



IRIS

IMPROVE RESILIENCE
OF INDUSTRY SECTOR

www.lifeiris.eu

IRIS: for a climate resilient industry



Project overview

IRIS project

Budget: € 1.658.680

Duration: sept 2015 - mar 2019

Climate change and industry

Climate change affects not only the cities, but also the industrial sector. Rainfalls, floods, heat and cold waves, droughts, tornados are events that more and more frequently occur. These events damage enterprises and their products and services.

Climate change impacts on industry are related to:

- asset integrity and infrastructures
- business continuity
- legal liability
- reputation
- market response
- financial balance
- health and safety

The capability to assess climate risk and measures to deal with it, today represents a priority for enterprises.

98% of international companies indicate at least one hazard impacting their business:

- 55% temperature rise / heatwaves
- 44% storms
- 38% floods
- 19% droughts
- 18% sea level rise
- 11% wildfires
- 11% landslides
- 7% ocean acidification

(DNV-GL Report "Are companies resilient enough to climate change?", 2017)

The IRIS project

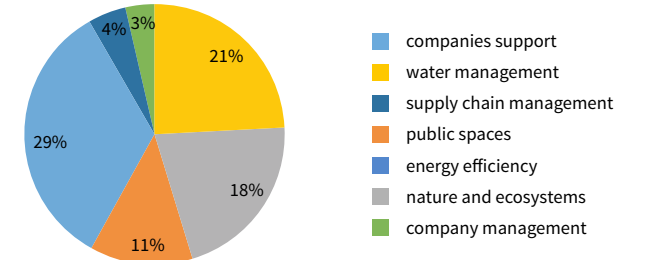
IRIS "Improve Resilience of Industry Sector" is a project financed by LIFE Programme, the European Commission programme committed to Environment and Climate change. Project partners are: ERVET Emilia Romagna Valorizzazione Economica Territorio (lead partner), CAP Consorzio Attività Produttive Aree e Servizi di Modena, SIPRO Agenzia per lo sviluppo di Ferrara, Carlsberg Italia, Scuola Superiore S'Anna di Pisa, Ergo Srl and Terraria Srl. The project aims at increasing enterprises resilience, that is their adaptation capacity to climate change. This purpose is pursued through a cluster approach, so both the climate impact assessment and the adaptation measures definition are developed at industrial area scale or at supply chain scale. Pilot activities are carried out in 3 clusters: industrial areas of Bompoto (MO) and San Giovanni di Ostellato (FE), Carlsberg beer supply chain.

IRIS actions are:

1. carry out climate risk assessment in pilot clusters
2. develop climate adaptation plan in pilot clusters
3. analyse opportunities related to financial and insurance tools for resilient companies
4. develop a web portal for a climate risk self-assessment in the enterprises

IRIS is the first project in Europe focused on climate change effects in industrial sector and suggests the cluster approach to increase companies resilience. This approach is particularly interesting for small and medium enterprises because it fosters resources and skills sharing.

Adaptation measures categories



IRIS project adaptation measures

INDUSTRIAL AREA OF BOMPORTO (MO)

The industrial area of Bomporto, an Eco-industrial Park managed by CAP Modena, is located in the northern plain of the province of Modena. The industrial area occupies 80 ha (of which still 6 to be implemented) and it hosts about 70 companies of different sizes and typologies. Manufacturing is the main activity (60%), in particular the mechanical sector, but there are also companies operating in the field of paper processing, business services, food production, prefabricated products and buildings construction.

The area is characterized by built-up surfaces (industrial and artisan buildings), surrounded by arable lands and uncultivated areas waiting to be implemented. The site is served by parallel and perpendicular roads and, on the whole, the green facilities are higher than the average of the industrial areas nearby. The central section is more natural thanks to the Fiumicello canal running from South to North, a tributary of the Secchia river, today the meteoric waters collector.

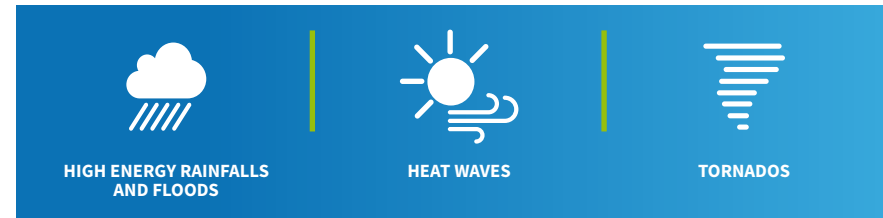


CAP - Bird-eye view of Bomporto industrial site



CAP - Training seminar with local enterprises

Cluster main risks:



Planned measures categories:

- companies support
- public spaces
- nature and ecosystems
- water management
- energy efficiency

Action

Year

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Action. 1 - Info point for enterprises										
Action. 2 - Training seminars and workshops										
Action. 3 - Climate agency for technical assistance to local enterprises, to underline critical situations / threats and to propose adaptation/mitigation measures										
Action. 4 - Emergency plan and alert plan - coordination of information among public entities and private companies										
Action. 5 - Outdoor comfort simulation ex-ante ed ex-post - elaboration of thermal comfort evaluation of the entire industrial site and elaboration of thermal comfort maps (PMV, air temperature, mean radiant temperature, specific humidity, wind speed)										
Action. 6 - Urban forestation - realization of flowerbeds on the roadside (planting around 80 trees) along the main internal routes to the industrial area										
Action. 7 - Pocket garden - green transformation of a small space unused to reduce degradation and increase its usability and attractiveness										
Action. 8 - Draining pavement - replacing the asphalt pavement with self-locking blocks in the car park										
Action. 9 - Rain gardens - construction of flowerbeds on the road that can intercept rainwater from roofs, roads and parking										
Action. 10 - Flooding basin - construction of storage, purification (sedimentation of suspended solids and nutrient removal) and / or rainwater infiltration. The project will cover a municipal area of approximately 18,000 square meters on the side of the southern stretch of the Cavo Fiumicello										
Action. 11 - Cold materials - incentives for enterprises to replace the roof covering of existing buildings with a high-SRI coating (Solar Reflectance Index), and / or the painting of the buildings' façades with reflecting anti-irradiation paints and / or the application of passive solar shields										
Action. 12 - Implementation of municipal urban planning tools - integration of existing urban planning instruments applied to the industrial sector, with objectives for environmental and micro-climatic improvement and maintenance of biodiversity										
Action. 13 - LED lighting - replacing lighting fixtures with LED lighting on all road inside the industrial area										

The investments to implement these actions amount to about 2 million euro.

IRIS project adaptation measures

INDUSTRIAL AREA OF SAN GIOVANNI DI OSTELLATO (FE)

The S.I.PRO Area of San Giovanni di Ostellato (located about 8 km from the center of Ostellato) is one of the largest production sectors in the Province of Ferrara with various types of companies and services. At present, each single sector is subdivided into various lots owned by the companies that have been established over the years, while the streets, the green areas and parking areas are owned by the Municipality of Ostellato.

The area currently has an area of 1,135,644 square meters and is divided into 3 sectors based on subsequent expansions made over the years. The main communication routes serving the area are: to the south, the Ferrara-Porto Garibaldi highway; to the west and north-west, the railway axis of the Ferrara-Codigoro line, which has a station in Ostellato. In 2010, the Municipality of Ostellato appointed Sipro as cluster manager of the APEA "San Giovanni di Ostellato". On 23/12/2010 the Province of Ferrara and the Emilia Romagna Region signed the agreement for the construction and financing of energy interventions in the environmentally-equipped area of Ostellato.



Sipro - Bird-eye view of Ostellato industrial site

Cluster main risks:



Planned measures categories:

- companies support
- public spaces
- nature and ecosystems
- water management
- energy efficiency

Action

Year

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Action. 1 - Adaptation Helpdesk for enterprises										
Action. 2 - Training seminars for enterprises										
Action. 3 - Industrial Adaptation Assessment - assessment of the company vulnerability to extreme events										
Action. 4 - Support in drafting Business Adaptation Plans - support to the elaboration of a Plan of Business Adaptation to the Climatic Changes for the companies										
Action. 5 - Definition of a program of management of the green areas to mitigate the Heatwaves										
Action. 6 - Realization of interventions of protection (barriers, flood channels, etc.) from the Flooding										
Action. 7 - Safeguarding endemic ecosystems in the process of adaptation										
Action. 8 - Education and information and investments in techniques and clean technologies (systems of irrigation, systems of harvest and treatment of the waters rain of it, etc.) to reduce the water consumptions and to combat the effects of the Drought										
Action. 9 - Planting of trees to lower the temperatures and to mitigate the effects of the Tornados										
Action. 10 - Cold materials (reflecting coverings, reflecting paintings) to combat the overheating of the buildings										

The investments to implement these actions amount to about 2 million euro.



Sipro - The ZF-TRW company that is preparing an adaptation plan - industrial area of San Giovanni di Ostellato

IRIS project adaptation measures

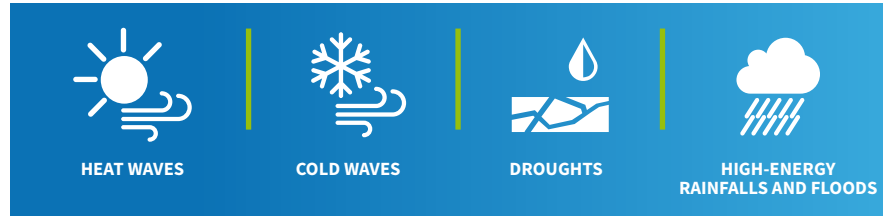
CARLSBERG BEER SUPPLY CHAIN



Carlsberg - The industrial site of Induno Olona (Va)

The Carlsberg Italia plant is located in Induno Olona, in the northern part of the province of Varese. The plant is part of the Olona Valley and part of its properties extend into the Campo dei Fiori Regional Park. The historic Brewery, from 1876 the headquarters of the Poretti Industries, is a perfect union between technological innovation, sustainable development and Liberty industrial archeology. The raw materials for the production of malt and barley beer come almost entirely from France, the red malt from Poland (but it is only a few quantities compared to the total) while the hop comes from all over the world Australia, Slovenia, France, Japan, England and America, little from Italy. The plant has 1,045 suppliers (in 2017) divided between raw materials and packaging material, services and consultancy, maintenance, sales and marketing. The distribution of products is mostly oriented to the Italian market, but being part of an international group it is natural to satisfy the requests for other markets; in particular, the product Draft Master is distributed in France, Switzerland, Poland while the bottles are exported to the United States and England.

Cluster main risks:



Planned measures categories:

- energy efficiency
- nature and ecosystems
- water management
- company management
- supply chain management

Action

Year

	1 Oct 2016	1 Dec 2016	1 Feb 2017	1 Apr 2017	1 Jun 2017	1 Oct 2017	1 Dec 2017	1 Feb 2018	1 Apr 2018	1 May 2018	1 Jun 2018	1 Dec 2018	1 Gen 2019	1 Feb 2019	1 Mar 2019
Action. 1 - A feasibility study for the pasteurizer replacement to mitigate the increase of the middle temperatures															
Action. 2 - Open Air Job to mitigate the heatwaves - The Garden area has been covered by a wireless network to ensure connection to the local network and to the Internet															
Action. 3 - A hydrogeological study to identify measures necessary to minimize the damage caused by a possible flash flood and preliminary actions to be put in place in case of emergency of droughts															
Action. 4 - A study on the protection of trees belonging to the Company Garden to mitigate the effects of the heavy rain															
Action. 5 - Supplier involvement in case of extreme events to guarantee business continuity															

The investments to implement these actions amount to about 1 million euro.



Carlsberg - The interventions for the realization of the pasteurizer

Financial tools for adaptation measures

Actions identified by an adaptation plan to climate change can be financed through various financial instruments, and in particular:

Bank Loans: some banking institutions integrate in their offer initiatives that reward resilient companies, other initiatives to finance reconstruction measures following extreme events. An example of this is the possibility of suspending or terminating mortgage installments, to guarantee business continuity in extreme weather conditions, offered by Unicredit, as well as the possibility of accessing loans at reduced rates for companies that have suffered total or partial destruction of goods due to disastrous events.

Funding funds: make public resources available as a means of supporting development for businesses. The most well-known public funds are the structural funds (regional) such as the funds dedicated to economic activities (ERDF) and the funds devoted to agriculture (EAFRD) which contain priorities related to climate change. In addition there is the Revolving Fund for business support and investment in research (FRI), through which loans at a subsidized rate are disbursed. Through the FRI, Cassa Depositi e Prestiti provides credit to companies, following the assessment of the creditworthiness of potential beneficiaries and proposed initiatives. Other funds of particular interest are the Guarantee Funds, in which an institution, such as the European Union, the Italian Government or the Regions, acts as guarantor for companies that have difficulty in accessing bank credit. In fact, the public guarantee replaces the sureties or insurance policies. The intervention facilitates access to credit, reducing the risks for banks, which would be compensated by the Central Fund in the case of corporate insolvency. The Central Guarantee Fund established at national level falls within this category.

Bond loans such as the innovative Green bonds that follow the operating mechanism of all other bonds and deviate from them for the use of collected liquidity. In the case of green bonds, in fact, this must necessarily finance projects that have positive effects on the environment, such as wind farms, initiatives related to pollution prevention and control, or eco-compatible construction.

In addition to the Green Bonds, Social Impact Bond (SIB) and Minibonds are important. The SIBs are a type of funding through which the public sector collects private investments to finance the start-up and development of interventional social policies aimed at ensuring the safety and well-being of citizens. Minibonds are a financing instrument dedicated to companies not listed on the stock exchange, thanks to which companies can raise funds directly from investors, providing credit in exchange for those who believe in their project.

Crowdfunding is a form of funding that allows companies to raise funds to support business projects useful to the community through online platforms that allow fundraisers to meet a large audience of potential lenders. There are different models of Crowdfunding, whose distinctions regard the reward that the lenders get in return for the money given.

The identified tools were subjected to a preliminary assessment by the partners involved in the IRIS project, in order to identify their applicability in relation to the adaptation measures included in the adaptation plans

Climate adaptation support tool

To respond to the absence of an instrument allowing rapid assessment of the risk in industry sector, CAST (Climate Adaptation Support Tool) has been implemented within the IRIS project. CAST is a screening tool to support companies to assess their main vulnerability to the risks of climate change and let to identify adaptation measures and evaluate their effectiveness.

CAST can be applied to single corporate or to companies with various productive sites. Based on institutional meteorological databases both at national and global level like ISPRA (Institute for Environmental Protection and Research) and IPCC (Intergovernmental Panel on Climate Change), climate information captures the change of intensity (or frequency) of climate-related hazard in the future due to climate change, based on scientific projections, taking into account past meteorological events and future scenarios. It generates easily interpretable assessments for various physical risks and allows users to see which business segments are more or less at risk. It is able to compare the risk analysis before and after interventions and allows to download a report that summarizes the whole risk analysis carried out.

Peculiar components and innovative elements of the instrument CAST are:

- **Transferability:** in the implementation of meteorological databases they have been used sources that provide data throughout the world so that the tool can be applied not only in Italy and in Europe but also in other parts of the world – data from IPCC
- **A web application with a user-friendly interface:** to use the portal, you must register and follow the guided tour along the subsequent sections, it is compatible with the main browsers
- **Multi-language approach:** the interface of the tool has been realized both in the Italian and English version in order to favor the diffusion and the use of the tool in different Countries
- **Wizard approach:** the user is guided step by step by the tool in the risk analysis, in this way the software can be used even by non-expert users

The screenshot displays the 'Company's master data' form for EvoBus Italia SpA. The form includes the following fields and content:

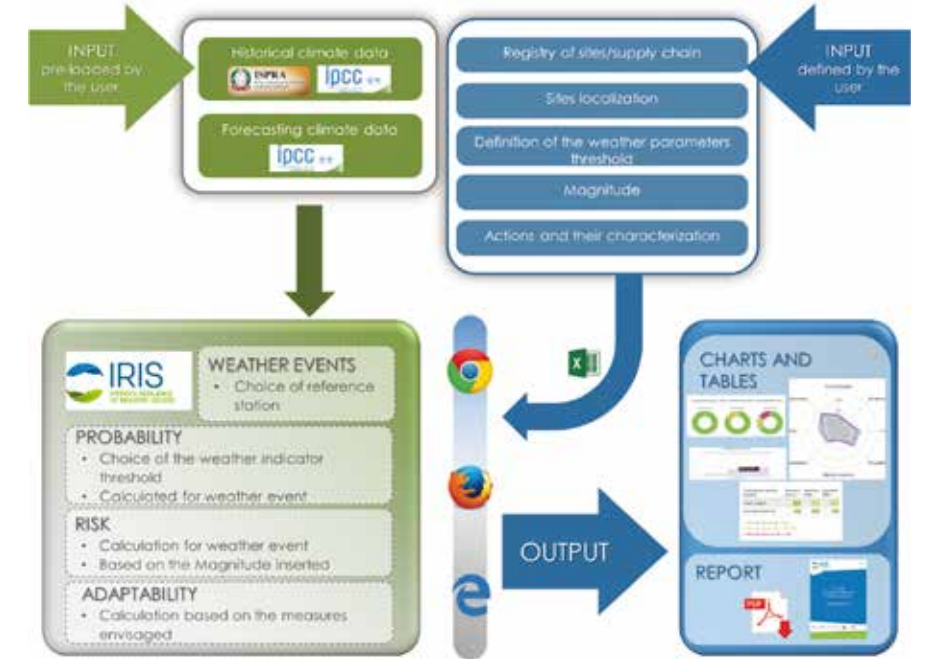
- Name:** EvoBus Italia SpA
- Description:** EvoBus rappresenta la divisione autobus per l'Italia dei marchi Mercedes-Benz e Setra. E' in grado di offrire ai suoi clienti un supporto altamente affidabile basato su una rete globale di siti produttivi e sulla più fitta rete di vendita e assistenza presente in Europa. Tutti i veicoli sono costruiti in base ai più severi standard qualitativi, attingendo ad un'enorme gamma di know-how globale e competenze altamente specifiche. Autobus urbani, interurbani, da turismo e minibus in una molteplicità di varianti in grado di soddisfare qualsiasi esigenza. Una filosofia "ambus" ovvero "per tutti".
- VAT:** 00873310361
- Address:** Via Tagliati 7/11 - 41030 Sorbara di Bomporto - Modena
- Email:** auro.nardomanno@damtec.com
- Phone:** 059810811

Below the form, there is a 'logo:' label and a file upload area containing 'EvoBus.png' and a 'Browse' button. At the bottom of the form, there are 'Home', 'Update', and 'Cancel' buttons. The top of the page features the IRIS logo and navigation links for Home, Settings, and Logout.

CAST - Company's master data.
EVOBUS Italia spa - industrial area
of Bomporto (Mo)



CAST - Risks evaluation results of EVOBUS Italy spa-industrial area of Bomperto (Mo)



CAST - block diagram with I/O and core system

THE LIFE PROGRAMME

The LIFE programme, begun in 1992, is the EU's funding instrument for the environment and climate action. The general objective of LIFE is to contribute to the implementation, updating and development of EU environmental and climate policy and legislation by co-financing projects with European added value.



coordinatore:



partner:



IFE Programme website: <http://ec.europa.eu/environment/life/>

www.lifeiris.eu