Interreg Sudoe

ClimACT

NEWSLETTER #4

CLIMACT DISSEMINATION THROUGH EUROPE

WELCOME TO THE CLIMACT WORLD !

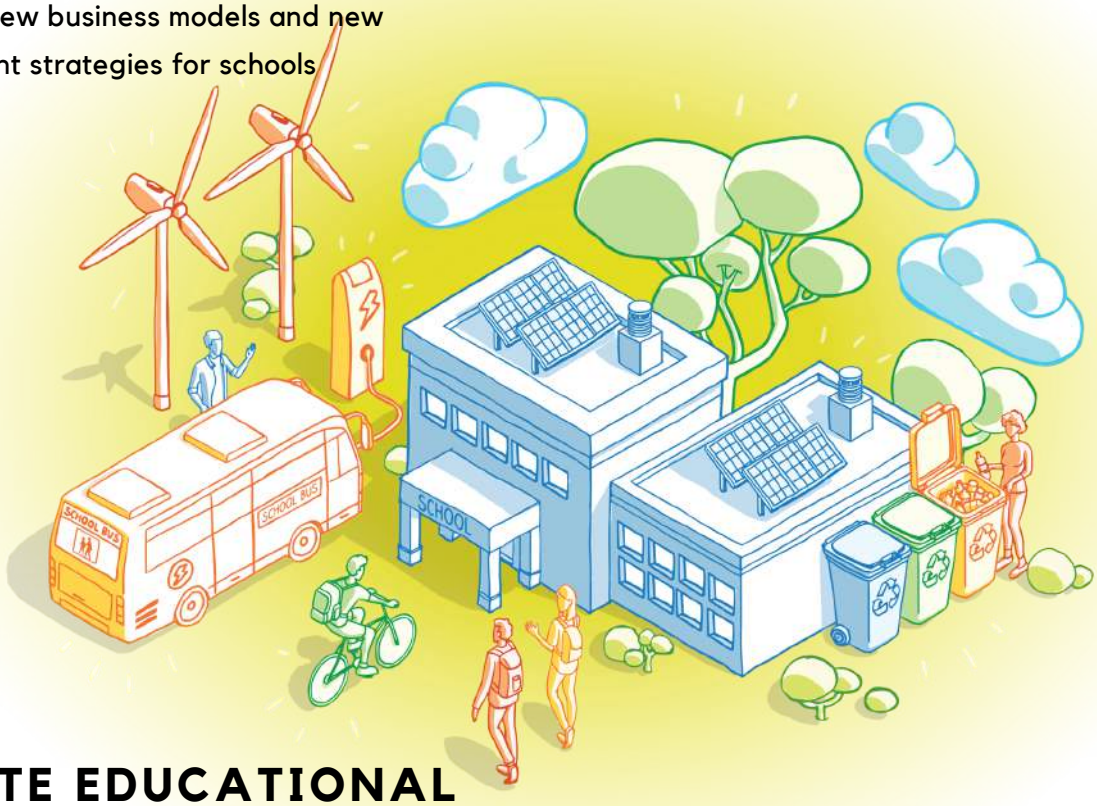
ClimACT is developing a holistic approach to support the transition to a low carbon economy in schools, with 4 mais objectives:

DEVELOP A DECISION SUPPORT TOOL

Develop a decision support tools to access and to identify sustainable solutions for schools, based on intelligent resource management, renewable energy and behavior change

GENERATE NEW BUSINESS MODELS

Generate new business models and new management strategies for schools



CREATE EDUCATIONAL TOOLS

Create educational tools to raise awareness in low-carbon, assisted by information and communication technologies

ESTABLISH A THEMATIC NETWORK

Establish a thematic network in the SUDOE region, driven by a Living Lab methodology, which raise awareness and training and foster a communication framework between end-users and stakeholders

CLIMACT INTERVENTION

ClimACT is based on a systematic methodology conducting to a LCE in 39 pilot schools to demonstrate that the tools developed in the framework of the project lead to an effective transition to a LCE, to significant cost reduction and to quantifiable resources savings around SUDOE region. The environmental performance of schools is assessed through audits. The objective is to characterize the environmental baseline of each school. The audits are divided in three major parts: (A) pre-audit; (B) site assessment (audit); and (C) consumption and cost analysis.

Environmental and energy performance are assessed through surveys and audits in schools in order to identify the schools' behaviour with regard to the resource consumption and respective associated costs and CO2 emissions. Seven environmental sectors are considered: Transports, Green Procurement, Green Spaces, Indoor Air Quality, Energy, Water and Waste. The characterisation process of environmental sectors is summarised as follows.

TRANSPORTS

Transports audits analyse the user's behaviour based on the transport mode used in the home-school path, quantifying CO2 emissions. Moreover, it is quantified the different available parking spaces for low-carbon transport modes, and the public transport network nearby schools.

GREEN PROCUREMENT

Green procurement audits evaluate the electric and electronic equipment labelling, the consumption of recycled paper, the training in green procurement and eco-driving, and the preference for food with biological certificate and the existing local suppliers.

GREEN SPACES

Green spaces audits assess the green areas, the use of chemicals and resources consumption associated to the green areas' maintenance, and the CO2 emissions and sequestration.

CLIMACT INTERVENTION

INDOOR AIR QUALITY

Indoor air quality (IAQ) and comfort is evaluated in representative school classrooms, in terms of size, number of occupants and activities, furnishings or equipment that can release pollutants to the indoor air. Main indoor pollutants are identified and analysed.

ENERGY

Energy audits evaluate the energy consumption from the last three years (i.e., 2014, 2015, and 2016), and the associated CO2 emissions.

WATER

Water audits evaluate the water consumption from the last three years (i.e., 2014, 2015, and 2016).

WASTE

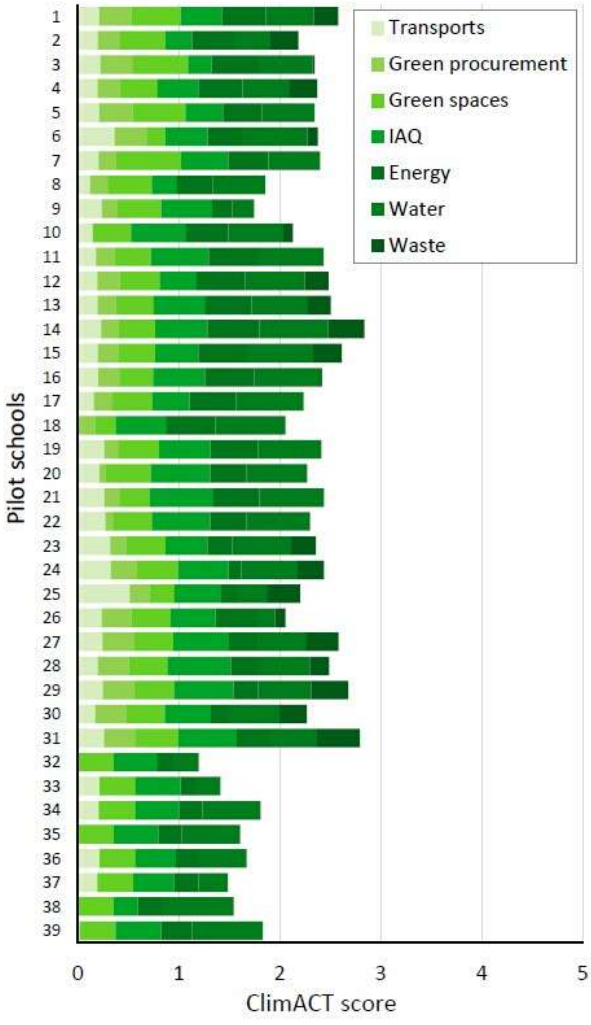
Waste audits quantify the volume of waste produced divided by categories: waste produced (non-recycled), waste recycled, and waste reused.

CLIMACT INTERVENTION

CLIMACT REFERENCE LEVELS - ENVIRONMENTAL AND ENERGY SECTORS

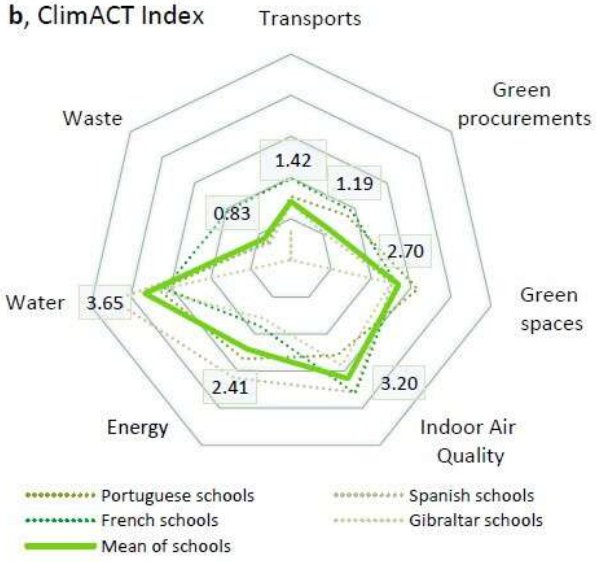
ENVIRONMENTAL RATING OF PILOT SCHOOLS

a, Final score of pilot schools



MEAN PERFORMANCE PER REGION

b, ClimACT Index



c,

Environmental sector	Mean value	SD
Transports	*1.42*	*0.71*
Green procurement	*1.19*	*0.81*
Green spaces	*2.70*	*0.56*
Indoor Air Quality	*3.20*	*0.71*
Energy	*2.41*	*0.82*
Water	*3.65*	*1.01*
Waste	*0.83*	*0.99*

d, Final mean score of 39 pilot schools: **2.20/5**

WHAT IS LCA?

Life Cycle Assessment (LCA) is a methodology that allows to assess environmental impacts associated to all the stages of a product's life cycle and encompasses extracting raw materials, processing, manufacturing, transportation and distribution, use, reuse and recycle and final disposal.

The framework of the analysis includes four phases:

- Definition of objective and scope;
- Inventory Analysis;
- Impact Assessment;
- Interpretation of results.

WHAT IS LCA TOOL USED FOR?

The aim is the development of tools to support the transition to low-carbon economy in schools by monitoring and benchmarking environmental and energy performance, identifying sustainable and cost efficient solutions, based on procurement related and behavioral-related measures, and identifying mechanisms to economically enable the application of these solutions.

The LCA tool has been designed in excel format, in an initial phase, and after programmed to be part of the ClimACT Decision Support tool.

The goal of this LCA is the quantification of the environmental impacts associated to the consumption of energy, materials and water of educational centers located in the regions of Spain, France, Gibraltar and Portugal.

LCA

Important aspects:

- A functional unit
- Scope and system boundaries

LCA:FUNCTIONAL UNIT

The work is focused on the quantification of the environmental impacts for educational activities per student

The figure 1 depicts the total system boundaries considered and the activities considered. The LCA software used has been SIMAPROTM.

The inventory describes the inputs and information analysis which is needed to obtain flows of the system, as well as how the impact factors are calculated. LCA module is oriented to obtain impact results referred to different impact categories. The module presents total results per impact category per school, per year and per student. An example of results in terms of impacts is shown in figure 2.

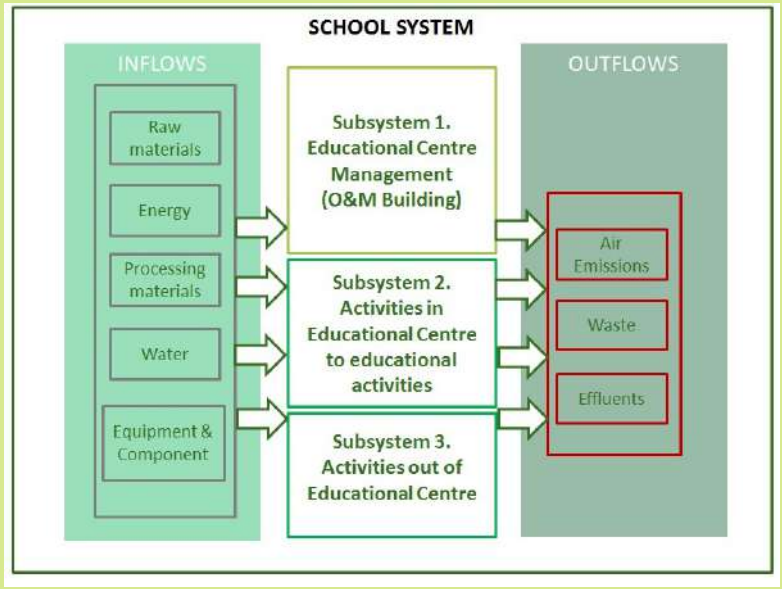
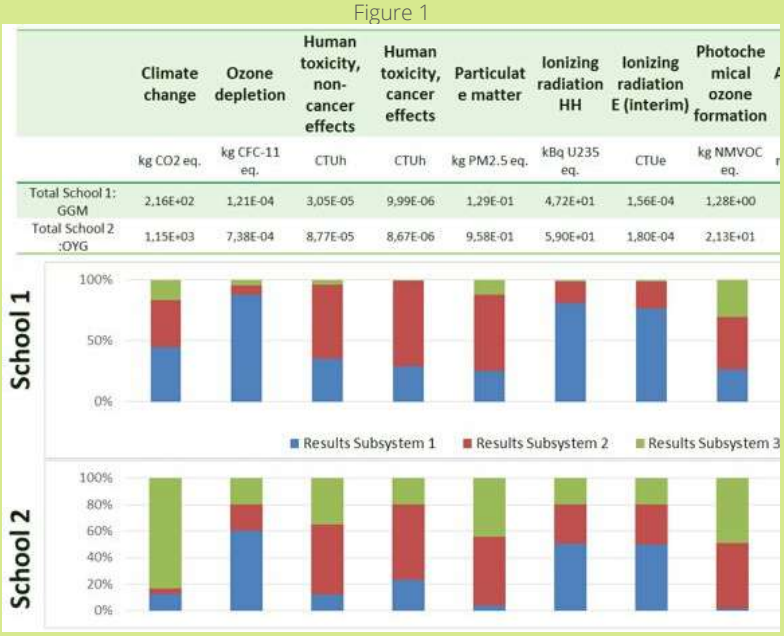


Figure 1



	Climate change	Ozone depletion	Human toxicity, non-cancer effects	Human toxicity, cancer effects	Particulate matter	Ionizing radiation HH	Ionizing radiation E (interim)	Photochemical ozone formation
	kg CO2 eq.	kg CFC-11 eq.	CTUh	CTUh	kg PM2.5 eq.	kBq U235 eq.	CTUe	kg NMVOC eq.
Total School 1: GGM	2,16E+02	1,21E-04	3,05E-05	9,99E-06	1,29E-01	4,72E+01	1,56E-04	1,28E+00
Total School 2 :OYG	1,15E+03	7,38E-04	8,77E-05	8,67E-06	9,58E-01	5,90E+01	1,80E-04	2,13E+01

Figure 2

LCA:FUNCTIONAL UNIT

The function considered in this LCA is the student activity for a course. The inventory of the whole energy, materials and water consumption will be referred to this period and will be calculated per school.

Why is this tool useful?

This tool is useful for schools because it shows the most relevant environmental concerns in their activities, so it's possible to know where to act to make the school more efficient. With LCA tool, also it is possible to make comparisons between schools.

CLIMACT IN GIBRALTAR

THE IMPACT OF THE PROJECT IN GIBRALTAR

WHY WAS CLIMACT IMPORTANT IN GIBRALTAR?

Teachers have engaged in a participatory process and have taken ownership of this. As a result of ClimACT seminars, teachers themselves have shaped the aim, the structure and operation of the framework for Gibraltar, this being the inception of ClimACT Schools Gibraltar.The ClimACT methodology inspired local schools and their progress. The local impact of this initiative has been significant and notable progress has been made in Gibraltar. Teachers have built their support network and students and ancillary staff are now an active part in achieving ClimACT Schools, with great ambition in making a change in Gibraltar. ClimACT has facilitated a support network to assist the framework for ClimACT Schools Gibraltar.

WILL IT CONTRIBUT FOR THE PROGESSION OF THE EDUCATIONAL SECTOR?

Teachers are determined to engage beyond ClimACT and hope to continue their international network in the future. Schools are delivering activities that impact on both the curricula and ethos, developing critical thinking and emphasising the learning outcomes behind each action. Teachers are reinforcing their professional competences and empowering other colleagues. Schools are inspired to keep up the campaigning to stop climate change and to encourage people to live their lives in a way that will allow future generations to also have a good quality of life. Gibraltar has strengthened ties with other like-minded educationalists from France, Spain and Portugal.

CLIMACT TEAM

PhD in Agricultural Engineering
Head of the Energy Systems Analysis Unit/Energy Department/ CIEMAT-Research Center on Energy, Environment & Tech

In ClimACT: Development of the Life Cycle Assessment and the Cost Benefit Analysis modules for the ClimACT DST. Support to the implementation of the ClimACT methodology in Pilot Schools from Madrid's Region; Management of the E-Learning course on Sustainable Development for Spanish teachers, and other activities related to the ClimACT thematic network. Communication, dissemination and diffusion of project and results.

MSc. Environmental Engineering
Researcher at Energy Systems Analysis Unit/Energy Department/ CIEMAT-Research Center on Energy, Environment & Tech

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MSc in Environmental Monitoring and Assessment
Research and Development Officer at Research and Development, Officer of University of Gibraltar

In ClimACT: Project Manager and Coordinator of local activities. Liaison with Department of Education, Department of the Environment and schools. Facilitator of local working groups.

PhD in Chemical Engineering
Researcher at Energy Systems Analysis Unit/Energy Department/ CIEMAT-Research Center on Energy, Environment & Tech

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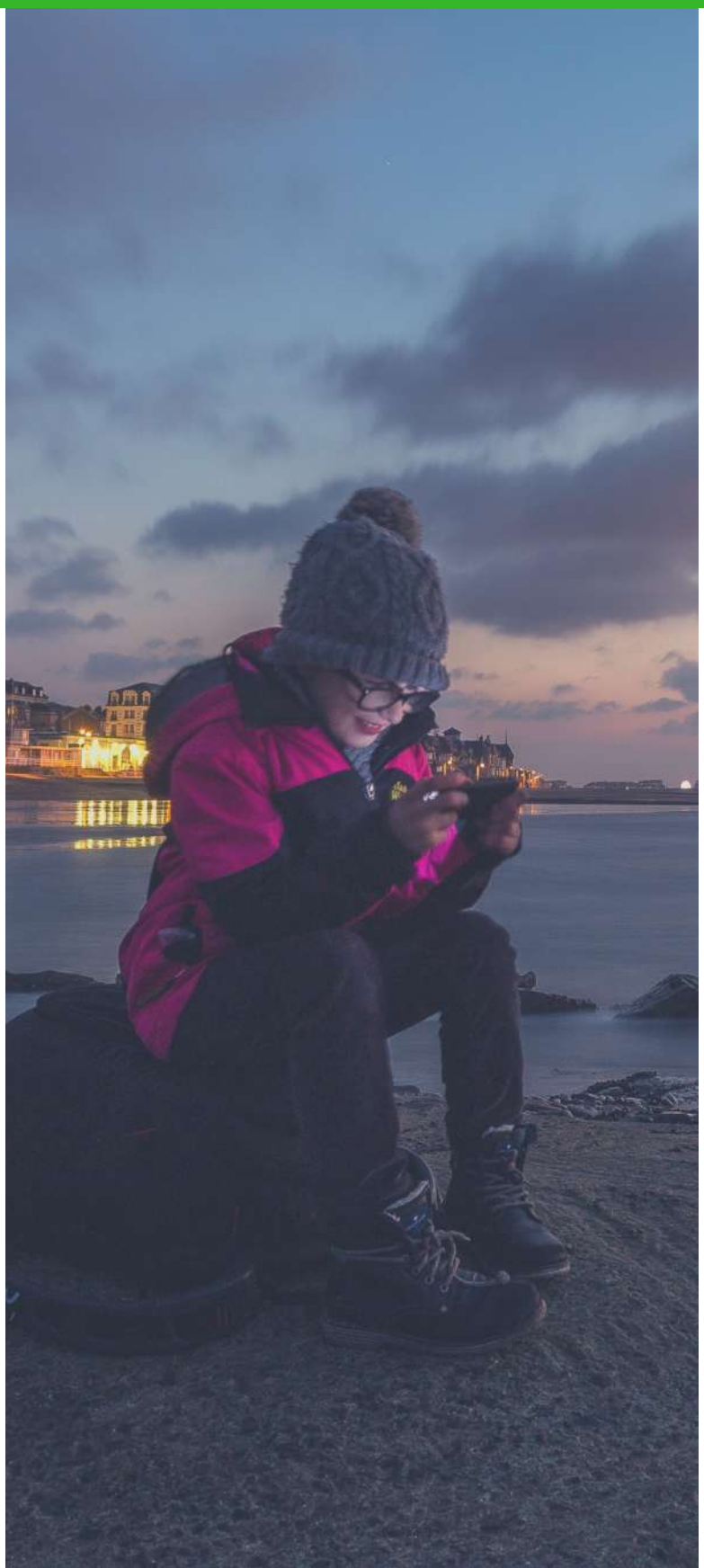
KEEP IN TOUCH



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