible way, avoiding waste and, in many cases, unnecessary penalties, and provides a free guide for condominium owners with rules for the correct allocation of heating, cooling and hot water expenses, based on the actual consumption of each property unit.

Editorial Board

From 1st November, the law provides for the possibility of switching on heating systems in the so-called climate zone D, which includes large cities such as Rome, Genoa and Florence. The "season" officially began on 15th October, when it became possible to turn on the systems in over half of Italy's 8,000 municipalities, those in the so-called zone E, which includes large cities such as Milan, Turin and Bologna, as well as mountain areas throughout Italy where the climate is harsher.

ENEA's 10 practical tips for a pleasant temperature at home without "increasing" the bill too much, avoiding energy waste and protecting the environment:

1) Maintain your installations. This is the first rule when it comes to safety, savings and environmental protection. A system consumes less and pollutes less when it is correctly adjusted, clean and free of limescale deposits. Anyone who fails to maintain their system is liable to a fine of 500 euros (Presidential Decree 74/2013).

2) Control the room temperature. Excessive heating in the home can be harmful to your health and your pockets: legislation requires a temperature of 20 degrees plus 2 degrees of tolerance, but 19 degrees is more than enough to guarantee the necessary comfort. In addition, every degree lowered saves 5 to 10 per cent on fuel consumption.

3) Pay attention to the switching hours. It is not advantageous to keep the heating system on during the day and at night. In an efficient home, the heat accumulated by the structures when the system is working guarantees a sufficient degree of comfort even when it is switched off. The maximum daily switch-on time varies by law according to the 6 climate zones in which Italy is divided: from 14 hours per day for systems in zone E (north and mountain areas) to 8 hours in zone B (coastal areas in southern Italy).

4) Install reflective panels between the wall and the radiator. This is a simple but very effective solution for limiting heat loss, especially in cases where the radiator is built into the wall, reducing its thickness and degree of insulation. To help reduce heat loss to the outside, a simple sheet of tin foil can be sufficient.

5) Screen windows at night. Closing shutters and blinds or placing heavy curtains will reduce heat loss to the outside.

6) Avoid obstacles in front of and above radiators. Placing curtains or furniture in front of radiators or using radiators as clothes dryers hinders the diffusion of heat into the room and is wasteful. Furthermore, it only takes a few minutes to renew the air in a room, so windows should not be left open for too long as this leads to unnecessary heat loss.

7) Give your home a check-up. Asking a technician to carry out an energy diagnosis of the building is the first step to take to assess the state of thermal insulation of walls and windows and the efficiency of air conditioning systems. With the diagnosis it is possible to know what needs to be done and to evaluate the cost-benefit ratio. As well as cutting heating costs by up to 40%, the measures are even more convenient if you take advantage of tax deductions for the energy requalification of buildings, the ecobonus that allows you to deduct from your IRPEF or IRES taxes from 50 to 85% of the expenses incurred depending on the complexity of the intervention and the Superbonus, with a deduction rate of 110%.

8) Choose innovative heating systems. Since 2015, with few exceptions, only condensing boilers can be installed. You should consider replacing your old heat generator with a condensing one or a high-efficiency heat pump. Biomass boilers and hybrid systems (condensing boiler and heat pump) are also available, combined with solar thermal systems to heat water and photovoltaic systems to produce electricity. Tax relief is also available for these systems.

9) Choose innovative technological solutions. It is essential to equip your system with an automatic temperature control unit to avoid unnecessary peaks or surges in power. The possibility of hourly, daily and weekly programming guarantees further energy saving. Home automation also helps to save energy: chronothermostats, presence sensors and electronic controllers allow the temperature of individual rooms and the switch-on time of heating systems to be regulated remotely via mobile phone.

10) Install thermostatic valves. These devices are used to regulate the flow of hot water in the radiators so that the set temperature for heating the rooms is not exceeded. Compulsory by law in apartment blocks, thermostatic valves help reduce consumption by up to 20%.

Sustainable cosmetics from plants, agricultural waste and plant cells

Editorial Board

Food plants such as ginger and basil, but also agricultural waste and plant cells to make safe, sustainable cosmetics with scientifically proven effects, without resorting to animal testing. This is the aim of the InnCoCells project, funded by the EU Horizon 2020 programme.

ENEA will be involved, in particular, in the chemical characterisation of species and bioactive molecules, through metabolomic analyses, but also in the development of cellular and above-ground cultures of kencur, ginger, cress, perilla, basil and tomato plants.

"It is a revolution in the way cosmetic ingredients are discovered, manufactured and converted into validated and market-friendly products that appeal to today's increasingly quality- and environment-conscious consumers," stresses Gianfranco Diretto of the ENEA Biotechnology Laboratory. "In fact, sustainable approaches and industrial-scale production will be applied, without resorting to animal testing but through bioassays on cell lines, a type of scientific experiment that then involves testing on human volunteers."

Arterra Bioscience, a company specialising in biotechnology research and development, will develop the growth conditions of the plant cell cultures of interest – cranberry, lychee, jasmine, liquorice, hyssop and peony – and characterise the biological activity of the plant extracts. "The InnCoCells project is in line with the company's mission, which is increasingly committed to the development of sustainable and highly

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effective active ingredients for the cosmetic market," stresses Maria Gabriella Colucci, founder and CEO of Arterra.

"One of the key principles of the project's approach is that plants currently at risk of overexploitation will be grown sustainably and economically to ensure that the new ingredients do not pose risks to biodiversity or environmental safety," highlights Kirsi-Marja Oksman, VTT project coordinator. "Indeed, one of the key principles of the InnCoCells project approach is to extensively validate the biological activity of all ingredients developed in the project through the participation of a range of partners who will perform a wide range of assays on different cell lines."

Specifically, researchers will work towards several key objectives, including the identification of 10 plant species with molecules of interest and the development of a process to validate the presence of natural bioactive molecules in plants by testing the activity of at least 50 ingredients. Of these, 20 will then be subjected to production processes in cell cultures or plants grown in greenhouses, in the field or under hydro-aeroponic conditions. The team will also work on the development of processes from at least 10 agricultural waste streams and innovative and sustainable technologies for the production, on a pilot scale, of at least 10 active ingredients, as well as the collection of regulatory and product safety dossiers and environmental assessments. Finally, the sharing of the know-how developed with stakeholders in the cosmetics industry and end users for the promotion of ingredients and the development of products that meet consumer demands.

The other 14 partners are: Evologic Technologies (Austria); VIB-UGent Center for Plant Systems Biology, ILVO – Flanders Research Institute for Agriculture, Fisheries and Food, EPSO – European Plant Science Organization and AE – Add Essens (Belgium); Ecomaat (Bulgaria); PAT – Plant Advanced Technologies and Cosmetic Valley (France); TUDA – Technische Universität Darmstadt and Merck (Germany); ALT – Alternative Plants (Latvia); LIST – Luxembourg Institute of Science and Technology (Luxembourg); ScandiDerma (Norway); TRM – Twyman Research Management (UK).

A journey into the world of trees through past, present and future

Why are trees good for nature but also good for man? The answer to this question can be found in a single word: “alberology” (or better “treeology”, from the Italian “alberologia”), an ad hoc neologism to reveal the influence of trees on popular beliefs and traditions and to explain their importance for mankind throughout history.

Aurora Chiara Cortese

Since ancient times trees have acquired a special meaning for men, who venerated them for their function of connection between the earthly and the otherworldly dimensions, and worshipped them as true gods. In the woods, man immediately found shelter, took care of himself, used the fruits of the trees as a source of nourishment and wood as a building material; it is precisely from a tree struck by lightning that, it is thought, the first fire has sprung, thanks to which man was able to warm up, defend himself from wild animals, cook the food and then melt the metals. The forest has always also had a therapeutic role, being the place where men could heal their soul and be reconciled with nature and, therefore, with themselves.

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This is what Antonio De Bona (naturalist and forester from Lucania) talks about in its first volume of "Alberologia" (Osanna Edizioni, 2015), in which he traces the history of trees and the importance that they have always had for the human being, starting from mythology and philosophy. In fact, just delve into literature, art, history, legend, to find any reference to trees, woods or forest: from the dark wood of Dante (night and dark scenery that opens the Divine Comedy) to the enchanted Arden's forest of the Shakespearean comedies, where fantasy and reality coexist and merge; from the tree of life which, according to Christian tradition, God placed in the Garden of Eden together with the tree of knowledge of good and evil, to the tree of life made by the Austrian painter Gustav Klimt, symbol of renewal and rebirth, element of conjunction between heaven and earth, between the conscious and the unconscious.

The interdisciplinary links that analyzes De Bona in "Alberologia" are many and also include chromotherapy (science that studies colors for the treatment of certain diseases), "silvotherapy" (therapy process that uses the forest as a body and mind care), numerology linked to plants and even the influence of trees on birth cycles during the solar year (a sort of tree horoscope). Another interesting aspect of the book is dendropsychology (from Greek dendron, tree): De Bona tells us that Evi Crotti (psycho-pedagogist and founder of the "Graphological School Crotti" in Milan) in her book "And you, what tree are you?" he resumes a psychological test of the '50s conceived by the Swiss scholar Emil Jucker, which was developed and implemented only later by the German psychologist Karl Koch, according to which the image of the tree would recall the image of the human being, which therefore is able to recognize itself in it. So the interpretation of the drawing made by the person would lead to reveal the most hidden aspects of his personality and his deepest self, but also past traumas, ideals and aspirations.

Soon I will have the pleasure of addressing and analyzing all these links (and many others) together with De Bona during a series of articles dedicated to "Alberologia", with the intention of making as many people as possible reflect and raise awareness on the importance that trees have always covered for all of us, today more than ever, especially in the light of recent developments in Cop26 (the 26th United Nations Climate Conference, held in Glasgow, in Scotland, from 31 October to 12 November).

In the fight against climate change, which we are fighting today, in fact, trees are our main allies, as they perform the valuable function of absorption and fixation of CO2 through a natural process, that of photosynthesis chlorophyll, that makes them real carbon tanks (carbon sink). Therefore, protection of existing forests and restoration of the degraded ones it is made necessary, and it is precisely for this reason that the European Union has set itself the goal to expand the forest area planting three billion trees by 2030. They look like huge numbers but they're not if we think that only in the last two centuries, we felled about two thousand billion trees (one third of all trees that ever existed on the planet) to obtain material but above all to make room for the cultivation of animal feed and livestock feed.

Our survival on Planet Earth, therefore, has always been closely related to trees and cannot disregard them. Woods and forests around the world are an immense treasure trove of biodiversity and play roles of primary importance, both from a biological and economic point of view (increase hydrogeological safety, reduce the impact of floods and inundations, consolidate the soil by reducing landslides and subsidences, stop the desiccation of soils, erosion and desertification and protect from heat waves and extreme heat) that make them an immense heritage to protect and preserve.

The triumph of the outdoors in 2021: glamping is the new buzzword!

Editorial Board

Pitchup, the only instant booking platform in Italy specialising in stays in campsites and holiday villages, reveals the year's figures and the next trends in comfort, safety and sustainability.

With the New Year just around the corner, there is a growing desire to plan trips in 2022, discovering new destinations and new experiences, in close contact with nature, without sacrificing comfort and style. Pitchup.com, a platform for booking outdoor holidays throughout Europe, reports on the emerging trends in glamping, the most glamorous form of camping.

On the wave of a constantly growing trend in Italy and Europe, glamping is perceived by users as a much safer solution than staying in a hotel due to several factors: the opportunity to stay in the open air, the larger surface area, guaranteeing a proper social distancing, and the distance from the most congested residential areas.

During 2021, outdoor holidays saw huge growth compared to hotel stays: Pitchup.com, Europe's largest outdoor booking platform, reported an 84% increase in overnight stays in the third quarter of 2021 compared to 2019, while Airbnb, Expedia and Booking.com saw decreases of 7%, 32% and 18% respectively.

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Sustainability has also become a determining factor when choosing a holiday, and glamping has proven to have a far lower environmental impact than other types of accommodation. The carbon footprint of glamping holidays tends to be much lower than that of hotel stays, not only because most people travel by car rather than plane, but also due to the use of renewable energy, recycling levels and a 'slow food' mentality, which promotes local produce and low-impact activities such as walking and hiking nearby. Glamping sites also help to sustain the vitality of local facilities for the benefit of the whole community, especially in predominantly rural areas.

The pandemic has taught us the importance of planning: a trend has emerged to 'book everything' – from restaurants and events to experiences and travel – due to the fear of 'missing out', the desire to use secure payment methods and the need to meet any pre-arrival requirements, as well as a greater and generalised need for certainty. Comparing 2021 arrivals with 2018-19 arrivals on Pitchup.com, the average booking time increased from 29 days to 35, mainly for lodges, cabins and pods (17%). Advance bookings for 2022 are up 200% on last year.

The favourable effects of the new outdoor trend are not affected by seasonality: although growth has been strong across the board over the past year, Pitchup.com has recorded its highest growth rates in the autumn, with September 2021 recording +206% arrivals compared to 2019 and October 2021 with +187%. Facilities equipped for glamping have benefited from the trend, being able to provide more cosy and comfortable solutions even in colder weather.

Among the most 'popular' accommodations, pods still account for about half of all glamping bookings on the platform. With a wide appeal thanks to their mid-market price, pods offer the perfect off-season option for campers, as well as a great way to win over the other half of camping sceptics. Pods are also more weatherproof and require much less maintenance.

High-end glamping accommodation has become a substitute for boutique hotels, offering the same standard of luxury while bringing people closer to nature. High customer expectations continue to drive innovation in this field, with many sites adding freestanding bathtubs, more technology and more original structures (such as tree houses and geodesic domes).

The pandemic has also seen an increase in the number of sites offering private toilets for added security, which will further strengthen the demand for premium glamping options.

Separate collection: how to recycle used cooking oil

Editorial Board

Did you know that a natural product like oil, if improperly disposed after use, can be extremely dangerous for the environment? Find out how to recycle used cooking oil in our section in collaboration with SmartRicicla

A natural product such as cooking oil can turn into a powerful pollutant if not properly recycled after use. It is estimated that in Italy each citizen produces approximately 5 kg of spent oil per year resulting from frying, storing food and cooking food.

The alarming fact is that more than half of this oil is not recovered but is dispersed in the environment, ends up in the sink or in the bathroom drain or is emptied in outdoor spaces such as the vegetable garden and the garden.

This action, in addition to representing an offense (the law prohibits the disposal of frying oil in sewer pipes), has a serious impact on the environment. Exhausted oil, in fact, is not biodegradable, it is not an organic waste, and can even pollute drinking water and dry up the soil where it is thrown. In our section in collaboration with SmartRicicla we see what is the most correct way to dispose of used oil.

First of all, it must be decanted into an ad hoc container to keep at home until it is full. Only then, it must be delivered to the ecological island or in the special containers made available by your municipality of residence. Alternatively, you can take it to petrol stations and supermarkets equipped to collect it.

If properly recycled, spent oil is a precious resource. It is used to produce lubricants for agricultural machi-

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nes, glycerine for saponification, biodiesel for cars. Even biofuel for aircraft was even produced, as in the case of the Boeing 777-200 that connects New York with Amsterdam, round trip, the first intercontinental flight that uses biofuel, capable of reducing CO2 emissions by 20%. The aircraft manufacturer KLM has decided that if the results continue to be so satisfactory, biofuel will be used for the entire fleet in order to reduce harmful emissions by 80%.

On the contrary, if disposed of in an improper way, the exhausted oil, although not harmful, is extremely harmful for the environment. In addition to damage to the sewage system, the refusal of vegetable and animal oils and fats renders the soil on which it is poured sterile. The earth, in fact, becomes waterproof and does not allow the root system of plants to take in the nutrients necessary to live. If poured into surface waters, it forms an extensive waterproof film, preventing aquatic flora and fauna from exchanging oxygen water-air, causing its death while, when poured into deep aquifers, it compromises its potability.

RenOils, a young non-profit consortium that deals with increasing and making more efficient the collection of used oils and fats and recovery for environmental purposes, has drawn up a handbook to properly dispose of the oil we consume in our kitchens.

Do not throw the oil in the sink or in the bathroom drain as it ends up in the city sewer system and, being the oil highly polluting, it alters the correct water purification, the efficiency of the purifiers with a consequent increase in management and maintenance costs of the plants. The purification of polluted water requires costs quantifiable in 1.10 euro per kg and is borne by citizens;
Insert the used oil in an ad hoc container to keep at home until it is full – we recommend using a thick plastic container with a wide neck to facilitate the transfer from pans and pots (e.g. fruit juice bottles or the liquid detergent container for the washing machine);
Once full, the chosen container must be brought to the ecological island closest to home or the used oil must be thrown into special bins present in your town.

WHAT YOU CAN CONFER

- used vegetable oil
- expired vegetable oil

WHAT YOU CANNOT CONFER

- Spent fuel oils

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L'informazione green in Italia

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