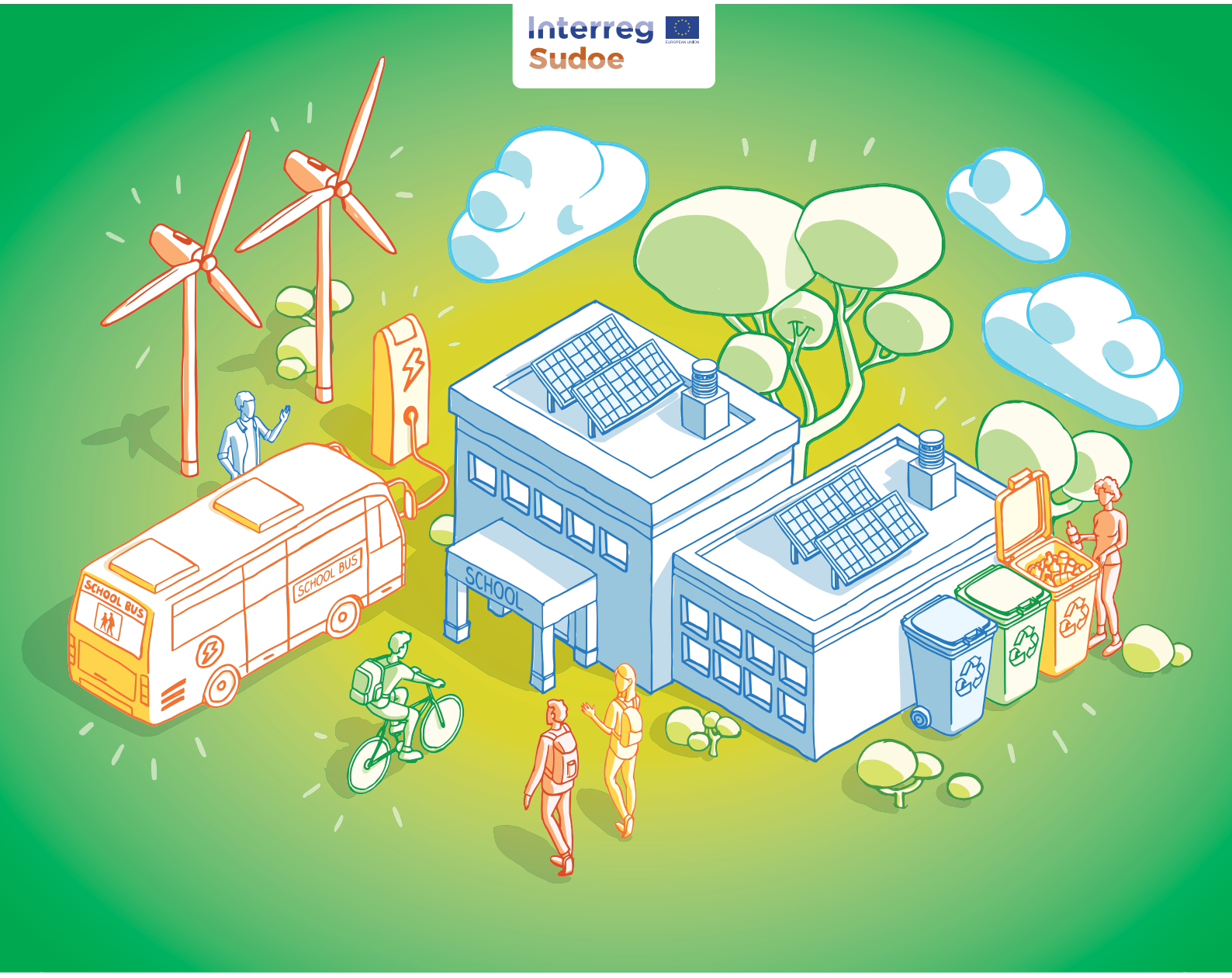
ClimACT

layman's report



Project Funded By The Interreg Sudoe Programme
Through The European Regional Development Fund
(ERDF)

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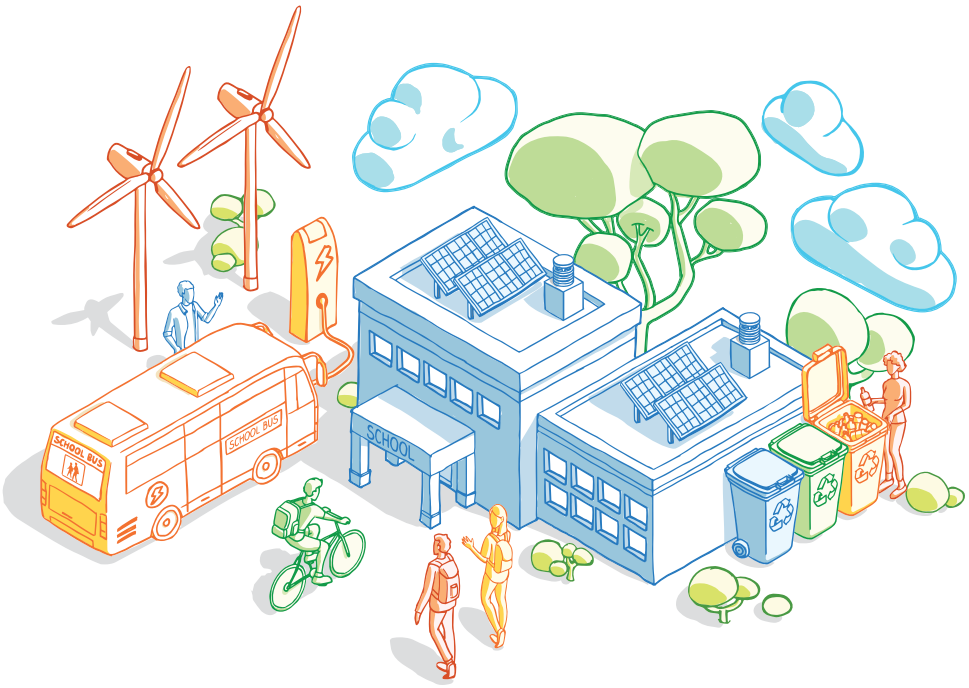


FUNDING PROGRAMME:
INTERREG SUDOE
FUNDED BY:
EUROPEAN REGIONAL DEVELOPMENT FUND (ERDF)
PROJECT DURATION: JULY 2016 - JUNE 2019

ClimACT HAS DEVELOPED A HOLISTIC APPROACH TO SUPPORT THE TRANSITION TO A LOW CARBON ECONOMY IN SCHOOLS

MOTIVATION

1 - LIMITED KNOWLEDGE ABOUT ENERGY AND ENVIRONMENTAL PERFORMANCE AT SCHOOLS

The ClimACT project performed audits in 39 pilot schools by assesing the energy and water consumption, indoor air quality, waste management, transport, green spaces and green procurement.

2 - EDUCATIONAL SECTOR'S BUILDINGS ACCOUNT FOR A SIGNIFICANT AMOUNT OF THE TOTAL ENERGY CONSUMED ACROSS EUROPE

ClimACT developed tools for schools that can play a great role in monitoring and optimising consumption and in advising on the costs and benefits of energy efficient investments. The development of methodologies that take into account the environment, safety and health costs, along schools' whole life cycle, allowed the identification of the most sustainable solutions for schools.

3 - MANY ENERGY EFFICIENCY INVESTMENTS PAY FOR THEMSELVES QUICKLY BUT ARE NOT REALISED IN SCHOOLS DUE TO TIGHT BUDGETS, LACK OF INFORMATION ABOUT NATIONAL AND EUROPEAN FINANCIAL SUPPORT MECHANISMS AND REGULATORY BARRIERS

ClimACT worked on the application of new business models in schools that can ensure cost-efficiency and significantly reduced payback periods for Energy Service Companies and Energy Performance Contracts projects, allowing the creation of a business-friendly environment that facilitates private investments in schools.

4 - EDUCATIONAL SECTOR HAS AN ENORMOUS AWARENESS RAISING POTENTIAL

ClimACT empowered students with knowledge about climate change and sustainable energy to ensure they grow up knowing how to protect the environment with founded and robust energy-aware behaviours that can pave the way towards a sustainable future and to ensure the contribution to future EU targets.

CLIM**ACT** AS A SOLUTION FOR CLIMATE CHANGE PROBLEMS

ClimACT project aimed to promote the transition to a Low Carbon Economy in 39 pilot schools by incorporating complementary approaches such as energy efficiency, sustainable transport, green procurement, resources conservation and behavioural change. The main novelty that incorporated this project was the global approach considering a collaboration framework with scientific, technology and business initiatives, the development of innovative and integrated decision support tools, the design of new business models and management strategies for schools and the development of a holistic, comprehensive and technology-assisted educational platform for active learning.

To achieve the main objective, 4 main actions were implemented:

1) development of decision support tools

2) generation of new business models

3) creation of educational tools, and

4) establishment of a thematic network. (fig. 1)

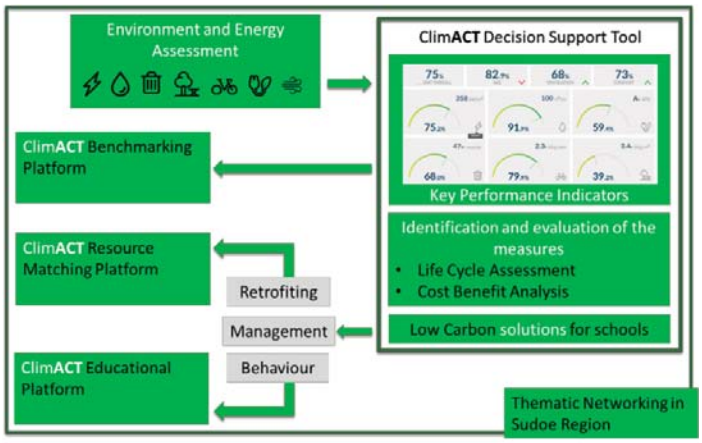


Figure 1 - ClimACT's Methodology

CLIM**ACT** TEAM

ClimACT project joined four European regions – Portugal, Spain, France and Gibraltar - composing a consortium of 9 partners, and 39 schools:

– Instituto Superior Técnico (IST), Portugal - LEAD PARTNER

– Associação Bandeira Azul da Europa (ABAE), Portugal

– Instituto de Soldadura e Qualidade (ISQ), Portugal

– EdiGreen, Portugal

– Universidad de Sevilla (USE), Spain

– Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Spain

– University La Rochelle (ULR), France

– Mairie de La Rochelle (VLR), France

– University of Gibraltar (UniGib), Gibraltar

AUDITS

39 schools in 4 countries:

- 9 Portuguese schools
- 13 Spanish schools
- 9 French schools
- 8 Gibraltar schools

1. TECHNICAL AUDITS

OBJECTIVE:

- To characterise the energy and environmental baseline performance.
- To assess the current situation of each school.

2. BEHAVIOURAL QUESTIONNAIRES

OBJECTIVE:

- Behavioural data regarding the use of resources in the selected environmental and energy sectors.

TRANSPORTS

Assessment of:

- User's behaviour based on the transport mode used in the school runs.
- Parking spaces (electric and bicycle) in schools, and public transport network nearby schools.

GREEN PROCUREMENT

Quantification of:

- Electric and electronic equipment labelling.
- Consumption of recycled paper.
- Training in green procurement and eco driving.
- Preference for food with eco labelling certificate.
- Local suppliers.

GREEN SPACES

Assessment of:

- Green areas.
- Use of chemical products.
- Use of resources associated to the maintenance of green areas.
- CO_2 emissions and sequestration.

INDOOR AIR QUALITY

Assessment of:

- IAQ and comfort in classrooms.
- Sources of indoor pollutants.

ENERGY

Assessment of:

- Energy consumption.
- Associated CO_2 emissions.

WATER

Assessment of:

- Water consumption.
- Associated CO_2 emissions.

WASTE

Assessment of:

- Volume of waste produced per category.
- Associated CO_2 emissions.

School audit reports

Key performance indicators

Schools' assessment based on scores

PROGRESS MONITORING OF SCHOOLS

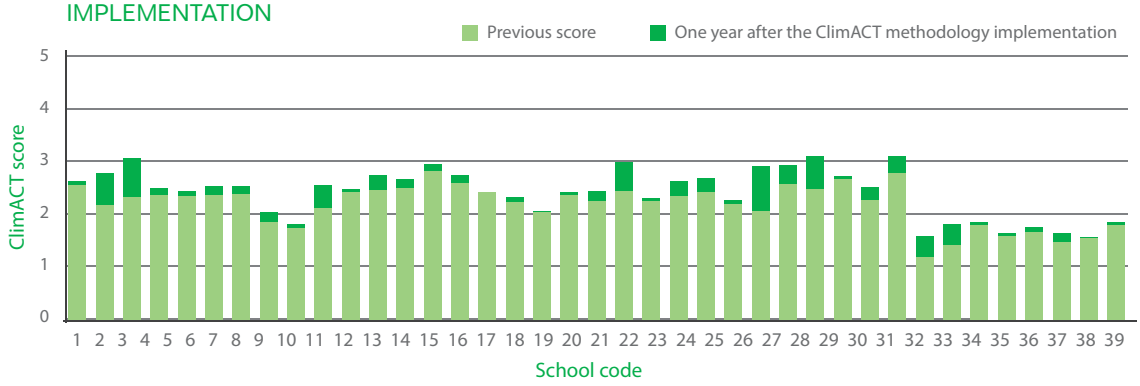
Academic year 2017/2018

Baseline reference of schools' performance

Academic year 2018/2019

Assessment of schools' performance evolution

CLIMACT SCORE OF PILOT SCHOOLS A YEAR AFTER THE CLIMACT METHODOLOGY IMPLEMENTATION

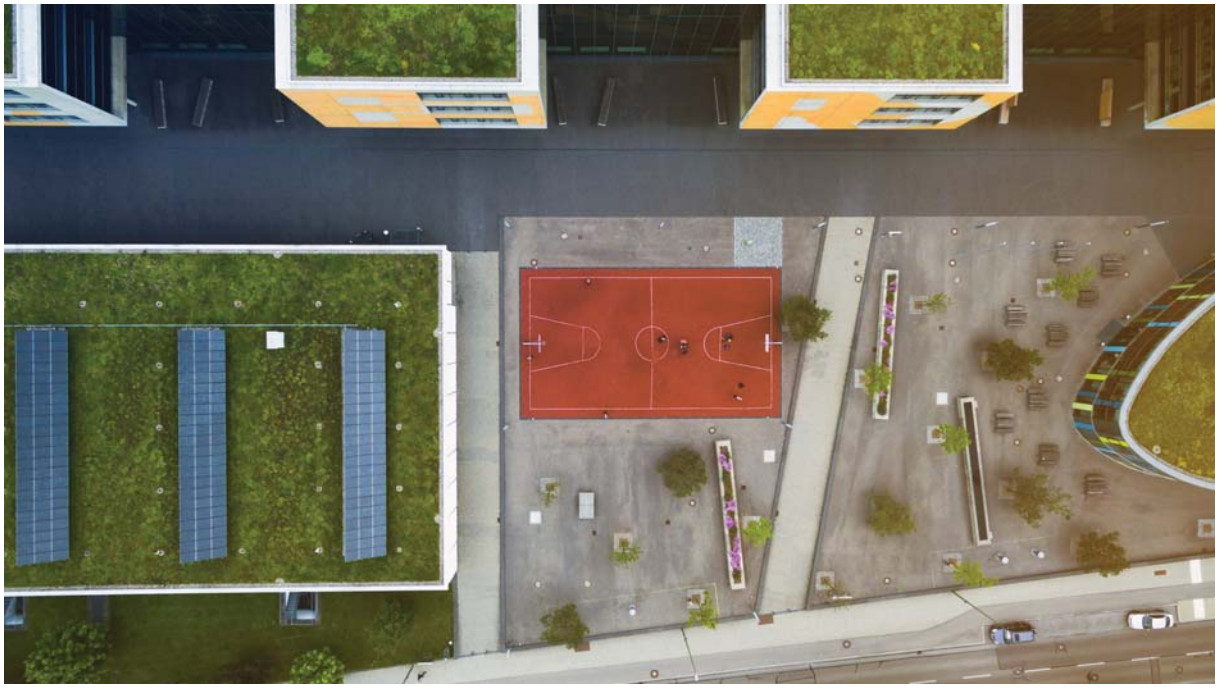


The average ClimACT score of the 39 pilot schools improved from 2.20 to 2.42 one year after the methodology implementation.

Final average score:

2.42/5

Sector	Average
Transport	1.50
Green Procurement	1.29
Green Spaces	2.71
Indoor Air Quaility	3.54
Energy	2.46
Water	3.96
Waste	1.47



CLIMACT BENCHMARKING PLATFORM

The ClimACT Benchmarking Platform allowed each school to consult its score over time and compare its performance with other schools, in any of the sectors assessed. Thanks to this benchmarking, schools could identify their weaknesses, strengths and opportunities for improvement.

The CLIMACT BENCHMARKING PLATFORM is available at the ClimACT website:
http://www.climact.net/gateway/.

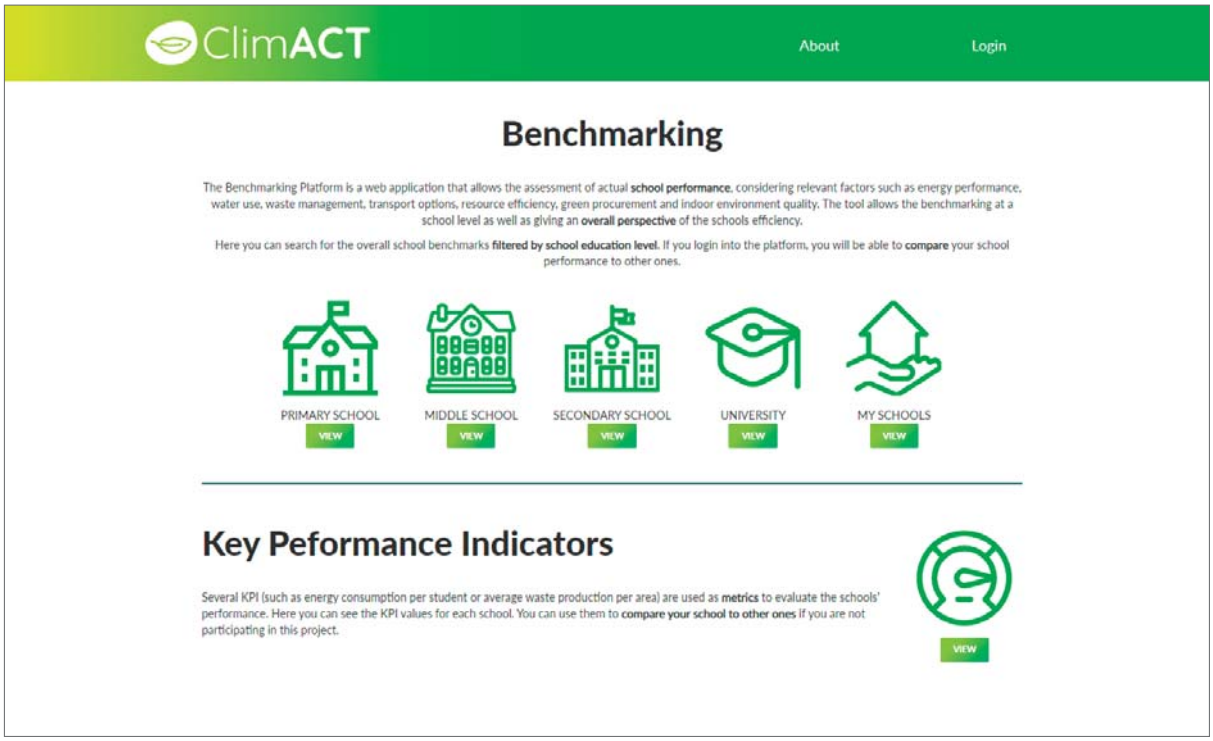


Figure 2 – Benchmarking Platform main menu.

CLIM**ACT** DECISION SUPPORT TOOL

The ClimACT DECISION SUPPORT TOOL (Figure 3) comprises 5 modules to help schools assessing their energy and environmental performance and associated impacts along the whole life cycle, as well as to evaluate improvement measures to build and implement their sustainable action plans.

1 - The DATABASE MODULE

An available, accessible, comparable and interoperable database.

2 - The KPI GENERATOR MODULE

Helps schools to track their performance, to measure their progress and to identify scope for improvement.

3 - The BUILDING SCENARIO MODULE

Users shape scenarios associated to action plans whose impacts and costs will be assessed through the modules 4 and 5.

4 - LIFE CYCLE ANALYSIS MODULE

Assesses the environmental impacts of the products and activities per student

5 - COST BENEFIT ASSESSMENT MODULE

Provides an economic evaluation of improvement measures to schools, including the social benefit of reducing the environmental impact

The CLIMACT DECISION SUPPORT TOOL is available at the ClimACT website: www.climact.net/gateway

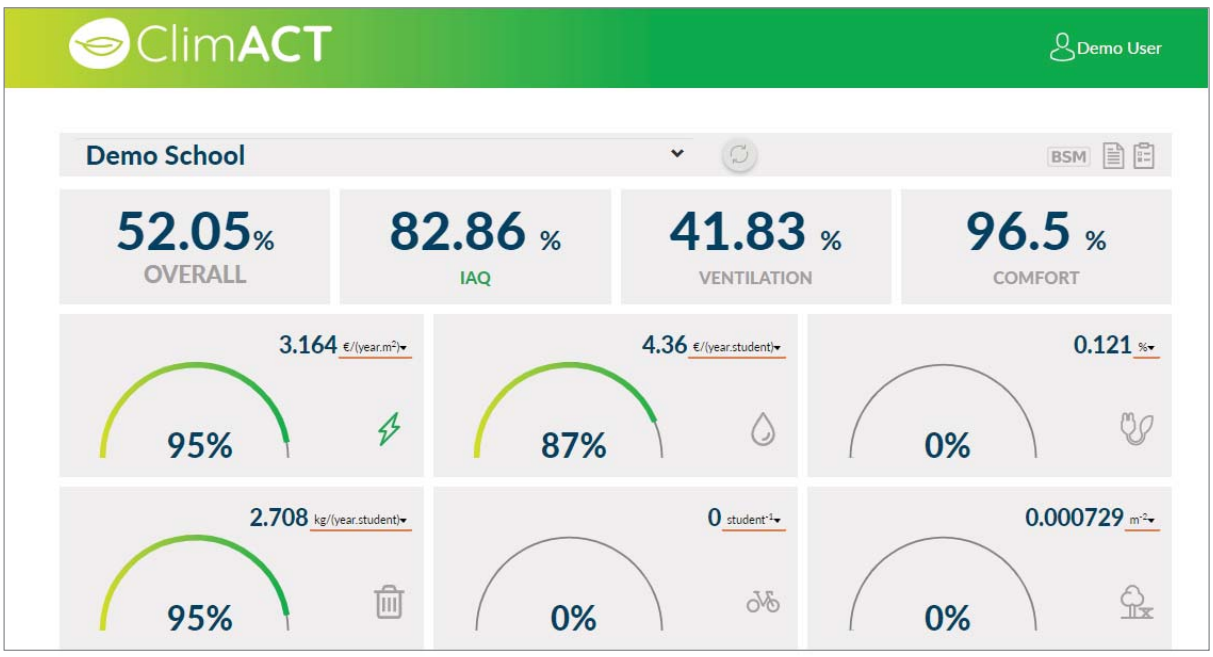


Figure 3- Home-page view of the ClimACT Decision Support Tool

BUSINESS MODELS

The ClimACT project aimed to enter into the ESCO (Energy Service Company) market by rethinking some of the traditional ESCO business models, adapting them to the reality of the school sector and defining some innovative features that appeal to the ESCO customer, in order to boost the market potential.

INNOVATION IN ClimACT BUSINESS MODELS

- ClimACT business models include health and comfort parameters, which are related to the satisfaction and confidence of the client in these business models.
- They focus on low or no-cost Energy Conservation Measures, such as energy management or maintenance actions. Schools have been a good target for these type of measures ecause, during the audit process, behaviour and lack of maintenance were identified as high-impact factors influencing schools' energy consumption.
- The ClimACT model proposes a comparison system that allow schools to assess their current efficiency status against other schools with the option of developing a healthy competition that would translate into an added effort to implement energy efficiency strategies.
- Business models consider raising awareness of occupants as a tool for energy saving, and intend to deploy an energy management framework with the innovative feature of including a gamification approach that will help occupants to understand and learn about the building of energy systems and how their behaviour can impact the energy consumption.
- ClimACT Resource Matching Platform was developed aiming at overcoming the financial difficulties of the implementation of energy conservation measures. The platform matches building owners with ESCOs, improving the dissemination of this type of business models and increase client trust by having an independent evaluation of potential savings.

CLIM**ACT** EDUCATIONAL PLATFORM

ClimACT developed gamification strategies to enhance students' engagement in Low Carbon Economy. Appropriate game elements have been pulled to stimulate acceptance and participation: collaboration in the form of team work, competition between student teams and rewards to celebrate achievements.

LOW CARBON GAME

The goal of this board game is to develop skills and solutions for the reduction of the carbon footprint in their daily-life. A giant mat game was also produced.

Target age: students from 8 to 18 years old.

ROLE PLAY GAME ON BIODIVERSITY AND CLIMATE CHANGE

The role-play aims to promote a debate in small groups. Each player acts like a citizen of a village at a public debate. Several topics are proposed for discussion such as wind energy, forest fires or native forest.

Target age: students above 12 years.

SOLAR OVEN CONTEST

This contest implies collective work, and the participation of students. The ovens are created using recycled materials.

Target age: students above 6 years.

SOLAR CAR KIT

The goal of these kits is to teach how solar panels work. The structure and wheels of the mini solar cars are made of recycled materials.

Target age: students above 6 years.

ClimACT QUIZ

This quiz is an App, easily adaptable to each school. Each student can use it to find out how to calculate his carbon footprint and that of their families or school.

Target age: students above 10 years.

SCREENS FOR MONITORING

These screens allow the school community to know the daily energy consumption of the building.

Students can then take action to reverse the trend by doing simple actions.

ClimACT E-LEARNING COURSE

ClimACT E-Learning Course, an accredited training in Portugal, was developed for teachers interested in the education for sustainable development and the low carbon economy. The objective of this course is to assist teachers in the teaching-learning process, promote behaviour change throughout the school community and contribute to teachers' curriculum development. The online course consists of 10 lessons with videos, presentations and support materials on various topics such as energy, water, waste, transport, climate change, indoor air quality and greens spaces.

This course accounted the participation of 322 teachers, and officers, amongst others, from 250 schools. The ClimACT E-Learning Course was a success!

CLIM**ACT** STRUCTURE IN SCHOOLS

The implementation and training of the Low Carbon structure in schools is considered a key aspect to guarantee the continuation of the project after its end. The low carbon structure was created in the ClimACT schools at the beginning of the project and is comprised of:

LOW CARBON COORDINATOR

A teacher that leads the Low Carbon project in the school.

LOW CARBON BRIGADE

It mainly includes students. The brigade implements the Low Carbon actions.

LOW CARBON COMMITTEE

It includes students, teachers, non-teaching staff, parents, community representatives and representatives from other sectors that schools deem convenient. This Committee discusses the annual working-plan, monitors and evaluates activities, and annouces actions to the community. An Eco-Code for a Low Carbon Economy (principles to be followed by school members) approved by the Committee ensures the commitment of schools.

Low Carbon Committee meetings:

CLIM**ACT** IMPLEMENTATION IN PORTUGUESE SCHOOLS

Market of recycled materials - Give a second life to recyclable materials.

Carnival parade - Students design and make costumes to celebrate Carnival, by reusing materials.

Cycling activity "Eco-Bike-cycling tour" through nearby neighbourhoods, organised by schools.

Assembly of solar cars – building of solar cars using recycled materials.

Construction of solar ovens - Construction of solar ovens by the students, with reused or recycled materials.

Pedagogical garden - Construction of an organic and pedagogical garden, responsibility of the students.

Awareness campaigns about water savings - posters, or playful approach.

Development of educational games for water saving awareness.

Sustainable diet without food wastage - Distribution of carrot sticks.

CLIM**ACT** IMPLEMENTATION IN SPANISH SCHOOLS

ClimACT Brigades

Geodesic structure workshop: construction with reused materials

Solar Car workshop: construction

Solar ovens workshop: construction and cooking some food

Students building a solar car.

Seminar for Teachers: Education for Sustainability - SWOT Activity.

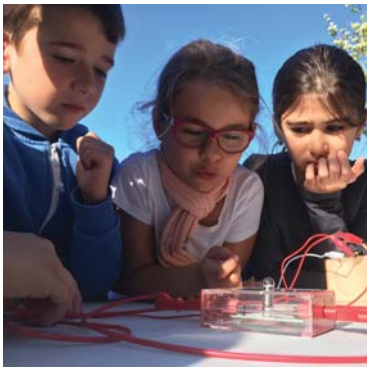
Hall decoration for the Waste Campaign Week

Students working on the Eco-code Poster

Eco – Christmas Tree made of cans by students at the hall of the school as Christmas decoration

CLIM**ACT** IMPLEMENTATION IN FRENCH SCHOOLS

Students learnt how a school building works in relation to energy, water, furniture and waste, in a full-day activity organised by respective heads of science at school.



Science Day: a game day about renewable energy for students and parents - solar and wind turbine energy.

Solaris Contest Day: solar oven and science activity about solar energy.

An activity day about sustainable transport. Students and teachers played bike games and learnt the rules to respect a pedestrian.

Construction of shedding and communication campaign to promote cycling as a daily transport mode to school.

Cleaning the school surroundings.

Shared permaculture garden operated by students

Implementation of low energy lighting systems

Presentation of audit results in pilot schools

CLIM**ACT** IMPLEMENTATION IN GIBRALTAR SCHOOL

Low Carbon Game display at World Environmental Day (WED) celebrations

Solar Oven competition between Gibraltar ClimACT schools

T-shirt based cotton bags

World Environment Day (WED)

Octopus handcraft

Teachers Working Party

IMPACT AND BENEFITS

4 countries (PT, ES, FR, GI)

9 partners

19 Advisory board institutions

41 Associated partners

10 Municipalities

39 managers

39 schools made aware

15000 students involved

87 Awareness campaigns for students
14500 students involved

62 editions/events in Training Course on the ClimACT educational tools operation for teachers
1461teachers involved

336 participants in ClimACT E-learning course on Sustainable Development

6 teachers trained in ClimACT educational tool

2 Seminars on business models for ESCOs

52 persons made aware about business models for ESCOs

3 ClimACT platforms

1 solid network (1435 participants)

6 technical meetings

31 Participations in Scientific Conferences

1 web portal

92 news items about ClimACT

IMPACT AND BENEFITS

1.435 followers

8 Social networks

1 final event

RegioStars 2018 Finalist - **Category 2**

2 awards
3 shortlist nominations

IMPACT AND BENEFITS

Interreg Talks: 6 projects, 1 slam

2nd Prize

EU Sustainable Energy Award

1st Prize

The impact of this project highlights the success of the ClimACT and the replication potential of its methodology. All pilot schools implemented the ClimACT methodology successfully, achieving significant environmental improvements after one year.

The ClimACT methodology, validated as a powerful tool to encourage and support the transition to a Low Carbon Economy, is now ready to steer an environmentally friendly pathway of schools.

FUNDING PROGRAMME: INTERREG SUDOE
FUNDED BY: EUROPEAN REGIONAL DEVELOPMENT FUND (ERDF)
PROJECT DURATION: JULY 2016-JUNE 2019

Participating schools:

PORTUGAL
Escola Básica de Camarate, Loures
Escola Básica de Prior Velho, Loures
Escola Básica General Humberto Delgado, Loures
Escola Básica Maria Veleda, Loures
Escola Básica Padre Manuel de Castro, Matosinhos
Escola Básica Júlio Dinis, Vila Nova de Gaia
Escola Secundária José Cardoso Pires, Loures
Escola Secundária Abel Salazar, Matosinhos
Escola Superior de Tecnologia da Saúde de Lisboa, Lisboa

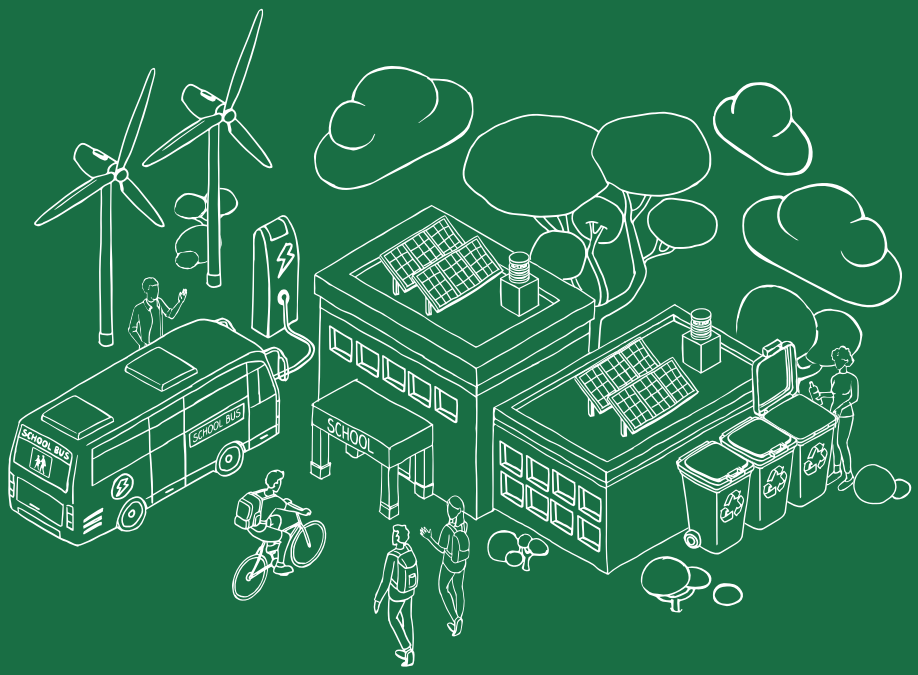
FRANCE
Ecole Barthélémy Profit, La Rochelle
Ecole Bongraine, La Rochelle
Ecole Marie Marvingt, La Rochelle
Ecole Grandes Varennes, La Rochelle
Ecole Jean Bart, La Rochelle
Ecole Marcelin Berthelot, La Rochelle
Lycée Dautet, La Rochelle
Lycée de Rompsay, La Rochelle
Institut Universitaire de Technologie, La Rochelle

SPAIN
CEIP Cardenal Cisneros, Alcalá de Henares
CEIP La Unión, La Rinconada
CEIP Maestro Pepe Gonzalez, La Rinconada
CEIP Nuestra Señora del Patrocinio, La Rinconada
CEIP Lope de Rueda, Seville
IES Cardenal Cisneros, Alcalá de Henares
IES Juan Ciudad Duarte, Bormujos
IES Gabriel García Márquez, Madrid
IES Ortega y Gasset, Madrid
IES Chaves Nogales, Seville
IES ITACA, Seville
IES Nervión, Seville
IES Martín Rivero, Ronda

GIBRALTAR
St Bernard's First School, Gibraltar
St Joseph's First School, Gibraltar
St Anne's Middle School, Gibraltar
St Joseph's Middle School, Gibraltar
St Bernard's Middle School, Gibraltar
Bayside Comprehensive School, Gibraltar
Gibraltar College, Gibraltar
University of Gibraltar, Gibraltar

The ClimACT project wants to thank the Interreg Sudoe Programme for all the support given to the project.

Thanks!



KEEP INTOUCH

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Twitter: www.twitter.com/ClimACT_SUDOE

ResearchGate: www.researchgate.net/project/Interreg-Sudoe-ClimACT

LinkedIn: www.linkedin.com/groups/12013151

Youtube channel: www.youtube.com/channel/UCMZDAglf3Lmpj9pHflbjndA

Vimeo: www.vimeo.com/user64434336

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