# THE ENERGY COMMUNITY

***By Michele Buono***
*With the contribution of Simona Peluso and Filippo Proietti*
*Video by Tommaso Javidi*

**MICHELE BUONO VOICE-OVER**
How is it that we've got it into our heads that we have to save the planet, when the planet doesn't even think about us?
What if one day we all stopped, the earth became clean and started breathing again, but it didn't notice. And what if we churned out all the gas we pleased? Things would heat up, the ice would melt, the seas would wash over a lot of the land and typhoons would strike all over. But the earth would keep turning as it always has, that's for sure. It can do without us. We need to save ourselves, because our civilisation – as we know it – is only possible if we don't release too much poison into the air and we do everything we can to stop the temperature going haywire.

**SIGFRIDO RANUCCI IN STUDIO**
It took a virus to let us enjoy slightly cleaner air, as well as cleaner water. They estimate that thanks to the lockdown, 5.5% fewer greenhouse gases will be released into the atmosphere in 2020. But that's not enough to stop the planet's climate going bonkers. We need to make a new pact with the planet. We need a serious conversion to green, to a green economy, but a proper one, not a fleeting financial bubble. What we're suggesting this evening is something that will be good for our own health, the planet's and the economy's. So, here it is. What would happen if we all became an energy community, if each of us became a source of clean energy? If we produced it, stored it and distributed it? I'll tell you. It would set off a virtuous cycle, one in which every citizen could contribute to the economy, use free electric cars and a free heating network for public and private buildings. And what would happen if we turned ourselves into an energy democracy, where people, local people could decide where and how to invest in energy? This idea is the brainchild of one man, Werner Vogt, a local pacifist who believes that wars are always fought over oil and gas. He says we should free ourselves from these sources. When he first began working on this in earnest, he was moved by it, while others ridiculed him. "Where are you going with all this?" they would say. "It's never going to work!" But they were laughing on the other side of their faces when the turbines started spinning and the money started rolling in. Here's our own Michele Buono.

**MICHELE BUONO VOICE-OVER**
This is a story from Germany, of energy communities. We're in Rhineland-Palatinate, on the roads of the Rhein-Hunsrück district. This area has two problems – a falling population and public debt. But things can change quickly.

**MARLON BRÖHR, DISTRICT COUNCILLOR OF RHEIN-HUNSRÜCK**
Our councils get 8 million euros in land rent from wind farms. We reinvest that money in installing solar panels and setting up local heating networks.

**MICHELE BUONO VOICE-OVER**
The farms produce about 50 million euros' worth of energy every year. The goal is decarbonisation. A climate protection manager runs the projects.

**FRANK MICHAEL UHLE, CLIMATE PROTECTION MANAGER FOR THE RHEIN-HUNSRÜCK DISTRICT**
I give advice to local people, councils and businesses. Three hundred people from the district took part in a discussion on the environmental plan. They asked, "How can we halve our energy consumption?" Once the plans are decided, my job is to carry them out.

**MICHELE BUONO VOICE-OVER**
Neuerkirch and Külz, two neighbouring municipalities that have come together.

**VOLKER WICHTER, MAYOR OF NEUERKIRCH**
We could never have done it alone. In Külz there was a small district heating network linking only 12 houses, not enough to stand on its own two feet. We added our municipality and the network widened. We built this thermal solar plant and a conductor about 7 kilometres long to link the two municipalities. It now heats 150 houses.

**MICHELE BUONO**
What's the financial model?

**VOLKER WICHTER, MAYOR OF NEUERKIRCH**
We get the resources from the revenues for the wind farms and manage to give 4,000 euros to every local who signs up to the network.

**MICHELE BUONO VOICE-OVER**
Together the municipalities' $CO_2$ savings have gone from 1,200 to just 80 tonnes a year.

**MARLON BRÖHR, DISTRICT COUNCILLOR OF RHEIN-HUNSRÜCK**
We funded car sharing with electric cars in all the municipalities in the district. It costs us 60,000 euros a year but is free for locals.

**VOLKER WICHTER, MAYOR OF NEUERKIRCH**
The idea's been very popular. There are some families who still don't have a car.

**MICHELE BUONO**
How is you economy changing?

**FRANK MICHAEL UHLE, CLIMATE PROTECTION MANAGER**
Once, the country produced food for nearby towns. Now it produces energy too. We supply cities like Koblenz, Trier and Mainz.

**MICHELE BUONO VOICE-OVER**
Agriculture is still here and there's actually a surplus of energy. Once, all the electricity was imported from coal-fired and nuclear stations. Now there are 270 wind, 4,500 solar and 17 biomass plants. There used to be a rubbish tip on the hill above the plants. That's been covered up. Now there's a solar farm there belonging to the municipality, which sends electricity to 500 houses.

**FRANK MICHAEL UHLE, CLIMATE PROTECTION MANAGER**
At first they all laughed. "You're all mad. It's never going to work!" They're laughing on the other side of their faces now. Take Werner Vogt, who built the first wind farm. He came from the peace movement. He was convinced that wars start over oil and

gas and that we need to free ourselves from those sources. When the first turbine went up he was moved.

**MICHELE BUONO VOICE-OVER**
Vogt battled the entire regional government to present his project, managed to convince 150 people to chip in some cash and finally managed to build a couple of plants.

**MICHELE BUONO**
What did he say to people to convince them?

**WERNER VOGT, CEO OF HÖHENWIND**
Why should I burn oil and gas when God gave us sunlight and wind? And they don't cost us anything! So I told them that if everything went ahead we'd all gain from it. Our numbers started to grow and more and more people said, "Hey, it works!"

**MICHELE BUONO VOICE-OVER**
Today we have 336 shareholders and 18 plants.

**MARLON BRÖHR, DISTRICT COUNCILLOR OF RHEIN-HUNSRÜCK**
The number of unemployed people in the area has gone down. Now we have a rate of about 3.4 per cent. And we have practically no more debts.

**MICHELE BUONO VOICE-OVER**
Hesse, south-west Germany. In Wolfhagen they decided to push the boat out even further.

**REINHARD SCHAAKE, MAYOR OF WOLFHAGEN**
Concessions for the power grids are renewed every 20 years. And when our town's concession expired, we wondered whether to keep using it or go down another path.

**MICHELE BUONO VOICE-OVER**
They went down another path. The power grid was sold off by the municipality – that can be done in Germany – and the good people of Wolfhagen did something they never would have imagined. They started running their own town's power grid.

**REINHARD SCHAAKE, MAYOR OF WOLFHAGEN**
They set up a cooperative, "citizens for energy", and bought 25 per cent of the municipal grid. This lets them sit on the supervisory board and take decisions alongside the managers.

**MICHELE BUONO VOICE-OVER**
It's an experiment in electric democracy that pushes from below for a transition towards renewable sources.

**HANS MARTIN, PRESIDENT OF THE SUPERVISORY BOARD OF THE RENEWABLE ENERGY COOPERATIVE**
Cooperatives are the most democratic model because every shareholder has a vote, regardless of how much money they've invested.

**KARL-HEINZ KRAFT, PRESIDENT OF THE BOARD OF DIRECTORS OF THE RENEWABLE ENERGY COOPERATIVE**
We now have over 900 shareholders and manage 4,600,000 euros in capital.

**REINHARD SCHAAKE, MAYOR OF WOLFHAGEN**
Thanks to this civic involvement, locals can guide and oversee the municipal grid's investments. They get a dividend, too. It's not speculation, it's a way of taking part in your own town's economic success.

**MICHELE BUONO VOICE-OVER**
They said, "Let's not take this old barracks down. Let's cover it in panels and turn it into a school."

**MANFRED SCHAUB, CEO OF ENERGIE 2000**
It was a hangar for parking tanks. In renovating it we're trying out new techniques of energy efficiency. The transparent roof is completely photovoltaic, so we can use sunlight to the maximum in the interiors.

**MICHELE BUONO VOICE-OVER**
It was locals who suggested investing in this area. They thought, it's barren land, so let's make it a solar farm.

**MARKUS HUNTZINGER, CLIMATE PROTECTION MANAGER FOR WOLFHAGEN**
In Wolfhagen today, we use renewables to produce about 55,000 MWh of electricity and consume less than 50,000, so we produce more clean energy than we consume.

**MICHELE BUONO VOICE-OVER**
And the energy that's left over? There will always be a neighbour in need, and city by city, country by country, you can change the model until you have a global network of renewable energy. Here's the Energy department at the Polytechnic of Turin.

**ETTORE BOMPARD, ENERGY DEPARTMENT AT THE POLYTECHNIC OF TURIN**
Renewables shouldn't be shared at a city-wide level, they should be shared at a global level.

**MICHELE BUONO VOICE-OVER**
They're looking into a global network that would exploit time differences. In the part of the world where it's night-time and the energy being produced from wind isn't being used, it could be sent by direct current lines to where it's daylight.

**ETTORE BOMPARD, ENERGY DEPARTMENT AT THE POLYTECHNIC OF TURIN**
Our laboratory is linked up to the United States, it's linked up to Europe, to the European Commission's laboratories, it's even linked up to China, to a laboratory which studies the energy transition at a global level.

**MICHELE BUONO VOICE-OVER**
The big challenge is, can we become a leader in a world with a new green economy? Can we become an energy community, as they did in Germany? By producing clean energy from renewable sources, for example. We have the plants, but that's not enough to become a leader. But we know what to do to make the most use of renewable sources and that's
a good starting point. We need to balance production and consumption.

**LUIGI PELLEGRINO, RESEARCHER AT RSE**

If the system isn't organised, we need to limit the power produced by plants using renewable sources. Obviously this isn't convenient in terms of energy.

**MICHELE BUONO**
But why? What would happen? Wouldn't it get used?

**LUIGI PELLEGRINO, RESEARCHER AT RSE**
It wouldn't get used because in an electrical system you have to balance, moment by moment, production and use.

**MICHELE BUONO VOICE-OVER**
Because when sunlight and wind suddenly appear, you have to switch off the renewables, otherwise the network gets unbalanced, but if excess energy from renewable sources could be stored, it could be put on the grid when it's needed. This is the plan at RSE (Ricerca sul Sistema Energetico), an energy research centre. The regional government of Lombardy has launched a campaign to encourage people to buy batteries.

**LUIGI MAZZOCCHI, DIRECTOR OF THE GENERATION TECHNOLOGY DEPARTMENT AT RSE**
Over 3,000 families in Lombardy now have batteries linked up to solar panels in their houses.

**RENZO CORTIANA**
I heartily accepted. We're stronger together. It's the same old truth – together, little people can make a mighty whole.

**MICHELE BUONO VOICE-OVER**
They can make a power station, in fact. Lots and lots of little solar plants that wouldn't count for much on their own are seen by the grid as a huge virtual power station that its operator can run.
Enel X brings together small plants in eastern Lombardy. The control room is in Rome.

**FEDERICA ROFI, ENEL**
At this time, our park is producing about 8,000 megawatts but is faced with a demand for 48,000 megawatts. The grid makes a demand and we need to meet it exactly in line with our production.

**MICHELE BUONO VOICE-OVER**
The operator Evolvere controls western Lombardy. How do you get the impact of a virtual power station by putting lots of little renewable energy sources on a grid?

**FRANCESCO CIMINO, TECHNICAL MANAGER AT EVOLVERE**
This brings together all the energy data and establishes the commands for charging and emptying the storage system.

**FRANCO GIAMPETRUZZI, INNOVATION MANAGER AT EVOLVERE**
We can use technology to communicate with individual plants. With a single storage system, with a single inverter, with a single meter, customer by customer, we can see the state their plants are in and even control them.

**MICHELE BUONO VOICE-OVER**

If no one is consuming, the batteries used by every single family are charged. When the grid needs it, every battery gives up what it can and there's enough for everyone.

**MICHELE BUONO**
Let's do a simulation. If this model of a green energy transition was up and running, what would happen?

**DAVIDE TABARELLI, PRESIDENT OF NOMISMA ENERGIA**
We'd have a reduction in the order of 20 to 30 per cent, so a reduction of about 20 billion euros in our 40 billion foreign debt and 1 per cent of our GDP freed up.

**MICHELE BUONO**
What would the effect be on creating new skilled jobs?

**FRANCESCO VENTURINI, CEO OF ENEL X**
Just think of the whole raft of installers and managers for the thousands of solar plants on the roofs of people's houses.

**MICHELE BUONO VOICE-OVER**
If there are lots of local producers, they can create communities in which electricity can be exchanged after it's produced. Whatever I have left over I give to you and whatever we all have left over we give to the grid. It's an energy community.

**FRANCESCO VENTURINI, CEO OF ENEL X**
For Enel X it would be easier to go and bring aggregators together and there you'd have your energy community. If projects like this are going to succeed at a national level, in particular, the public needs to get fully involved, or we won't manage it.

**SIGFRIDO RANUCCI IN STUDIO**
If we don't become an energy community we can't do it. The 3,000 families who've put a battery in their basement don't add up to much. Now the regional government of Lombardy has given incentives and people are trying it out. So why aren't other regional governments doing it? We're able to here. We have the skills to turn ourselves into an energy community. We know how to manage the energy that comes out of clean energy plants. We know how to channel it into smart grids. We are among the best in the world at research and knowledge of using and developing global super-networks for distributing clean energy. And this is a skill we could bring to the table in geopolitics, too, because we know how to make the most of energy from renewable sources. There's not a lot of oil and gas in the world, but there is a lot of sunlight and wind. And everywhere has a bit of them, above all Africa, a continent that still needs to grow, that is growing exponentially, and 30% of which still needs lighting. If they go on getting light by burning gas and diesel, how will we stop the planet's temperature carrying on rising? And that's why the president of the European Commission, Ursula von der Leyen, has said, "Invest in that continent, take your skills in the green economy and digitalisation there, build your growth straight away on the foundation of sustainability. Because it's good for humanity." And what greater authority on sustainable energy than an indefatigable ocean mariner powered only by its own two wings?

**MICHELE BUONO VOICE-OVER**
We have technologies and skills and Italy is not short of ideas.

**TOMMASO MORBIATO, FOUNDER AND CEO OF WIND CITY**
We discovered that the albatross is a bird that consumes very little energy over the distances it flies, so we made it our symbol for what's already obvious all over the planet. We just need to stop, be humble, look at nature and try and learn from it.

**MICHELE BUONO VOICE-OVER**
The result is this wind turbine, built by Trentino Sviluppo, an incubator of technological businesses and start-ups.

**TOMMASO MORBIATO, FOUNDER AND CEO OF WIND CITY**

We had the idea to make the turbine adapt itself to the wind, essentially, make it think for itself, as if it were a sailing boat forced to go upwind.

**MICHELE BUONO VOICE-OVER**
A turbine that can handle windy streets, weak and capable of leaning one way or the other. A turbine with a flexible geometry so it can be used as much as possible. Part albatross and part sailing boat.

**TOMMASO MORBIATO, FOUNDER AND CEO OF WIND CITY**

We're making 40 to 45 turns a minute, at a power already over 120 to 130 watts. Thanks to this turbine's flexible geometry, it's already started and is fully running even in a light wind.

**MICHELE BUONO VOICE-OVER**
Meanwhile, an idea that will bring work to companies in the area has taken shape. How much wind could a turbine designed to go on the roofs of blocks of flats turn into energy? City by city, from Italy to the rest of the world.

**MAURO CASOTTO, DIRECTOR OF OPERATIONS AT TRENTINO SVILUPPO**
These start-ups, these businesses work here, helping the local area and considering all the issues, all the principles of sustainability and green technology, but they have to go on into the wider world.

**MICHELE BUONO VOICE-OVER**
They could look to the Gulf of Guinea, for instance. This is the Ivory Coast. We didn't expect to be contacted by an African country. An architect and teacher, Riccardo Bertoni, has chosen which issues to work on with his students – architecture, energy efficiency and sustainability.

**GOUDIAMY NAFISSA, ARCHITECTURE STUDENT**
My name's Goudiamy, I'm 18 years old and I study at the architecture school in Abidjan. I don't think it's possible to imagine a future for the Ivory Coast without sun and wind energy.

**LAURENT DJEDJI, ARCHITECTURE STUDENT**
The sun can produce 5 kilowatts per square metre per day, with an ideal exposition of over 2,500 hours a year. As for wind, we have enough, especially around the coast.

**GOUDIAMY NAFISSA, ARCHITECTURE STUDENT**
And yet some regions of this country are still left in the dark.

**MICHELE BUONO VOICE-OVER**
Overall growth in the country is 8 per cent a year and electrification will have to be completed, to avoid the growth coming to a halt. The middle class is growing and, like all middle classes, they want new things and above all houses.

**RICCARDO BERTONI, ARCHITECT**
That, without doubt, will be what increases energy demand. Here, obviously, energy is not generated by a nuclear system or a solar system. It's generated from coal or diesel.

**ERMES AKAH, ARCHITECTURE STUDENT**
That means we have a lot of work to do and we want to get started straight away, beginning with designing and building houses.

**MICHELE BUONO VOICE-OVER**
The opportunity to do so is provided by a cooperative made up of professors and all the families, who add up to 25,000 people. Enough to build a neighbourhood, essentially. But they like to think of it as an energy community.

**RICCARDO BERTONI, ARCHITECT**
This is where 6,000 flats will be built.

**MICHELE BUONO VOICE-OVER**
The buildings will be very energy-efficient. They will keep their temperature trapped inside and be totally covered with solar panels. There are already spaces planned for accumulators, to store energy.

**RICCARDO BERTONI, ARCHITECT**
A small, independent power station that can produce energy for itself at the same time as distributing it to any small towns nearby lacking in energy.

**MICHELE BUONO VOICE-OVER**
A system that's still not in place in our country because we're living with the old model. But in Africa, starting from zero, you can go straight to doing things this way.

**RICCARDO BERTONI, ARCHITECT**
Taking technological energy production from Italy to Africa is very important. It could become a huge opportunity for us.

**MICHELE BUONO**
What can Italy do for you?

**GOUDIAMY NAFISSA, ARCHITECTURE STUDENT**
Help us architecture students with our education, show us how to take advantage of the potential of renewable energies. Because it'll be us building things in the future.

**GUIDO SARACCO, RECTOR OF THE POLYTECHNIC OF TURIN**
It's a huge opportunity for Italy.

**MICHELE BUONO**

What would be the effect of changing things? What would it mean for us in Italy?

**GUIDO SARACCO, RECTOR OF THE POLYTECHNIC OF TURIN**
It's not just a commercial opportunity for our businesses but a big opportunity to, if you like, save the environment from wrong-headed development on that land.

**ETIENNE DIAKITE, ARCHITECTURE STUDENT**
I ran a project to install solar panels in the lagoon, on a floating plastic platform.

**MICHELE BUONO VOICE-OVER**
It's an island made of recovered plastic bottles, off the coast of the city of Abidjan.

**ETIENNE DIAKITE, ARCHITECTURE STUDENT**
We could set up solar panels on this platform and provide electricity for a section of the local population.

**MICHELE BUONO VOICE-OVER**
You could add the Italian mini wind farm for a good energy mix.

**MICHELE BUONO**
Would you be ready to test this system as it is, in Africa?

**TOMMASO MORBIATO, FOUNDER AND CEO OF WIND CITY**
I'd say in six months' time. We could be ready.

**MICHELE BUONO VOICE-OVER**
And to close the circle, systems of batteries for storing energy.

**FRANCESCO VENTURINI, CEO OF ENEL X**
What could be the benefits of all this? First of all market development. There would be more chances to sell our products. The other benefit would be sharing skills.

**SIGFRIDO RANUCCI IN STUDIO**
This also has the feel of an energy community. Because it helps another continent not to make the same mistakes as us, not to poison the environment. It's the best, most strategic policy for avoiding deaths at sea, for avoiding the rafts of desperate people arriving on our coasts. It's a sign of peace, of inclusion. And the architecture student asking us for a hand could become, in the future, the best ambassador for our skills. All in all, everyone wins in some way. On this front, if I do say so myself, *Report* has made a contribution, creating links between needs and skills. We have a lot of them already. Let's use them. Not least because we can't wait for this blasted virus to stop spreading, only to realise afterwards what wonderful things we've lost.

**MICHELE BUONO VOICE-OVER**
The planet's been clean recently. An ecosystem is made up of living organisms, animal and vegetable, that interact to get the best out of the environment they live in. And if ecosystems are to help us grow, all we have to do is create them. They work outside of nature, too.
Turin, there's an ecosystem. The Polytechnic there is linked to the industrial system, together they're part of the Science and Technology Park for the Environment, and all of them work with Istituto Italiano di Tecnologia, the Italian Institute of Technology. That's a laboratory where they study materials for capturing $CO_2$, or carbon dioxide,

that emitted by the industrial system and that already in the atmosphere. Intuition means finding someone who loves something and letting them run wild with it. That's exactly what it is.

**FABRIZIO PIRRI, COORDINATOR OF THE ISTITUTO ITALIANO DI TECNOLOGIA IN TURIN**
This is where they develop materials for capturing $CO_2$. They're called ionic liquids.

**MICHELE BUONO VOICE-OVER**
Once they're captured, micro-organisms step in and finish the job.

**FABRIZIO PIRRI, COORDINATOR OF THE ISTITUTO ITALIANO DI TECNOLOGIA IN TURIN**
These materials can take the $CO_2$ trapped in ionic liquids, pluck the oxygen molecules out of it and turn the $CO_2$ into molecules with high added value, like methane for example.

**MICHELE BUONO VOICE-OVER**
These are the gluttons for $CO_2$, the micro-organisms that eat and digest it. They don't exist in nature. They have to be created and trained, "Eat carbon dioxide. It's really tasty!"

**FABRIZIO PIRRI, COORDINATOR OF THE ISTITUTO ITALIANO DI TECNOLOGIA IN TURIN**
The development of ionic liquids and so-called synthetic biology. These two things are very, very scarcely used in the rest of the world.

**MICHELE BUONO VOICE-OVER**
This sector is ramping itself up. They're trying out processes on reactors that simulate an industrial platform. It's yet more circular economy, so the carbon dioxide they trap is reused instead of being buried.

**DAVIDE DAMOSSO, DIRECTOR OF OPERATIONS AT ENVIRONMENT PARK**
What do we need to get hold of in order to use it? A reagent that combines with $CO_2$. Hydrogen can do that.

**MICHELE BUONO VOICE-OVER**
We have hydrogen. We produce it here by separating it from oxygen in water, using electricity generated from renewable sources. Then we combine it all with carbon dioxide.

**MICHELE BUONO**
And when hydrogen combines with $CO_2$, what happens?

**DAVIDE DAMOSSO, DIRECTOR OF OPERATIONS AT ENVIRONMENT PARK**
It creates hydrocarbons or other chemical substances. You might say a new chemical is born, which isn't tied just to fossil fuels.

**MICHELE BUONO VOICE-OVER**
You could create a new green industrial chain, from construction of reactors for capturing $CO_2$ to a chemical process industry for producing new hydrocarbons.

**DAVIDE DAMOSSO, DIRECTOR OF OPERATIONS AT ENVIRONMENT PARK**

And that essentially lays a base for a pretty innovative industry.

**MICHELE BUONO**
Can the model be reproduced? Is it scalable on a national level?

**GUIDO SARACCO, RECTOR OF THE POLYTECHNIC OF TURIN**
I certainly think so.

**MICHELE BUONO**
How?

**GUIDO SARACCO, RECTOR OF THE POLYTECHNIC OF TURIN**
When you have education, applied research and services that demonstrate technologies and teach you how to use them at the same time, it creates jobs, including skilled jobs. That's what we need now to get out of the recession.

**MICHELE BUONO**
Let's imagine this design was up and running. What would its effect on the country be?

**GUIDO SARACCO, RECTOR OF THE POLYTECHNIC OF TURIN**
I think the country would restart.

**SIGFRIDO RANUCCI IN STUDIO**
We're one of the only countries in the world that can capture carbon dioxide from the atmosphere and transform it, by combining it with hydrogen produced from clean energy, into a non-fossil and therefore less polluting hydrocarbon. In short, we've turned a poison into an environmental and economic resource. And from that an industrial chain can be formed. And that's not the only good thing. It's also relevant to death and illness. We can make things circular and environmentally friendly. Just think about it. ILVA lovers, pay attention.

**MICHELE BUONO VOICE-OVER**
Factories should all be part of a network where one site's waste becomes another's raw material. That's what the Feralpi steelworks at Lonato del Garda, near Brescia, is doing. It takes in iron slag, the waste from other factories, and turns it into special steels. Then, the waste it makes producing these goes on, in turn, to other factories.

**MICHELE BUONO**
Nothing gets thrown away.

**GIAMPAOLO POGLIO, HEAD OF WRECKAGE MANAGEMENT AT THE FERALPI GROUP**
Nothing gets thrown away.

**MICHELE BUONO VOICE-OVER**
What happens when production combines the circular economy with high technology?

**COSIMO DI CECCA, HEAD OF PROCESS TECHNOLOGY AT THE FERALPI GROUP**
Right at the edge of the oven we set up an innovative tool that lets us measure from afar the temperature of the steel inside it.

**MICHELE BUONO VOICE-OVER**

The temperature has to stay constant. If it goes up it's no use. If it goes down, you have to bring it back up, which wastes energy and releases more emissions.

**COSIMO DI CECCA, HEAD OF PROCESS TECHNOLOGY AT THE FERALPI GROUP**
This process saves us 30 per cent on methane consumption inside the oven in rolling mill 1. We have an advantage not just in terms of energy but of the environment, too.

**MICHELE BUONO VOICE-OVER**
Every machine is equipped with sensors so all the production stages can be traced and data produced.

**COSIMO DI CECCA, HEAD OF PROCESS TECHNOLOGY AT THE FERALPI GROUP**
The more data we have at hand, the deeper we can delve into the processes.

**MICHELE BUONO VOICE-OVER**
To improve productivity and waste less raw material, energy and harmful emissions at the same time.

**ERCOLE TOLETTINI, HEAD OF ENVIRONMENTAL MANAGEMENT AT THE FERALPI GROUP**
We have an ongoing sample system. Our emissions over the last five years have been 20 times under the limit, for dioxins, PCB, micro-pollutants in general, benzopyrene.

**MICHELE BUONO VOICE-OVER**
In every phase of the cycle we recover material as much as we can. Not all the raw material goes into the smelting ovens.

**GIAMPAOLO POGLIO, HEAD OF WRECKAGE MANAGEMENT AT THE FERALPI GROUP**
This is the only plant in Europe that separates wreckage from aggregates and reuses it, sending it to plants which recover the noble material inside it.

**MICHELE BUONO**
Not even the fumes are wasted. They're captured and turned into more raw material.

**ERCOLE TOLETTINI, HEAD OF ENVIRONMENTAL MANAGEMENT AT THE FERALPI GROUP**
These plants do nothing but recover the zinc oxide within and turn it into zinc in metal form.

**MICHELE BUONO VOICE-OVER**
At the end of its cycle, the finished product is ready to be sent off and the slag from working, which is black and gets thrown away in traditional processes, is completely recovered.

**PAOLO OTTONELLI, CEO OF DIMA**
Here's what waste is to Feralpi. We treat it, we work it, we create artificial gravel to use as an aggregate. It's used to produce concrete, tarmac and pre-cast cement objects.

**MICHELE BUONO**

And where does the energy come from to run these plants?

**PAOLO OTTONELLI, CEO OF DIMA**
We buy it from producers of green energy from renewable sources.

**MICHELE BUONO VOICE-OVER**
Even the heat that comes out of the steelworks isn't lost.

**PAOLO GIACOMUZZI, FERALPI GROUP**
The hot water that's heated by the fumes ends up in heat exchangers, where it joins the water system for the district heating, taking the heat far away to the town of Lonato.

**MICHELE BUONO VOICE-OVER**
The town near the plant doesn't need to resort to consuming fossil fuels for its heating.

**ROBERTO TARDANI, MAYOR OF LONATO IN THE PROVINCE OF BRESCIA**
It lets us heat all our sports centres, the town hall, the local foundation, our old people's home and all the main schools. I always give my children an important example – it's as if we'd planted 23,000 trees.

**MICHELE BUONO VOICE-OVER**
The heat produced at the site in Calvisano, meanwhile, heats a sturgeon farm.

**MARIO PAZZAGLIA, SCIENTIFIC ADVISOR TO THE FERALPI GROUP**
So it saves a good deal of money. Then there's the water used for farming.

**MICHELE BUONO**
Is this model of steel production scalable, that is to say could it always be produced like this?

**CARLO MAPELLI, STEELWORK AND ENVIRONMENTAL PROTECTION OFFICER AT THE POLYTECHNIC OF MILAN**
More than a choice, it's an obligation, and this is the way to keep it sustainable.

**MICHELE BUONO**
What would the effect on the environment be in terms of lowering harmful emissions of climate-altering gases?

**CARLO MAPELLI, STEELWORK AND ENVIRONMENTAL PROTECTION OFFICER AT THE POLYTECHNIC OF MILAN**
Between 45 and 60 per cent depending on the technological and engineering solutions used.

**MICHELE BUONO**
Let's imagine this model was up and running. What would the economic effect be?

**CARLO MAPELLI, STEELWORK AND ENVIRONMENTAL PROTECTION OFFICER AT THE POLYTECHNIC OF MILAN**
It would save about 3 or 3.5 terawatts of energy a year and at least 40 million cubic metres of water.

**MICHELE BUONO**
Would it create jobs?

**CARLO MAPELLI, STEELWORK AND ENVIRONMENTAL PROTECTION OFFICER AT THE POLYTECHNIC OF MILAN**
It could well directly create about 10,000 jobs, including highly skilled ones in logistics and treatment processes for the disposal of the materials.

**SIGFRIDO RANUCCI IN STUDIO**
Steel is a crucial asset in our economy and we shouldn't necessarily give up on it or associate it with illness or death. We can work with it in another way. Why don't we start, for example, with ILVA? In the last few days, in the last few hours, the multinational steel manufacturing corporation Arcelora Mittal presented its new industrial plan, which involves laying off more than 3,000 workers. And now? Now we know that people there aren't keen about working with steel. So, the state is stepping in, reclaiming it and turning what's currently a fiasco into a resource. We have the technologies to keep working steel in other ways. And to give our children back the future we've stolen from them.