



innovando

Innovando Srl

COMMUNICATION ON PROGRESS

2020

Innovando Srl COMMUNICATION ON PROGRESS 2020



Innovando Srl supports the Sustainable Development Goals

A brief introduction

Innovando S.r.l. is promoting the adoption of circular economy concepts by offering solutions designed to reduce pollution and keep materials in use. We advance our clients' resource-efficiency by innovating their supply-chain sustainability through our industrial waste management solutions and various R&D projects. Moreover, by providing a compliance service, Innovando S.r.l. supports companies in their entire circular transition.

The Communication on Progress captures the alignment of Innovando S.r.l. strategies and operations with universal principles on Human Rights, Labour, Environment and Anti-corruption, along with all the actions we take to advance societal goals.





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A statement of continue support



Ever since United Nations launched the Agenda 2030 for the Sustainable Development, Innovando S.r.l. has connected its governance with a set of Global Goals intended to end poverty, fight inequality, stop climate change and improve lives. This year more than ever, as big events are changing our future, we need to address all the risks holistically and move beyond regular activities by #UnitingBusiness to respond to COVID-19 outbreak.

15th of January, 2021

Daniele Bonin — CEO, INNOVANDO SRL

The world we know is changing due to the most wide-reaching health crisis which has significantly impacted practically every aspect of business operations. Today's business landscape is characterized by an unprecedented, accelerating and complex mix of risks, triggered by the crisis and caused by much earlier non-strategic decisions. These decisions were driven by the need to meet quarterly earnings and short-term profits and they represent the major obstacle for companies embedding sustainability in their strategic planning.

The Coronavirus outbreak managed to emphasize the centrality of sustainability for business resilience and to advance the understanding among business leaders and investors that short-termism is not enough. Innovando S.r.l. has integrated sustainability and transparency strategically into its business operations years before the outbreak, while the crisis itself has put an even stronger focus on it, thus, we were much more agile in responding to these unexpected events.

While closely interlinking different SDGs and targets are, our aim is to achieve interactions between various personal, social, economic, political and environmental factors. In the response to COVID-19 pandemic, significant economic stimulus has been made available around the world, aligning the call for a recovery with other global challenges. In our country, Italy, marked as one of the “top 10 worst-hit countries” with the highest fatality rate, both national and local governments were actively trying to implement a risk reduction strategy in order to ensue an overall health-related quality of life (HRQoL). This was followed by the National Recovery and Resilience Plan where Italy outlines its investment reform agendas and collective response to the pandemic crisis and where sustainability is at the heart of each flagship area.

Innovando S.r.l. has also entered a new investment regime, since the crisis has brought a profound acceleration along four dimensions in the way economies and societies operate:

Continue to next page

We are team of people united around a common purpose: to drive a sustainable waste management innovation.

Continued from previous page

sustainability, inequality, geopolitics and policy of governments and central banks. We believe the environment calls us to rethink about our portfolio construction. Innovando S.r.l. is proud to demonstrate its approaches and achievements during this challenging period, which, we are convinced, will pave the way towards a sustainable future.

The outcome of pandemic remains uncertain and all SDGs are being impacted. Given their interconnected nature, by providing a foundation for a sustainable future while focusing on goals we can contribute to, our aim is to engage and integrate a new vision towards a circular, low-emission economy, resilient to climate impacts and other global changes. One of the goals integrated with the existing service and the nature of our business, aims to ensure sustainable consumption and production patterns (SDG12) through our collection and processing waste management network. Through this goal, governments can deliver key

policy objectives and send strong market signals. Sustainable procurement allows governments to reduce greenhouse gas emissions, improve resource efficiency and support recycling. Innovando S.r.l. will keep promoting environmental policy approaches which we believe can provide a valid solution to address environmental problems that we managed to identify. Concretely, we will commit to promoting the Extended Producer Responsibility (EPR) approach based on the "polluter pays" principle, recognized by the European Union as the most suitable environmental policy for product management throughout its life cycle. EPR is currently applied with excellent results to products such as WEEE (Waste electrical and electronic equipment), ELT (end-of-life tires), end-of-life vehicles, batteries and accumulators and packaging. Our intention is to expand this to all industries related to raw materials, contributing this way to their competitiveness.

At Innovando S.r.l., we are team of people united around a common purpose: to

drive a sustainable waste management innovation. Our innovative approach to business operations and human resource management is confirmed by a special section of the Business Register (art. 25, paragraph 8) within the Decree Law 3/2015 (art. 4, paragraph 1) which defines innovative SMEs.

We're pleased to demonstrate our focus on responsible business practices, as well as to provide an evidence of our shared values in management, expressed partly in our Code of Ethics and Model 231 and updated in our Communication on Progress (CoP) with some of our achievements during 2020. We are also very excited about our continuing commitment to and engagement with the United Nations Global Compact – Network Italy.

Enjoy reading!



Introduction



Innovando Srl supports the Sustainable Development Goals

Innovando Srl focus on the Global Goals

Innovando S.r.l. is mobilizing a global movement of sustainable companies through Participant engagement level at UN Global Compact, by making its commitment and integrating the Ten Principles into all its strategies and operations. The Communication on Progress (COP) is our mechanism to inform all the stakeholders on progress we made in implementing Ten Principles into our strategy, culture and day-to-day operations.

COMMUNICATION ON PROGRESS

Period covered by this report:

March 2020 — February 2021



This is our **Communication on Progress** in implementing the principles of the **United Nations Global Compact** and supporting broader UN goals.

We welcome feedback on its contents.

Reporting on UNGC

Reporting on the management of End-of-Life tyres that Innovando S.r.l. provides on annual basis for its clients is based on principles of legality, transparency and efficiency, fully aligned with the requirements of current legislation.

This activity plays a significant part of our waste management activities, delivered and presented to all our stakeholders, investors, consumers, civil society and governments, and it confirms our commitment to the transition towards sustainability and circular economy. The Communication on Progress captures the way Innovando S.r.l. continues its support for the UNGC through its core activities and various projects started and implemented in the last 12 months. We would like to capture the alignment of our strategies and operations with universal principles on Human Rights, Labour, Environment and Anti-corruption.

About Innovando S.r.l.

Innovando Srl is an innovative SME that offers solutions for industrial waste management, designed for small, medium and large companies throughout Europe. From its initial motivation – to provide the most innovative waste management and EPR solutions – Innovando S.r.l. has quickly established a program through which we deliver services related to resource efficiency, circular economy, and eco-innovation, while collaborating with both public entities and innovative SMEs.

This way we managed to structure our environmental and regulatory compliance solutions designed to reduce compliance risk, enact full accountability and ensure a real-time waste traceability. Our purpose is to make the business case for resource recovery and create incentives to change consumer behavior.



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Global Waste Management Innovation

About Innovando S.r.l.

Across its service network, Innovando S.r.l. advances its role and contribution to solving some of the world's most challenging issues. As trusted advisers to the public, private and non-governmental sectors, Innovando S.r.l. helps organizations to meet the UN's wider goals and objectives, which could be confirmed through our active engagement within the UN Global Compact Network Italy.



Consulting

Strategic eco-innovation, sustainability, reporting, circular economy



Collection

Wide waste collection coverage and transfer system



Take-back Schemes

Tailored initiatives for collecting used products at the end of their life



Waste Trading

An extensive waste collection and treatment network



Extended Producer Responsibility

Environmental policy for product management throughout its lifecycle



R&D

Mixed-methods associated with research, feasibility studies, policy formulation and stakeholder engagement

About Innovando S.r.l.

An innovative small-medium enterprise (SME)

Introduced by the Italian Ministry of Economic Development with art. 4 of Legislative Decree 3/2015, innovative SMEs (small-medium enterprises) represent those companies that contribute to the innovative development of the country. At the same time, an innovative SME like Innovando S.r.l. owns patents and internally developed software.

PDCA Management activities of Innovando Srl

Plan-Do-Check-Act (or Adjust) is an iterative 4-step management method used in all Innovando S.r.l. business activities for the control and continuous improvement of processes and products. This “Deming Cycle” is actually a strategy focused on helping companies to achieve a true culture of excellence, where all the processes that companies execute maximize stakeholder benefits. Continuous improvement is a vital service to ensure the sustainability of Innovando S.r.l. management system and the improvement of the performance of any business.



The Quality

Innovando S.r.l. is a certified Environmental Management System company according to the UNI EN ISO 9001: 2015 and UNI EN ISO 14001: 2015 standards. Green consideration has been one of the most crucial issues for environmental protection due to increasing consumption level, and its effect of the industrial developments.

To overcome negative impacts of the industrial processes, supplier selection can be seen as an important part of the green supply chain management concept due to its long term effects.

ISO Certifications

Integrated Management System for Quality and Environment, certified and aligned with UNI EN ISO standards.



About Innovando S.r.l.

Supply-chain Sustainability

Supply-chain sustainability is a business issue affecting an organization's supply chain or logistics network in terms of environmental, risk, and waste costs. There is a growing need for integrating environmentally sound choices into supply-chain management.

Sustainability in the supply chain is increasingly seen among high-level executives as essential to deliver profitability and has replaced monetary cost, value, and speed as the dominant topic of discussion among purchasing and supply professionals. A sustainable supply chain seizes value creation opportunities and offers significant competitive advantages for early adopters and process innovators.

Managing the social, environmental and economic impacts of supply chains, and combating corruption, makes good business sense. Innovando S.r.l. encourages a good governance practices throughout the lifecycles of goods and services.



The point of generation

Identifying locations where the waste initially accumulates; applying the most sustainable solution to each location-specific issue and establishing good environmental practices throughout supply chains.



Logistic network

Addressing business ethics, labour and eventual business continuity concerns by engaging with logistics suppliers and by optimizing supply chains to meet a number of defined objectives, including the elimination of waste, duplication and inefficiency in procurement and more.



Monitoring

Encouraging suppliers to integrate sustainability into their business through a real-time monitoring systems, effective in establishing baseline measurements and compliance-based approaches.



Transparency

One of the key principles for successful supply chain sustainability management, essential to every step of the process. Innovando S.r.l. is continuously exploring innovative ways to encourage and reward transparency.

About Innovando S.r.l.

Circular economy

With a wide range of activities, services, but also research and development projects, Innovando S.r.l. contributes to the transition to circular economy.

In the process of finding innovative ways to treat and reuse products that reach the end of their useful life, Innovando S.r.l. continuously expands its list of project partners and collaborators.

Bocconi

Green

Centre for Research on Geography, Resources, Environment, Energy & Networks

GREEN was established as the result of the merger between two historic research center at Bocconi University, namely IEFE (Center for Research on Energy and Environmental Economics and Policy) and CERTET (Center for Regional Economics, Transport and Tourism). An independent research center is active in Environmental Economics and Policies, Climate Change, Transport Policy and Economics, E-mobility, Logistics and more.



FONDAZIONE
PER LO SVILUPPO
SOSTENIBILE

Sustainable Development Foundation

An authoritative point of reference for the main sectors and actors of green economy whose purpose is to promote green economy through initiatives in different sectors such as energy and climate, waste and circular economy, sustainable mobility, green strategies, eco-innovation and many more.

Our common vision of sustainability and responsibility is expressed through an active participation of Innovando S.r.l. in all their activities.



The role of Innovando S.r.l. in FISE UNICIRCULAR is to enhance and reintroduce goods and materials deriving from their transformation into production and consumption cycles. By sharing our know-how and expertise, we help other businesses translate their internal linear processes into new, circular business models, with a range of economic and environmental advantages, benefiting, consequently from the new value creation and competitive differentiation.



L'Italia del Riciclo is a scientific-editorial project on waste recycling and recovery, carried out by the Sustainable Development Foundation and FISE UNICIRCULAR, with the patronage of the Ministry of the Environment. Each year Innovando S.r.l. supports the project and participates in the annual report production.

About Innovando S.r.l.



Area Science Park is a national public research body that promotes the development of innovation processes. It has managed the main Italian multisectoral science and technology park since 1978. Area Science Park coordinates the activities of ARGO, an industrial system based on the virtuous interaction between research and industry.

Activities of ARGO are outlined in Memorandum of Understanding between the Ministry of Education, University and Research, the Ministry of Economic Development and the Friuli Venezia Giulia region. Together with Innovando S.r.l. ARGO supports the activities of REFIBER – the first Italian program for the management of fiberglass boats at the end of their useful life.

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UN GLOBAL COMPACT DESCRIPTION OF ACTIONS

Corporate Governance & Sustainability in action

Innovando S.r.l. is pleased to confirm its reaffirmation of the support to the Ten Principles of the United Nations Global Compact in the areas of Human Rights, Labour, Environment and Anti-Corruption.

Since its incorporation on the 15th of January 2014, Innovando S.r.l. has realized the importance of transparency starting from top management, considering it one of the basic principles of corporate governance. The main values that guide Innovando S.r.l. actions are expressed in the summary of principles that govern decisions and behavior at our headquarter office in Vicenza. These values are articulated in the Code of Ethics that provides a specific guidance for handling issues like harassment, safety, and conflicts of interest.

Our Organizational Model 231, introduced by the Legislative Decree No. 231 of June 8, 2001, requires stakeholder commitment and participation in terms of transparency, fairness, health and safety at work, responsibility and environmental protection along the entire supply chain. The adopted model applies to all our employees and anyone who interacts with our company. Therefore, the United Nations Global Compact Ten Principles adoption represents our natural progress with already implemented principles and actions demonstrated within all our operations.

The Ten Principles of the United Nations Global Compact



The ability of Innovando S.r.l. to positively influence environmental, social and economic development through its governance practice is communicated regularly in our reports, namely Communication on Progress and reports we provide for our clients.

All these written documents contain information on our corporate sustainability and principles-based approach to doing business which meet fundamental responsibilities in the areas of Human Rights, Labour, Environment and Anti-corruption.

Human Rights

Principle 1

Business should uphold the freedom of association and the effective recognition of the right to collective bargaining.

Principle 2

Make sure that they are not complicit in human rights abuses.

Workplace of Innovando S.r.l. located in via dell'Industria 71 in Vicenza is provided with suitable, safe and sanitary facilities, available for employees and our visitors. Innovando S.r.l. workers are protected from workplace harassment, including physical, verbal and sexual or psychological harassment, abuse or threats. Innovando S.r.l. takes all measures to eliminate ingredients, designs or defects that could harm or threaten human life and health during coordinating, manufacturing, usage or disposal of products.

We respect Universal Declaration of Human Rights and Environmental Protection and the details of the previously mentioned Organizational Model 231 and Code of Ethics are published on our website, as an integral part of our transparency in communication with all our suppliers, employees and partners.

Description of actions

Labour

Principle 3

Business should uphold the freedom of association and the effective recognition of the right to collective bargaining.

Principle 4

The elimination of all forms of forced and compulsory labour.

Principle 5

The effective abolition of child labour.

Principle 6

The elimination of discrimination in respect of employment and occupation.

Innovando S.r.l. strives to uphold international labour standards within all our operations and across supply chains, including the freedom from discrimination, freedom of association and collective bargaining. The acceptance and implementation of the Legislative Decree No. 231/2001 is one of the evidences that Innovando S.r.l. does not participate in any form of forced or bonded labour, that it complies with minimum wage standards and ensures that employment-related decisions are based on relevant and objective criteria. By voluntarily adopting codes, standards and policies of social sustainability, management of Innovando S.r.l. continuously maintains a suitable working environment and explores the needs of the staff.

A few examples:

- » Risk Assessment Document, which identifies the health and safety in the company and defines the prevention and protection measures to be implemented.
- » Fire Risk Assessment Document, which identifies the infrastructure, the areas at risk, measures to be adopted in order to eliminate the risk of fire.
- » Staff safety courses.
- » Consultation and inspection of the head of the prevention and protection service in charge (RSPP).
- » Consultation and inspection of the competent doctor with a periodic health controls for the staff.

Environment

Principle 7

Business should support a precautionary approach to environmental challenges.

Principle 8

Undertake initiatives to promote greater environmental responsibility.

Principle 9

Encourage the development and diffusion of environmentally friendly technologies.

Considering how companies' most significant impacts on the environment and society occurs in their supply chains, within our activities related to R&D (Research and Development), we focused particularly on the logistics optimizations for the waste collection and treatment.

Continue to next page:
"Environment"

Description of actions

Continued from previous page:

The Ten Principles of the UNGC – “Environment”

Sustainable supply chain management can be a strong driver of value and success and it is increasingly recognized as a key component of corporate responsibility. The objective of supply chain sustainability is to create, protect and grow long-term environmental, social and economic value for all stakeholders involved in bringing products and services of both Innovando S.r.l. and its clients' to market.

The goal we set long time ago was to ensure transparent and structure management, while enabling a complete traceability of all operations through the whole supply chain actors coordination and we managed it by upgrading PFU24 (PFU24.com) portal with an innovative cloud-based software iSystem. This way, we provided the availability of all data in real-time, along with the processing of statistics and reports for different planning, monitoring and reporting needs. Furthermore, the optimization of logistic flows contributed to the wider rationalization of resources and it has provided the environmental benefits by reducing emissions and saving energy.

Innovando S.r.l. avoids environmental damage through the regular maintenance of production processes and environmental protection system (air pollution control, water treatment systems, etc.). At the same time, Innovando S.r.l. ensures emergency procedures to prevent and address accidents affecting the environment and human health. Innovando S.r.l. minimizes the use and ensures safe handling and storage of chemical and other dangerous substances. Innovando S.r.l. has developed an Integrated Management System for Quality and the Environment (QMS) in accordance with UNI EN ISO 9001: 2015 and UNI EN ISO 14001: 2015.

Therefore, it is continuously engaged in optimizing cycles and operations in order to increase its customer and stakeholder satisfaction by effectively applying the QMS. Within these lines, Innovando S.r.l. established Policy for Quality and Environment which represents a framework for evaluating company's objectives (managerial, operational but also ethical and environmental).

Anti-corruption

Principle 10

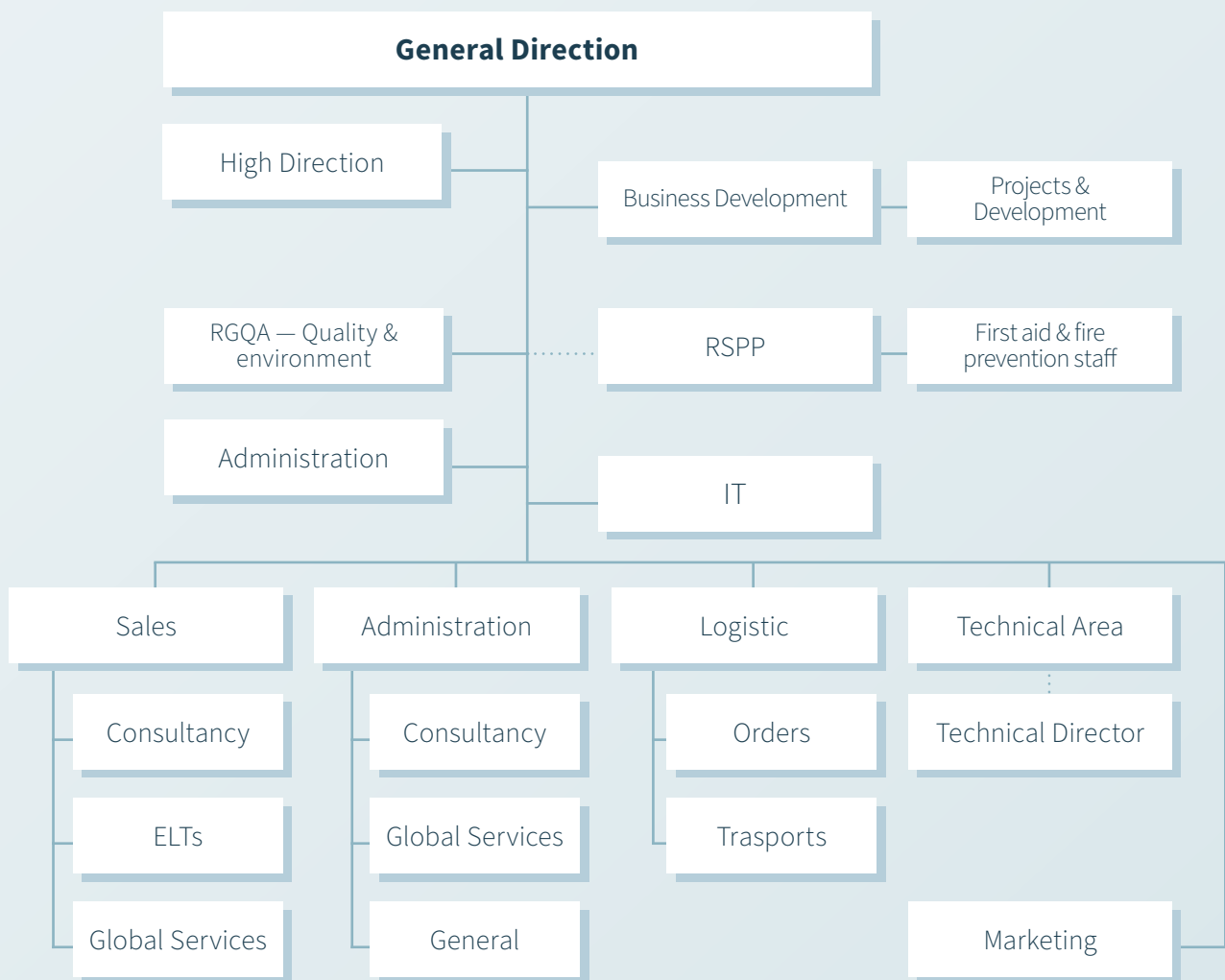
Business should work against corruption in all its forms, including extortion and bribery.

Responsible businesses enact the same values and principles wherever they have a presence, and know that good practices in one area do not offset harm in another. By incorporating the Ten Principles of the UN Global Compact into strategies, policies and procedures, and establishing a culture of integrity, companies are not only upholding their basic responsibilities to people and planet, but also setting the stage for long-term success. The Ten Principles of the UN Global Compact are derived from the Universal Declaration of Human Rights, the International Labour Organization's Declaration on Fundamental Principles and Rights at Work, the Rio Declaration on Environment and Development, and the United Nations Convention Against Corruption.

Description of actions

Corporate structure

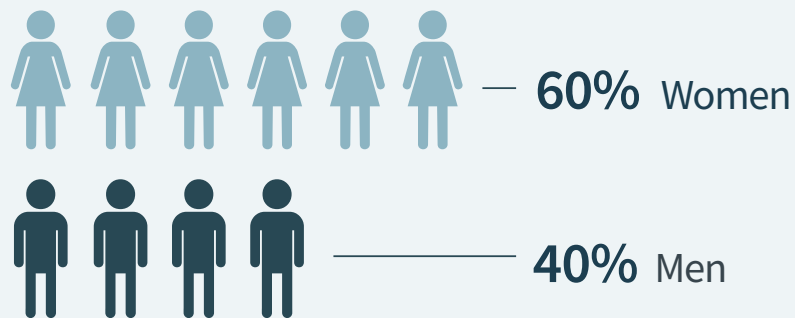
Innovando Srl has a system which outlines how certain activities (rules, roles and responsibilities) are directed in order to achieve the goals of an organization.



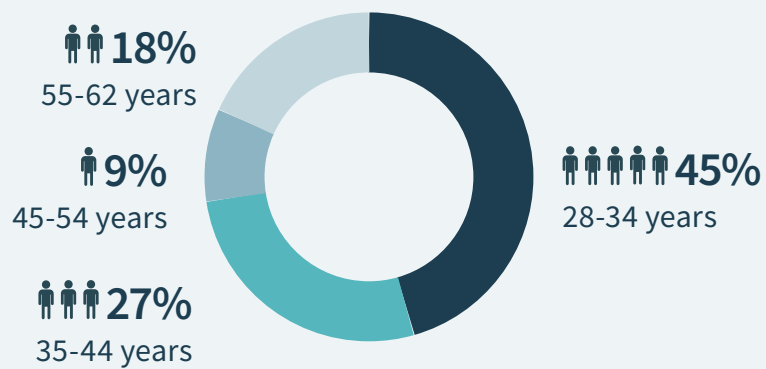
Description of actions

Company demographics

The demographics of management & employees broken down by diversity factors.



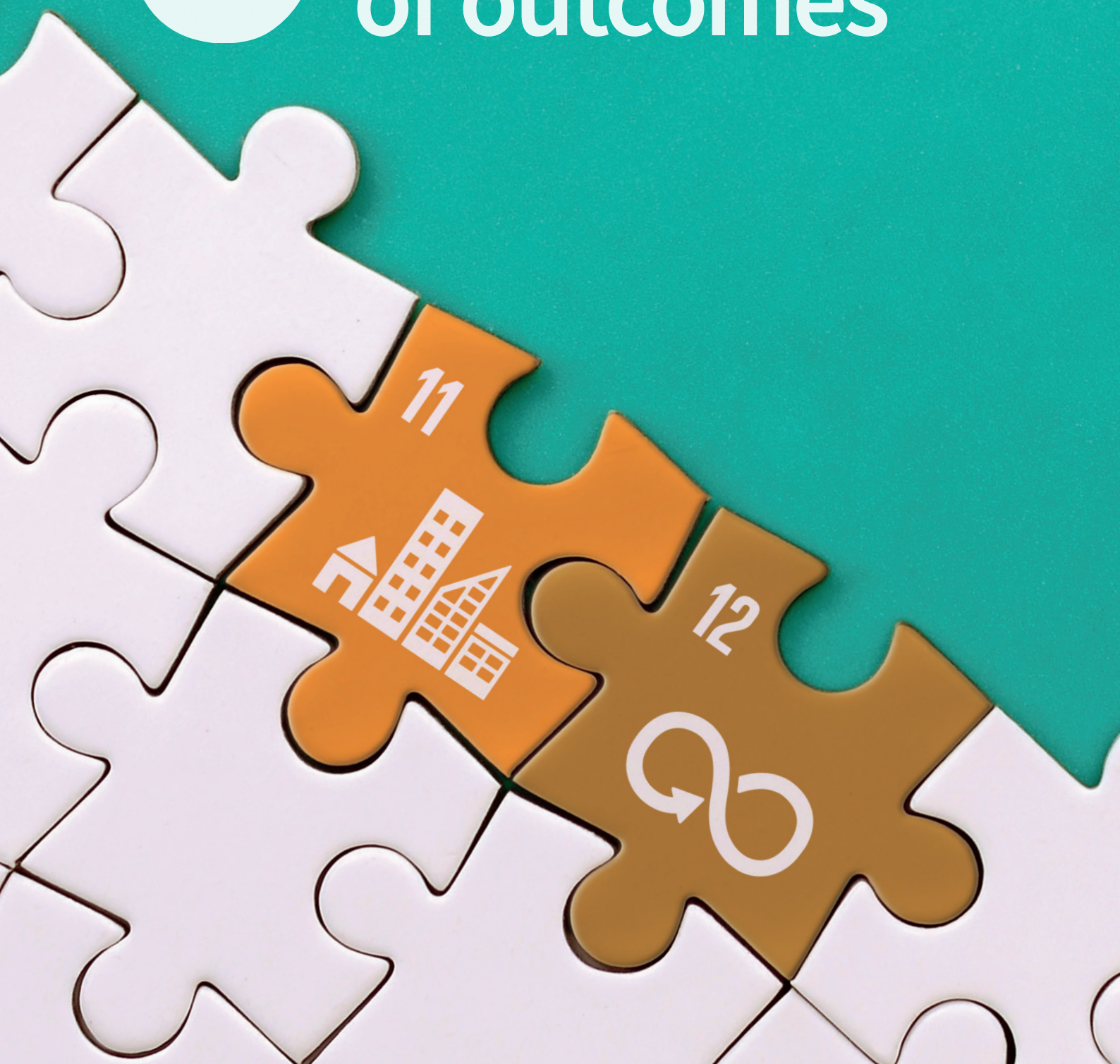
Age (28-62 years)



Education



3

Measurement
of outcomes

Training hours in 2020

Innovando S.r.l. provides to its employees starting work support: course on hygiene, health & safety on work- places in accordance with the state-regions agreement 221/2011. Information and training of workers pursuant to art. 37 of Legislative Decree 81/08 and the state-regions agreement 221/2011.

Trainings according to the UNI EN ISO 9001:2015 and UNI EN ISO 14001:2015 – based on the information and training of employees regarding the company management system with particular attention to the policy procedures and requirements SGQA – Environment Quality Management System (Italian: *Sistema di Gestione Qualità Ambiente*).


40_h

Total training hours in 2020*

**In 2020, due to the restrictions caused by the global pandemic, we managed to organize 40 hours of training for the employees.*

Training activities

- » Training & support on the use of iSystem platform and power BI, provided by Innovando Srl
- » English language training for 4 employees, organized by Formazione Spa
- » Excel training covering advanced functions, data management, analysis and protection, provided by Formazione Spa

End of life tire (ELT) management activities 2020

20.564

Tons collected

Collection divided in different categories and activities, aligned with the DM n. 82 of 11th of April 2011 and s.m.i

+2000

Points of collection

In Italy
(ELT manufacturers,
tire dealers, etc.)

Collection suppliers

16 suppliers

166 vehicles

ELT recovery 2020

18.953

Tons (100%) of the ELT recovered

Recovery suppliers

3 R1 recovery

11 R3 recovery

25%

● R1 recovery
● R3 recovery

75%



Collection suppliers

Suppliers for collection distributed all over Italy



Recovery suppliers

Suppliers for recovery distributed in Europe

● R1 recovery

● R3 recovery



End of life tire (ELT)
management activities
2020

Measurement of outcomes

ELTs and Sustainability

Innovando S.r.l. is committed to promoting and training its logistics network with an aim of adopting good ELT management practices, from the collection phase, to the treatment and recovery phases, in order to minimize the environmental impact of the ELT on the ecosystem.

Innovando S.r.l. monitors its supply chain in terms of environmental performance. The environmental impact related to the ELT collection and treatment activities is measured annually, considering the balance of Material and Carbon Footprint as indicators.

Material footprint 2020

Material footprint 2020 In both recycling of materials and energy recovery terms, ELT management of Innovando Srl avoids the virgin raw material utilization in order to affect positively the Material Footprint balance. In particular:



The ELT rubber granulates recovery helps with avoiding the vulcanized rubber polymer components production (natural, synthetic rubber, carbon black, metal oxides and other additives).



Steel recycling avoids the production of steel from the iron.



The recovery of textile fibers and other materials deriving from the ELT are reused as fuel for the production of energy in authorized plants (cement plants); avoiding the use of other fossil fuels (in particular pet-coke and coal).

Measurement of outcomes

Carbon footprint 2020

Carbon footprint 2020 Measured in kg/ton of CO₂ equivalent and represents the total amount of greenhouse gasses emitted, directly and indirectly, during the life cycle of a product or service: from extraction and processing of raw materials, to transformation in semi-finished and finished products, up to the management of the waste to be recovered or disposed. The value expressed by this indicator is the result of the balance between the emissions generated by the activities connected to the analyzed process (negative impacts / environmental costs) and those avoided thanks to the recovery of matter or energy (positive impacts / environmental goods due to the lack of recourse to new productions from virgin raw material).

Considering the total ELT managed by Innovando Srl in 2019, the data shows that the amount of emissions generated by the various activities of the supply chain (collection and transport logistics, treatment and combustion) is lower than the amount of equivalent CO₂ that has been avoided to produce thanks to the recovery of materials deriving from ELTs, that is the emissions that would have been generated for their production from virgin raw material.

Collection and transportation

Collection and transportation In a tire Life Cycle Assessment, the transportation phase plays the crucial role, from the points of collection to the material and energy recovery centers. The optimization of an overall transportation must be the main objective in the logistics network planning activities where partner companies of Innovando Srl guarantee the efficiency of the service we provide, by optimizing all collection rounds, while identifying the most suitable and economically viable means.

Consequently, we achieve a positive impact on an overall vehicle emissions and therefore on the carbon footprint of the transport phase.

Material footprint in numbers 2020

13.605 tons

of recovered secondary raw materials

4.590 tons

sent to energy recovery

5.325 tons

of pet-coke as a fuel avoided



65%

8.845 tons

of recovered rubber



10%

1.360 tons

of recovered textile fibers



25%

3.400 tons

of recovered steel

Research & Development

Innovando S.r.l. has focused its research and development activities in two different main sectors.



Recovery

The enhancement of materials deriving from end-of-life products like tires, batteries and more through innovative and sustainable technologies.



Traceability

An IT development for the complete management of data, making the waste flows traceable from origin to final recovery.

Research & Development

R&D / Critical Raw Materials

Being crucial to Europe's economy, Critical Raw Materials (CRM) form a strong industrial base, producing a broad range of goods and applications used in everyday life and modern technologies.

However, their disappearance raises the concerns of the European Commission and inspires numerous actions aiming to make Europe's raw materials supply more secure and sustainable. An updated list of CRMs (2020) contains materials crucial for strategic

technologies and sectors from the 2030 and 2050 perspectives.

The Action Plan looks at the current and future challenges and proposes activities to reduce Europe's dependency on third countries, diversifying supply from both primary and secondary sources and improving resource efficiency and circularity while promoting responsible sourcing worldwide.



Concrete projects and activities of Innovando S.r.l. will foster our transition towards a green and digital economy, and at the same time, bolster Europe's resilience and open strategic autonomy in key technologies needed for such transition.

In the following lines, we will give an overview of current project initiatives of Innovando S.r.l. that aim to offer a concrete solution to the issue of disappearing materials from the planet.

Research & Development

R&D / Rubber Conversion: Re-Rubber

Being actively involved in management of large ELT (end-of-life tire) amounts for us at Innovando S.r.l. means addressing the main environmental challenges in terms of restrictions on landfill disposal, but also compliance difficulties encountered in obtaining suitable products to be sold on the market as secondary raw materials.

The List of Critical Raw Materials has been updated to reflect the changed economic importance and supply challenges based on their industrial application. The CRM list contains 30 materials including natural rubber. This speaks explicitly about the risks associated with this material supply.

Although it was included in the CRM list back in 2017, very little has been done so far to improve the utilization rate of materials from end-of-life products made of rubber. Despite the continuous increase in the cost of raw materials, currently only 1.5% of the rubber from end-of-life tires is reused in the development of new rubber products.

Acknowledging the huge amount of annually discarded End-of- Life Tires (ELT) within the waste collection service of Innovando S.r.l., we were curious to address these environmental challenges by introducing an innovative and patented technology for rubber recycling and recovery.

This solution applies to the problem of restrictions against landfills disposal, but also to the problem connected with difficulties in obtaining suitable products to be sold in the market as secondary raw materials.



Research & Development

Being familiar with all modern rubber recycling disadvantages associated with a number of operational drawbacks, in addition to poor quality of the components, Innovando S.r.l. decided to offer a response to all these challenges by establishing an independent company called Rubber Conversion S.r.l. that aims at providing the most sustainable and economically viable method for the rubber reutilization.

Before its R&D activities, Rubber Conversion S.r.l. has been recognized as the most promising method to reuse ELT-derived rubber in high-quality products, and our patented devulcanization technology has been awarded by the Circular Economy Network in November 2018, recognized by the Foundation Caritro in 2019 and promoted by the Italian Chamber of Commerce and Industry in UK with Keynes Sraffa Award in 2019.

Within Rubber Conversion S.r.l. we started developing projects and we have received a support from Caritro Foundation and University of Trento for our project RE-RUBBER, which aims at producing automotive components using recycled rubber deriving from processing waste from the same sector, with a view to closed recycling.



**RUBBER
CONVERSION**



**Circular Economy
Startup Award**

Winner Company of
the 2018 Edition



Caritro Award

Selected Company
in the 2019 Edition



**The Keynes Sraffa
Award**

Italian Chamber
of Commerce and
Industry in the UK



Research & Development

R&D / Life Green Vulcan

This project aims at offering a new solution for reuse of end-of-life tires. Reclaimed rubber from End-of-Life Tires (ELTs) and other rubber waste is used at very low concentrations in tire manufacturing (3-5%) due to technical constraints.

The team of this promising project, coordinated by Innovando S.r.l. will try to increase the reuse rate of rubber waste by developing an innovative and environmentally friendly devulcanisation technology. The new technology will enable higher recycling rates for rubber from ELTs, while reducing CO2 emissions linked to the production process.



Project LIFE GREEN VULCAN is presented by a consortium of companies consisting of Bridgestone Europe NV / SA, Centro Ricerche Fiat S.C.p.A., FCA Italy S.p.A., Rubber Conversion S.r.l. and University of Trento. The project was admitted and funded under the LIFE Environment and Resource Efficiency program.

Research & Development

R&D / Ledgenda

In addition to natural rubber, another material added to the Critical Raw Materials list 2020 is lithium. The acceleration in registrations of electric cars (+ 155% compared to 2019 equal to about 30 thousand new cars) due to the green revolution in the automotive sector, will determine an exponential demand for lithium batteries and the need for ecological procedures for disposal and recovery accumulators.

As a contribution to the upcoming problems and challenges, Innovando S.r.l. proposed a project that was accepted and funded by the European Institute of Innovation and Technology (EIT Raw Materials) as a sustainable solution for the raw materials sector. The aim of the project was to achieve traceability and maximize the life cycle value of products such as EV batteries.



For this project, Innovando S.r.l. has developed an innovative traceability solution that promotes transparency along commodity supply chains by combining blockchain technology with IoT and AI.

Called the Ledgenda, this tactile internet platform is used to monitor and trace industrial batteries and has been implemented commercially. The Ledgenda is powered by passive sensors connected to both lithium and lead industrial batteries.

Research & Development

R&D / iSystem

The circular economy aims to maximize the value of resources on the market. To achieve this, a transformation of the supply chain is necessary where digital technologies play a fundamental role.

For decades, linear economic growth has had a negative impact on the environment, which has led to the current need to implement a paradigm shift to optimize existing resources in the economy. With internally developed platforms – Ledgenda and iSystem – Innovando S.r.l. has introduced an effective solution to digitize complex supply chains, making real-time information on products and materials readily available throughout their life cycle.

A complete waste traceability software developed internally by Innovando S.r.l. – iSystem, responds in a timely manner to the traceability, optimization and control requirements, and it is continuously updated. Among the various developments, a technology has recently been successfully implemented that can collect strategic information relating to business processes, which are analyzed with a Business Intelligence (BI) solution and processed within an Analytical Management Control System. At the same time, the following aspects are being studied and progressively implemented.



- » **Introduction of a web application, for use by the operators of the collection network**, for the planning and optimization of routes. The planning is carried out on the basis of cartography and road graphs, using routing algorithms that take into account the characteristics of the vehicle, such as type and load capacity. Based on the results of the planning, the tasks are sorted to the individual drivers / vehicles, all managed by an appropriate smartphone application.
- » **The development of a smartphone application for carrying out collection activities** and for uploading specific and legally required data to the system relating to the transport of waste. The data of the quantities collected and provided by the operator are consolidated with the actual geographical position of the collection point.
- » **The development of a blockchain-based data system**, powered by the actions carried out by the collection operators, to consolidate the specific data of individual transactions and make them immutable and accessible in transparent manner by interested parties (customers, entities, control bodies).
- » **A feasibility study** relating to the use of 'data mining' algorithms to identify any anomalies in the historical data collection data.

Research & Development



innovando
iSystem

Complete solution & full traceability system

iSystem guarantees a complete traceability of the entire ELT (End-of-Life Tyre) management process, from the collection to the recovery. Customizable dashboards are allowing supply chain participants, namely waste producers, temporary storage centers and customers, to access the most relevant information and documentation.



Transparency

benefiting manufacturing companies, waste holders and managers



Implementation

of strict data verification standards



Guarantee

fulfillment of all legal obligations in document management



Simplification

of the supply chain operational processes



Monitoring

of the performance of all services provided in real time

Continuous update

The solution is in continuous development and evolution and in the future will include also the integration of optimization devices and algorithms, computer security services based on a blockchain structure, traceability solutions based on geolocation and more.

Research & Development

Take-Back Schemes

The development of innovative platforms we developed has opened up opportunities for us to structure a tailored take-back schemes based on RFID technologies and solutions which support an overall product traceability. At Innovando S.r.l. we believe that Extended Producer Responsibility (EPR) can provide a valid solution to address the environmental problems identified.

Thus, in structuring our projects, we consider this environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle.



“Environment” EPR typically involves shift in responsibility (administratively, financially or physically) from governments or municipalities to producers as well as an encouragement of producers to take environmental considerations into account during the design and manufacture phases of product development. EPR seeks to achieve a reduction in the environmental impact of products, throughout their lifespan, from production through end-of-life.

In September 2020, with Legislative Decree 116/2020, the amendments to the Environmental Code (Legislative Decree No. 152 of 2006) came into force, implementing the provisions of the Waste Framework Directive (EU 2018/851) and of the Packaging Directive (EU 2018/852). Articles 178-bis and 178-ter have been added to the Environmental Code which reinforce the principle of the EPR. With these changes, new EPR regimes can be established, even at the request of a party.

Take-Back schemes / Work-in-progress

Re-shoes

One promising project coordinated by the Calzaturificio S.C.A.R.P.A. SPA, organized in several phases managed by the members of the consortium including Innovando S.r.l. is based on the recycling of post-consumer shoes and production waste to create new shoes.

The current environmental challenge of the footwear industry is the huge amount of waste generated in the end-of-life phase, with most shoes being disposed of in landfills. European consumers want fashion players to act responsibly and consider the social and environmental impacts of their businesses.



The abbreviated RE-SHOES project wants to implement a new circular economy model to solve the end-of-life phase of shoes which is critical for recycling. The project proposal was accepted for the second evaluation phase.

Take-Back schemes / Work-in-progress

REFIBER

An association formed as a result of cooperation between Innovando S.r.l. and Area Science Park, national research and multisectoral technological body, is structured with a mission to create a better future for pleasure boating in Italy based on the principles of environmental and economic sustainability and EPR. This program in development is called REFIBER and it promotes innovative solutions for the management of end-of-life boats related to circular and sustainable economy.

REFIBER is the first Italian program for the management of fiberglass boats at the end of their useful life, since a structured disposal model in Italy does not exist as of today. REFIBER wants to give a concrete answer to the environmental and economic problems connected with disposal (legal and illegal) of fiberglass boats, due to the absence of a structured disposal model. Thus, REFIBER will open-up new market opportunities for operators in the sector.

Research & Development



Being already applied with success in other sectors and to other products, such as WEEE (Waste electrical and electronic equipment), ELT (end-of-life tires), end-of-life vehicles, batteries and accumulators and packaging, Extended Producers Responsibility represents the most important pillar of this program – and also of the European strategy for Circular Economy.

In 2021

Despite the challenges and problems we all faced in the past year, Innovando S.r.l. has worked to serve its stakeholders with courage, by rapidly innovating to keep the business going.

This crisis highlighted the importance of a global response, similar to the one we all need to provide if we want to reach the ambitious SDGs. Innovando S.r.l. will keep accelerating transition towards circular economy, and we will outline our actions in all projects we plan to execute during the 2021.

We will keep inspiring companies to articulate their purposes and the modalities to benefit their stakeholders, including their employees, customers and communities in which they operate. We will commit to the same goals and try to outperform our previous achievements.

— Innovando S.r.l.



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