



ClimACT



CLIMACT - ACTING FOR THE TRANSITION TO A LOW CARBON ECONOMY IN SCHOOLS –
DEVELOPMENT OF SUPPORT TOOLS

Guidelines for Implementing Learning Activities

October 2016

Executive Summary

The Guidelines for Implementing Learning Activities is a document with instructions for teachers that refers the framework for ClimACT activities.

This document presents information about: i) a brief approach to carbon footprint; ii) Sustainable Development Goals and main links with low carbon economy, iii) the curricular design in the 4 ClimACT countries - Portugal, Gibraltar, Spain and France - underlining the modules where curriculum from different years and subjects explore sustainability and environment topics; iv) and finally the presentation of the behavioral questionnaire applied to scholar community.

It was very important to analyze the school curricula because it allows us to understand in which disciplines can be integrated the contents developed by the project ClimACT.

The carbon footprint is a simple tool that involves students to reflect on their actions and consequences for the planet. The Climate Code is a manifesto of each school that presents the commitments of the school community for the implementation of good environmental practices and that promotes sustainable development.

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1. Guidelines for Implementing Learning Activities

1.1. Introduction

This Guidelines includes information about Carbon Footprint, Sustainable Development Goals by United Nations, the curricular programs of the SUDOE countries and the ClimACT behavioural questionnaire. We hope that this document inspire you and help you get started planning ClimACT activities for your own school. Your participation and reporting of your activities will help us spread the ClimACT project to other schools, governments and organizations who might be able to help promote and support a transition to a low carbon economy in many communities.

2. My Carbon Footprint

In this guidelines we provide a toolkit that helps us understand the implications of our actions. It gives us simple formulae to calculate just about every impact of our lifestyles including the food we eat, energy we use and waste we create. Understanding these human impacts helps us make informed choices about future ways of living. We invite you to join us in making choices for a better world for all!

We all seek to live in a way that is good for us and others and bring about happiness. But this is not always the case. Sometimes the way we live, and the resources we use and greenhouse gases our lifestyles emit exceed the life support systems of Earth. We use too much energy and create greenhouse gases that further threaten life on Earth. We create too much waste, use too much water and, often, our lifestyles reduce the precious biodiversity that sustains life on Earth. How can we live differently on Earth?

As the threats to our planet increase and we progressively exceed planetary boundaries, we have a choice: either we carry on the same, become depressed, or pick up the challenge and explore the true impacts of our lifestyles and try to reduce our CO₂ emissions. Our activities are rapidly reversing the very processes that made human life on Earth possible!

2.1. What is a Carbon Footprint?

A carbon footprint is carbon dioxide (CO₂) that is released into the atmosphere as a result of our actions. Carbon dioxide is one of the major contributors to climate change (global warming).

2.2. How does Global Warming occur?

Carbon dioxide and other gases are released into the atmosphere and form a layer. This layer allows the shortwave radiation from the sun to enter and heat up the earth, but this layer traps some of the outgoing reflected heat (longwave) radiation. Therefore the earth's atmosphere is heating up as we release more and more CO₂ into the atmosphere.

2.3. Where does the CO₂ come from and how is it linked to our ACTIONS?

Every action that we perform on Earth needs energy.

- The energy we use can come from our own **BODIES**, e.g. lifting, walking and digging. For this, we need to eat food. Our bodies break down the food to release energy and we breathe out CO₂.
- We could use **ANIMALS** to do the work for us (e.g. oxen ploughing, horse pulling a cart). We would then need to feed the animals. Their bodies break down the food to release energy and they breathe out CO₂.

- We could use **MACHINES** to do the work for us (e.g. tractor for ploughing, driving a car). These machines need fuel to operate. This is usually in the form of “fossil fuel” (oil, petrol). Burning oil and petrol releases energy for the car to use, which releases CO₂ into the air.
- We could use **ELECTRICITY** to do the work for us (e.g. to run machinery in factories, do work in our homes). This electricity comes mainly from burning coal. Burning coal releases energy which is used in power stations and releases CO₂ into the air.

2.4. Ideas for Discussion

Electricity Action

How much ELECTRICITY do I use in a day?

- A watt is a unit of power
- A watt rating is the rating given to appliances.
- A kilowatt (kW) is 1 000 watts
- kWh = kilowatt-hour
- 1kg of CO₂ is produced for every kWh of electricity consumed.

These are some activities that could increase your electricity use:

- Heaters in winter
- Air conditioner in summer
- Holidays
- Increased use of stove
- Swimming pool

Travel Action

- How much PETROL do I use in a day?
- Measure the distance you travel each day by car.

Water Action

- How much WATER do I use in a day?
- All the water you use in a day needs to be pumped to your house or school.
- This uses electricity.
- Did you know it takes about 0,0018kWh to pump 1 litre of water for your use?
- Therefore $0,0018\text{kWh} \times 1\text{kg CO}_2 = 0,00178\text{kg CO}_2$ for every litre of water you use.

These are some activities that could increase your water budget:

- Watering the garden
- Washing the car
- Swimming pools

Waste Action

- How much WASTE do I produce in a day?
- Everything you throw away was made somewhere in a factory. This process of making the item released CO₂ emissions.

Food Action

The most important things about the food that you consume, when related to your carbon footprint, is:

- How far did it travel to get to you?
- Is it in season or has it been refrigerated for months (or flown in from somewhere else)?
- Is it meat, fish or vegetarian?
- How is it packaged?

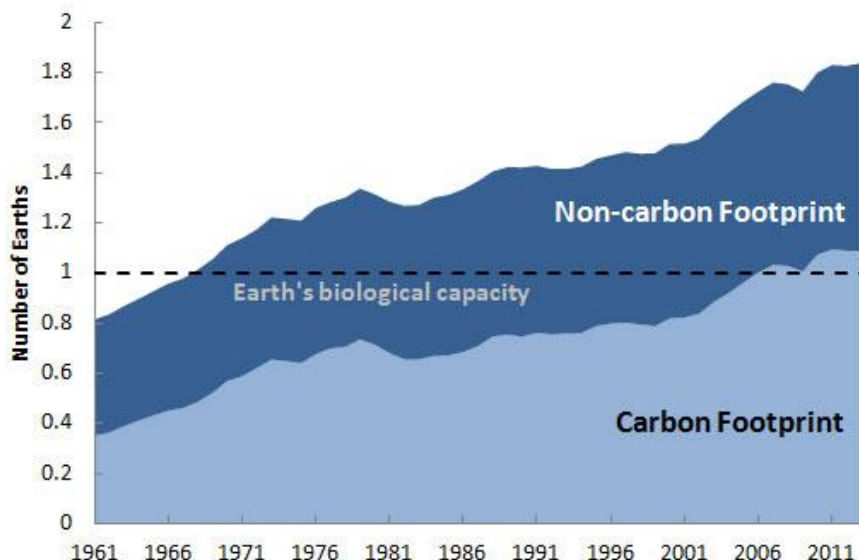
	Total CO ₂ Emissions
 Electricity	
 Travel	
 Water use	
 Waste	
 Food*	

* Not a CO₂ score. An indication only

My total carbon footprint for:

- one day is ___ kg of CO₂
- one week is ___ kg of CO₂
- one month is ___ kg of CO₂
- one year is ___ kg of CO₂

The Carbon Footprint is 60 percent of humanity's overall Ecological Footprint and its most rapidly growing component. Humanity's carbon Footprint has increased 11-fold since 1961. Reducing humanity's carbon Footprint is the most essential step we can take to end overshoot and live within the means of our planet.



3. Sustainable Development Goals



This Agenda is a plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom. We recognise that eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development. All countries and all stakeholders, acting in collaborative partnership, will implement this plan. We are resolved to free the human race from the tyranny of poverty and want and to heal and secure our planet. We are determined to take the bold and transformative steps which are urgently needed to shift the world onto a sustainable and resilient path. As we embark on this collective journey, we pledge that no one will be left behind. The 17 Sustainable Development Goals and 169 targets which we are announcing today demonstrate the scale and ambition of this new universal Agenda. They seek to build on the Millennium Development Goals and complete what these did not achieve. They seek to realize the human rights of all and to achieve gender equality and the empowerment of all women and girls. They are integrated and indivisible and balance the three dimensions of sustainable development: the economic, social and environmental.

The Goals and targets will stimulate action over the next fifteen years in areas of critical importance for humanity and the planet:

People

We are determined to end poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment.

Planet

We are determined to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations.

Prosperity

We are determined to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature.

Peace

We are determined to foster peaceful, just and inclusive societies which are free from fear and violence. There can be no sustainable development without peace and no peace without sustainable development.

Partnership

We are determined to mobilize the means required to implement this Agenda through a revitalised Global Partnership for Sustainable Development, based on a spirit of strengthened global solidarity, focussed in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people.

The interlinkages and integrated nature of the Sustainable Development Goals are of crucial importance in ensuring that the purpose of the new Agenda is realised. If we realize our ambitions across the full extent of the Agenda, the lives of all will be profoundly improved and our world will be transformed for the better.





SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD

We present a practical guide to integrating the SDGs into schools, including practical activities, year plan, networking and sustainable centre developments through change-choice-practices.

Quotations from the SDG Recommendations

1. We encourage all member states to develop as soon as practicable **ambitious** national **responses** to the overall **implementation** of this Agenda. These can support the transition to the SDGs and **build on existing** planning instruments, such as **national development** and sustainable development strategies, as appropriate. We also encourage member states to conduct **regular and inclusive reviews** of progress at the national and subnational levels which are country-led and **country-driven**. Such reviews should draw on contributions from **indigenous** peoples, **civil society**, the private sector and other stakeholders, in line with national circumstances, policies and priorities. National parliaments as well as other institutions can also support these processes.

2. Even outside formal modelling, scientists and practitioners alike have mentioned as critical to reflect in the goals and targets **strong interconnections among goal areas** from the **biophysical and socio-economic** points of view (Griggs et al., 2014, Weitz et al., 2014, ICSU-ISSC, 2015). Looking at multiple areas in relation to one another can provide critical insights as to the **feasibility** and ways and means of **achieving** specific goals.

Introduction - SDG

Whatever an individual or organisation's interest in sustainability is, the concept will be multidimensional and will promote connected thinking. This guide aims to help with such an approach by taking each of the recently adopted seventeen Sustainable Development Goals (SDGs) and offering connecting ideas and examples that touch on and gain inspiration from:

- * Special environmental days
- * Green technologies and practices
- * Networking opportunities and support
- * Doable advocacy challenges
- * Related educational resources

The problem with such high level, over-arching goals, is that they can appear too remote to address our real-life situations on the ground. One way to give them real meaning and effect is for all of us to make informed decisions, where we are and by doing positive things that add to a collective effort to really make a difference. The fact that the goals are not legally binding makes this groundswell effort so important or as Swedish designer, Jakob Trollbäck, puts it: we must “create an army of goalkeepers.” The goals are really value-based lenses that can help with planning, implementing and evaluating actions.

Now we present the goals that are directly related with the ClimACT project and some ideas to explore the implications, possibilities and challenges of each goal and its underlying values. We hope that you join us and be motivated by the change-choices we can all make and, more importantly, use the resource to further your school’s commitments to the environment and a sustainable future for all:



This goal looks forward to 2030 when the hope is that:

- Everyone, irrespective of gender, race, background or vulnerability will have had such a worthwhile, quality education that they are equipped to participate peacefully and equitably on the path to and the benefits of sustainable development.
- Boys and girls equally will have benefitted from and learnt much from an effective and relevant free early childhood, primary and secondary education that makes it easy to move on to good, affordable vocational and tertiary education, preparatory to fulfilling, skilled and productive participation in the world of work.
- Increased numbers of scholarships will have improved access to higher education.
- All youth and most adults will be able to read, write and use numbers.
- Places of learning will be safe and supportive environments for everyone needing them.
- Through international co-operation more qualified teachers will be available to serve global educational needs.

To think about and act on:

- Irrespective of what our own or organisation’s particular work focus is how can we deliberately contribute to the success of this goal?



This goal looks forward to 2030 when the hope is that:

- Affordable, reliable and modern energy will be available to everyone in the world with special attention given to developing countries.
- Renewable energy will be a much bigger part of the mix.
- We will all be twice as efficient in how we use energy.
- By working together countries of the world will have made it easier to produce and use clean energy, become more efficient through research, technology sharing and investment in infrastructure.

To think about and act on:

- How do we ensure that increased efficiency leads to more equitable distribution of energy across society?



This goal looks forward to 2030 when the hope is that:

- Good quality, sustainable, built infrastructure like roads, bridges, power stations and water lines will be supporting industrial activity, economic and human well-being in an affordable and fair way.
- There will be affordable loans and support available for smaller industries and businesses, especially in developing countries, so that these can find a welcoming place in the larger economy.
- Upgrades and retro-fitting with appropriate technologies will have made existing infrastructure and industries more environmentally sound and sustainable.
- The number of people working on technological and innovative research and development, especially in developing countries, will have increased significantly along with government and private funding to match this.
- African, least developed and small island states will have benefitted from international financial and technical help with the installation of sustainable and resilient infrastructure and the support of local research and innovation capacity.
- The goal of inexpensive internet access and IT availability generally for everyone will have moved much closer, especially in less developed countries.

To think about and act on:

- How do we build infrastructure that is more like natural ecosystem services?



This goal looks forward to 2030 when the hope is that:

- Everyone will be able to live in a secure, affordable house and get about with safe, inexpensive, sustainable public transport that caters for special needs and disabilities.
- Many more people everywhere will be participating in the planning and management of integrated settlements.
- Cultural and natural heritage will be better protected through strengthened efforts.
- Far fewer people, especially amongst the poor and vulnerable, will be dying as a result of disasters, water-related or other, and economic losses from these will have also decreased.
- The ecological footprint of each person living in cities will have reduced with special attention given to air quality and waste management.
- Everyone, especially women, children, the aged and disabled will be able to enjoy green, public spaces when they want to.
- National and regional development planning will have improved to ensure positive economic, social and environmental links between urban and rural areas.
- Climate smart cities that have integrated risk reduction into planning around settlements, resource efficiency and disaster resilience will have been increasing in number since 2020.
- Least developed countries will have had financial and technical help to build sustainably for resilience using local materials.

To think about and act on:

- Focus on the most glaring solid waste or air pollution problem near you and suggest practical ways that you could be involved in helping solve it.



This goal looks forward to 2030 when the hope is that:

- All countries will have taken effective action to implement the 10-year Framework of programmes (10YFP) on sustainable consumption and production.
- Natural resources will be sustainably managed.
- Food waste will have been halved by retailers and consumers and reduced in other parts of the supply chain.
- Prevention, avoidance, recycling and reuse will have reduced all other wastes significantly.
- Chemical use and all wastes will be well managed with much reduced impacts on air, water and soil, improving human and environmental health as a result.
- Companies including international ones will have been encouraged to be sustainable and report on this.
- Governments will have buying policies based on sustainability
- Everyone will have the information and awareness to live in harmony with nature.
- Developing countries will have been supported with scientific and technological information to enable them produce and consume in an environmentally friendly way.
- More jobs in sustainable tourism will have been created with the help of good monitoring tools.
- Fossil fuel subsidies that distort markets and lead to waste will be changed to protect poor and affected communities.

To think about and act on:

- How would you sell the idea of higher prices for fossil fuels for the sake of lower environmental impacts?



This goal looks forward to 2030 when the hope is that:

- Every country will have increased its ability to deal with climate-related dangers and disasters
- National policies and plans will reflect measures that deal with climate change

- Education and awareness raising as well as the directed capacity of institutions will have improved to undertake climate change mitigation and adaptation better in order to reduce impacts and provide early warning.
- The UNFCCC commitment to raising and distributing \$100 Billion by 2020 will have been realised and, as a result, developing countries will have been able to implement climate mitigation measures in a responsible way.
- Least developed countries and Small Island states will have benefitted from support with climate change planning that especially includes the needs of women, youth and vulnerable people.

To think about and act on:

Heat stress, wildfire intensity, drought, floods, crop failure, migration and sea-level rise are amongst climate change impact predictions. Which of these are most relevant in your area and what practical measures can be taken to prevent or lessen them?



This goal looks forward to 2030 when the hope is that:

- Life on land in all its biodiversity everywhere will be in a better condition as a result conservation and restoration efforts backed up by sustainable use of freshwater ecosystems and the services they provide and with specific attention to forests, wetlands, mountains and drylands.
- Forests everywhere will have benefitted by at least ten years of better management, reforestation work.
- Desertification trends will have been combatted and reversed through the restoration of degraded land and soils and those affected by drought and floods.
- Mountain ecosystems and biodiversity will be conserved so that their benefits can better support sustainable development.
- Natural habitats will have greatly improved as a result of urgent action to reduce degradation, biodiversity loss and prevent the extinction of threatened species.
- Genetic resources and their benefits will be fairly shared.
- Poaching and trafficking of protected species will have ended through tackling both demand and supply of illegal wildlife products as well as by supporting local communities to pursue sustainable livelihood opportunities.
- Alien invasive species on land and in water, particularly the priority ones, and their impacts will have been greatly reduced after at least ten years of increased effort to prevent their introduction and control them.
- We will see the benefits of at least ten years of integration of ecosystem and biodiversity values into national and local planning and the effects of this on poverty reduction.

- Much more money will have been freed up for the conservation and sustainable use of biodiversity and ecosystems, especially forests of developing countries where it will have been directed at management and providing incentives for protection and reforestation.

To think about and act on:

- “Biodiversity conservation must pay for itself” we often hear. This goal (SDG 15) suggests otherwise. Which of the suggestions in the bullet points above is most feasible where you are?



This goal looks forward to the 2020s when the hope is that:

- There will be more international financial support for developing countries and help with improving local tax collection.
- Developed countries will be fully honouring their “official development assistance” (ODA) undertakings related to their own “Gross National Income” (GNI) in assisting least developed countries and will also explore other funding sources to help.
- Debt relief and restructuring will be helping developing countries reach long-term debt sustainability and reduce debt distress of poor countries.
- Poor countries will be benefitting from investment promotion.
- There will be more North-South, South-South co-operation and capacity development around science, technology, innovation and knowledge sharing, especially with regard to environmentally sound and information technologies as well as the implementation of all the SDGs.
- There will be a rules-based, open and fair trading system that benefits all countries, especially poor ones whose exports should be able to double by 2020.
- The operation of the global economy will have been improved by making sure that policies are well coordinated, logical and in line with the SDGs.
- Each country’s policy space to address poverty eradication and sustainable development will have been respected.

To think about and act on:

- Capacity development underpins much of what this goal intends. What type of capacity building would be most useful in your school and how could this best be achieved?

You can find the complete text of the SDGs

<https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf>

4. Curricular Analysis

4.1. Curriculum in Portugal

Degree of Education	Education Cycle	Grade Level	Disciplines	Themes	Subjects
Basic	1 st	1 st , 2 nd , 3 rd and 4 th	Study of the local environment	The discovery of the Natural Environment	Living beings of your environment
					The physical aspects of the local environment
					Identify colors, sounds and smells of nature
					Meet physical aspects and living beings from other regions and countries
					Living beings of the close environment
Basic	1 st	3 rd and 4 th	Study of the local environment	The discovery of the inter-relations between nature and society	The local industry
					Livestock farming in the local environment
					Forestry in the local environment
					Fishing activity in the local environment
					Mining in the local environment
					Agriculture in the local environment
					Tourism in the local environment
					The local buildings
					Investigate the constructions of other regions or countries
					Main national productive activities
					Environmental quality
Basic	1 st	4 th	Study of the local environment	The discovery of the inter-relationships between spaces	The contact between the Earth and the sea
					Populational densities
Basic	2 nd	5 th and 6 th	Natural Sciences	Diversity of living organisms and their interactions with the environment	Fauna diversity
				Water, air, rocks and soil-earth materials	Flora diversity
					Importance of water to living beings
					Importance of air to living beings
					The rocks, soil and living beings
				Aggression of the environment and health of the Organism	Hygiene and social problems

Basic	3 rd	7 th , 8 th and 9 th	Natural and physical sciences	Earth: a planet with life	Conditions of the Earth that allow the existence of life
					The Earth as a system
				Consequences of the internal dynamics of the Earth	Seismic activity; risks and protection of populations
				Energy	Sources and forms of energy
				Ecosystems	Living-environment interaction
					Energy flow and matter cycle
					Disturbance in the balance of ecosystems
				Global change	Weather forecast
					Influence of human activity on the atmosphere
				Sustainable management of resources	Natural resources-use and consequences
					Protection and conservation of nature
					Costs, benefits and risks of scientific and technological innovations
Basic	3 rd	9 th	Geography	The Earth: studies and representations	Landscape description
					Maps as a mean of representing the Earth's surface
					Location of the different elements of the Earth's surface
				Natural Environment	Climate and plant formations
					Landform
					Risks and disasters
				Population and Settlement	Population
					Mobility
					Areas of human settlement
				Economic Activities	Economic activities
					Networks, transports and telecommunication
				Contrasts of development	Developed countries vs. developing countries
					Interdependence between spaces with different levels of development
				Environment and Society	Environment and sustainable development
Secondary	4 th	10 th	Biology and Geology	Earth, a very special planet	Environmental protection and sustainable development
Secondary	4 th	10 th	Physics and Chemistry A	Energy and its conservation	Energy and motion
					Energy and electrical phenomena
					Energy, thermal phenomena and radiation

Secondary	4 th	10 th	Geography A	The population, resources and user space planner	The population: evolution and regional differences
				The natural resources of the population features: uses, limitations and potential	The distribution of the population
					The resources of the subsoil
					Solar radiation
					Water resources
Secondary	4 th	11 th	Geography A	The spaces organized by population	Maritime resources
					The changing rural areas
					Urban areas: internal dynamics
				The population, as moves and communicates	The urban network and the new city-country relations
					The diversity of modal transport and spatial inequality of networks
Secondary	4 th	12 th	Geography C	Environmental problems, different human impacts?	Transport, communications and the quality of life of the population
					International and global environmental issues
Secondary	4 th	12 th	Biology	Preserve and restore the environment	Urban environment
					Pollution and resources degradation
Higher	Degree	2 nd	Environmental Health	Water quality management I	
				Waste management I	
				Habitat management	
				Water quality management II	
				Waste management II	
		3 rd	Environmental Health	Environmental chemistry	
				Air quality management	
				Environmental Physics	
				Methodologies for environmental management	
				Sociology of the environment	

4.2. Curriculum in Gibraltar

Degree of Education	Education Cycle	Grade Level	Disciplines	Themes	Subjects
Primary	Key Stage 1	Year 1 and 2 (Age 5-7)	Science	Everyday materials	identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
				Uses of everyday materials	identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
				Working scientifically	making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
					identifying differences, similarities or changes related to simple scientific ideas and processes
Primary	Key Stage 2	Year 3, 4, 5, 6 (Age 7-11)	Science	Living things and their habitats	recognise that environments can change and that this can sometimes pose dangers to living things
				Electricity	identifying scientific evidence that has been used to support or refute ideas or arguments
				Working scientifically	.- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary .- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate .- identifying scientific evidence that has been used to support or refute ideas or arguments
				Electricity	identifying scientific evidence that has been used to support or refute ideas or arguments
Secondary	Key Stage 3	Year 7, 8, 9 (Age 11-11-)	Science	Physics	Energy; .- Calculation of fuel uses and costs in the domestic context .- Energy changes and transfers

		14)			.- Changes in systems
					Waves; .- Observed waves .- Sound waves .- Energy and waves .- Light waves
					Electricity and electromagnetism; .- Current electricity .- Static electricity .- Magnetism
					Matter; .- Physical changes
Secondary	Key Stage 4	Year 10, 11 (Age 14-16)	Science	Physics	Energy (continuation of Key Stage 3)
					Wave motion
					Electricity
Primary	Key Stage 1	Year 1 and 2 (Age 5-7)	Geography	Place knowledge	understand geographical similarities and differences through the study of human and physical geography of a region of the United Kingdom, a region in a European country, and a region within North or South America
	Key Stage 2	Year 3, 4, 5, 6 (Age 7-11)		Human and physical geography	human geography, including: types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water
				Geographical skills and fieldwork	use fieldwork to observe, measure, record and present the human and physical features in the local area using a range of methods, including sketch maps, plans and graphs, and digital technologies
Secondary	Key Stage 3	Year 7, 8, 9 (Age 11-14)	Geography	Human and physical geography	human geography relating to: population and urbanisation; international development; economic activity in the primary, secondary, tertiary and quaternary sectors; and the use of natural resources
					understand how human and physical processes interact to influence, and change landscapes, environments and the climate; and how human activity relies on effective functioning of

					natural systems
				Geographical skills and fieldwork	use fieldwork in contrasting locations to collect, analyse and draw conclusions from geographical data, using multiple sources of increasingly complex information
Primary	Key Stage 1	Year 1 and 2 (Age 5-7)	Design and technology	Design, Make, Evaluate, Technical knowledge	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts (e.g. the local community and the wider environment)
	Key Stage 2	Year 3, 4, 5, 6 (Age 7-11)			
Secondary	Key Stage 3	Year 7, 8, 9 (Age 11-14)	Design and technology	Design, Make, Evaluate	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of contexts (e.g. health, engineering, manufacturing, energy).
				Technical knowledge	understand how more advanced electrical and electronic systems can be powered and used in their products apply computing and use electronics to embed intelligence in products that respond to inputs, and control outputs, using programmable components
Primary	Key Stage 1	Year 1 and 2 (Age 5-7)	History	Understanding the complexity of people's lives, the process of change, the diversity of societies and relationships between different groups, as well as their own identity and the challenges of their time.	significant historical events, people and places in their own locality
Primary	Key Stage 2	Year 3, 4, 5, 6			They should regularly address and sometimes devise historically valid questions about change, cause,

		(Age 7-11)			similarity and difference, and significance.
Secondary	Key Stage 3	Year 7, 8, 9 (Age 11-14)			a local history study (e.g. energy generation...)
Primary	Key Stage 1	Year 1 and 2 (Age 5-7)	PE	PE	take part in outdoor and adventurous activity challenges both individually and within a team
	Key Stage 2	Year 3, 4, 5, 6 (Age 7-11)			
Secondary	Key Stage 3	Year 7, 8, 9 (Age 11-14)	PE	PE	take part in outdoor and adventurous activities which present intellectual and physical challenges and be encouraged to work in a team, building on trust and developing skills to solve problems, either individually or as a group
	Key Stage 4	Year 10, 11 (Age 14-16)			take part in competitive sports and activities outside school through community links or sports clubs
Advance Level		Year 12, 13 (Age 16-18)		Design Technology	
				Geography	
				Physics	

Degree of Education	Education Cycle	Grade Level	Disciplines	Themes	Subjects
Primary	1st cycle (6-8 old)	1st	Natural Sciences	Package 1. Introduction to scientific activity	Introduction to scientific activity
					Information sources
					Information technology
					Project planning and reporting

			Package 4. Energy and resources	Classification of materials and properties	
				Physical phenomena	
				Energy sources: electricity, renewable and non-renewable energy, etc.	
			Package 5. Technology, objects and systems	Electricity and systems	
				Benefits and risks of new technologies	
				Inventions	
				Search for information on the Internet	
			Social Sciences	Package 2. The world in which we live	Environment and climate
					Measurement and prediction
		Natural resources			
		Water cycle			
		Problems with regard to pollution, waste and climate change			
		Responsible consumption			
		Mathematics	Package 3. Measure	Metric system	
				Measure of time	
				Monetary system	
			Package 5. Statistics and probability	Graphics and statistical parameters	
Qualitative and quantitative data					
2nd	Natural Sciences	Further development of previous packages and topics			
	Social Sciences				

			Mathematics	
	2nd cycle (8-10 years old)	3rd	Natural Sciences	<i>Further development of previous structure</i>
			Social Sciences	
			Mathematics	
		4th	Natural Sciences	<i>Further development of previous structure</i>
			Social Sciences	
			Mathematics	
	3rd cycle (10-12 years old)	5th	Natural Sciences	<i>Further development of previous structure</i>
			Social Sciences	
			Mathematics	
		6th	Natural Sciences	<i>Further development of previous structure</i>
			Social Sciences	
			Mathematics	

4.3. Curriculum in Spain

Degree of Education	Education Cycle	Grade Level	Disciplines	Themes	Subjects
Secondary	1st cycle (12-14 years old)	1st	Biology and Geology	Package 1. Abilities, skills and strategies. Scientific methodology	Natural environment
				Package 7. Research project	Research work in group
			Geography and history	Package 1. The human space	Demography
					Human activities and natural

					resources
					Environmental impacts and sustainable development
			Maths	Package 1. Processes, methods and attitudes in mathematics	Problem resolution
					Assessment of results
			Technology	Package 5. Statistics and probability	Assessment of variables
			Technology	Package 1. Resolution of technological problems	Stage in development of technological products
				Package 4. Structures and mechanisms: machines and systems	Measuring instruments. electrical Variables.
				Package 5. Technology of information and communication	Using a computer to develop and communicate technical project
			Physics and Chemistry	Package 1. Research activity	Scientist methodology. Laboratory work. Research projects.
				Package 5. Energy	Types of energy. Responsible consumption
			Geography and history	Package 1. The human space	Demography
					Human activities and natural resources
			Maths	Package 1. Processes, methods and attitudes in mathematics	Environmental impacts and sustainable development
					Problem resolution
				Package 5. Statistics and probability	Assessment of results
			Biology and	Package 1. Abilities, skills and strategies.	Assessment of variables
					Natural environment

2nd cycle
(14-16)

3rd

years old)		Geology	Scientific methodology	
			Package 7. Research project	Research work in group
		Physics and Chemistry	Package 1. Research activity	Scientist methodology. Laboratory work. Research projects.
			Package 5. Energy	Types of energy. Responsible consumption
		Maths oriented academic teachings	Package 1. Processes, methods and attitudes in mathematics	Problem resolution
				Assessment of results
			Package 5. Statistics and probability	Assessment of variables
	4th	Biology and Geology		Human activities on ecosystems
				Natural resources and their types
			Package 3. Ecology and Environment	Environmental consequences of human energy consumption
				Waste, pollution and their management
			Package 7. Research project	Research work in group
		Sciences applied to professional activity	Package 1. Basic instrumental techniques	TIC
				Experimental assessments
			Package 2. Scientist applications in environmental conservation	Pollution and waste
				Sustainable development
			Package 3. Research, Development and Innovation	Research concept
			Package 4. Research project	Research work in group
		Economy	Package 6.	Sustainable economy

	International Economy	
Physics and Chemistry	Package 1. Research activity	Scientist methodology. Laboratory work. Research project
	Package 5. Energy	Types of energy. Heat exchange and thermal Systems
Maths oriented academic teachings	Package 1. Processes, methods and attitudes in mathematics	Problem resolution
		Assessment of results
	Package 5. Statistics and probability	Assessment of variables
Technology	Package 1. Information technology and communication	Networks. Digital media. Programming
	Housing facilities	Electrical installation
		Heating and cooling systems
		Other facilities
		Energy savings. Bioclimatic architecture
	Technology and Society	Use of raw materials and natural resources
		Industrial evolution
		Sustainable development
Earth and environmental sciences	Package 1. Environment and sources of environmental information	Identification of resources, risks and impacts, linking to human activity on the environment
		Instruments of environmental information
	Package 2. Fluid layers, dynamic	Climate and solar energy
		Atmosphere and air quality
	Package 3. Atmospheric pollution	Source of air pollution
		Greenhouse effect

				Package 4. Water pollution	Source of water pollution
					Sustainable water management
				Package 5. Geosphere and geological hazards	Mineral resources, fossil fuels and the impacts of use
				Package 7. Management and sustainable development	Uncontrolled development, conservationism and sustainable development
					Management of waste
			Scientific culture	Package 1. Work procedures	Research impact in the life
					Environmental impacts. Types
				Package 3. Technological developments and their environmental impact	Overexploitation of natural resources, pollution, desertification, loss of biodiversity and waste treatment
					Renewable and non-renewable resources
				Package 4. Quality of life	Air quality and illness
			Technology of information and communication	Package 5. New materials	Methods of obtaining raw materials and possible social and environmental impacts
				Package 2. Computers, operating systems and networks	Networks

Degree of Education	Education Cycle	Grade Level	Disciplines	Themes	Subjects
High school	1st cycle (16-18 years old)	1st	Biology and Geology	Package 4. Biodiversity	Conservation of biodiversity. The anthropic factor in the conservation of biodiversity
			Economy	Package 7. Economic	Environment as sensitive

	imbalances and the role of state in the economy	and scarce resource
Physics and chemistry	Package 1. Research activity	Scientist methodology. Laboratory work. Research project. Diffusion of research.
	Package 4. Energy transformations and spontaneity of chemical reactions	Thermodynamic systems Chemical combustion reactions
	Package 8. Energy	Types of energy
Mathematics applied to Social Sciences	Package 1. Processes, methods and attitudes in mathematics	Variables of measure and problems
		Scientific reports Using technology in the learning process: data collection, simulations, reports, etc.
Maths	Package 1. Processes, methods and attitudes in mathematics	Problem resolution. Methodologies
		Assessment of results
	Package 5. Statistics and probability	Assessment of variables
Scientific culture	Package 1. Work procedures	Research impact in the life
Industrial Technology	Package 3. Machines and systems	Measuring equipment of variables
	Package 4. Manufacturing procedures	Environmental impact of manufacturing
	Package 5. Energetic resources	Importance of energy resources
Technology of	Package 1. The information	Influence of information and

2nd	information and communication	society and computer	communications technology
		Package 5. Software for computer systems	Software and tools.
	Design	Package 1. Historical development and design areas	Sustainable design
	Physics	Package 1. Research activity	Scientist methodology. Laboratory work. Research projects.
		Package 3. Electromagnetic interaction	Electricity (Energy and power)
	Geography	Package 1. Geography and study of geographical space	Concept of geography
			Sustainable development
			Plans and maps. Scale.
		Package 5. Natural landscapes and nature-society relationships	Sustainable use of the physical environment.
			Natural heritage
		Package 8. Energy sources and industrial space	Energy sources in Spain
			Deficiencies and problems of the Spanish industrial sector
			Industrial development: future prospects
	Geology	Package 8. Mineral and energy resources and groundwater	Renewable and non-renewable resources
			Mineral and energy resources
			Water cycle
	Mathematics applied to Social Sciences	Package 1. Processes, methods and attitudes in mathematics	Variables of measure and problems
			Scientific reports
			Using technology in the learning process: data collection, simulations,

				reports, etc.
			Package 4. Statistics and Probability	Assessment of variables
		Maths	Package 1. Processes, methods and attitudes in mathematics	Problem resolution. Methodologies
			Package 5. Statistics and probability	Assessment of results
		Chemistry	Package 1. Research activity	Basic strategies of scientific activity
				Documentation, reporting, communication and dissemination of results
		Technology of information and communication	Package 2. Publication and dissemination of content	Social media. Web 2.0. Networks.

4.4. Curriculum in France

Degree of Education	Educational Cycle	Grade Level	Disciplines (Geography, Biology, Physics and Chemistry, etc)	Themes	Subjects
Elementary school	2nd (6-8 years old)	CP, CE1, CE2	Question the world	Question the world of living, matter and objects	What is matter ? How to recognize the living world ? Technical objects: what are they? Which needs do they fill? How do they work?
				Question space and time - Explore different ways of living in the world	Sense of time and space Different ways of living in the world: the school (CP), local markets (CE1), transportation (CE2)

		CP, CE1, CE2	Civic and moral education	Being involved : act individually and collectively	Being involved and take responsibilities in the school : 1/ respect individual and collective commitments, getting involved in the school life (actions, projects, ...), 2/ getting involved in a collective project (school, city, national, ...), 3/ cooperate towards a common goal Assume collective living and environment constraints, and develop a social, eco-friendly and citizen way of thinking: involve the class in actions for solidarity or the environment
	3rd (9- 11y)	CM1	Geography	Consuming in France (CM1)	Understand that energy, food and water consumption is essential for life and ressources must be managed carefully Understand that goods are produced throughout the world and need to be transported over short to very long distances
		CM2	Geography	Mobility (CM2) Living better at home (CM2)	The place of nature and biodiversity in the city, transportation, waste management, eco-friendly areas: opportunities to think about policies for sustainable development
Secondary: Grammar school		6th	Geography	Living in a metropol (6th)	Main features of a metropol and reflexion about the possibility of a sustainable urban development
Elementar y and grammar school		CM1, CM2, 6th	Sciences	Matter, movement, energy, information The earth : living bodies in their environment	Need of energy to live Meteorology : instruments to measure climate
		CM1, CM2, 6th	Civic and moral education	Being involved : act individually and collectively	Being involved and take responsibilities in the school, including getting involved in a collective project (school, city, national, ...) Assume collective living and environment constraints, and develop a social, eco-friendly and citizen way of thinking

Secondary: Grammar school	4th (12-14y)	5th	Geography (5th)	Limited resources to manage and to renew Prevention of risks and adaptation to global change	Population growth put pressure on natural resources which are to save and maintain Capacities of societies to maintain resources in a sustainable way are different throughout the world and representative of development level Global change is a major risk of vulnerability for all territories
		5th, 4th, 3rd	Civic and moral education (5th, 4th, 3rd)	Feeling as a member of a collectivity	Feeling as being part of the common destiny of humanity Knowing the principles, moral values and symbols of French and European citizenship Individual and collective responsibilities with regard to major risks
			Life and Earth Sciences (5th, 4th, 3rd)	The Earth, environment and human action	Explore and explain some meteorological and climate facts Identify the main impacts of human actions, benefits and risks, on the Earth planet Planning or justifying sustainable behaviours for the environment and the conservation of natural resources
			Technology (5th, 4th, 3rd)	Provide comfort in a dwelling Designing an automatic lighting Produce, distribute and convert energy Maintain natural resources (save energy and protect the environment)	
			Chemistry and Physics (5th, 4th, 3rd)	Energy and energy conversions	Different forms of energy, conversion from one energy to another, energy power, energy conservation, energy metrics, ...

Secondary: high school	4th (15- 17y)	2nd	Geography	The stakes of development Maintain the earth resources Develop cities	From development to sustainable development Feeding humanity Water, an essential resource The energy challenge Cities and sustainable development
		1st	Life and earth sciences : section Science (S)	Feeding humanity	
		1st	Science : sections economy (ES) and literature (L)	The energy challenge	
		Termin al	Physics and Chemistry : section Science (S)	Energy, matter and radiation	
		Termin al	Civic and moral education : all classes preparing a general baccalaureat only	Biology, ethic, society and environment	The environmental responsability. The inter- relationship between humanity and nature

5. Behavioral Questionnaire

The proposed questionnaires - behavior questionnaires - aim to be a baseline for behaviour changing. The information requested in this questionnaire is intended to evaluate the behaviors of the school community in a wide range of environmental themes, within the framework of the Interreg SUDOE project ClimACT. The questionnaire is composed by multiple choice questions + 1 open question in order to study behavior before the project activities and changes on behaviour after the project. The aim of the open question is to help the LC coordinator to better understand his/her potential for acting.

The questionnaire will be one of the first activities of the schools. The LC Committee in every school should decide the way in which the questionnaire should be carried out (to the entire school or a sample grouping). In case of undertaking the questionnaire in samples, the recommendation is to be answered by at least 30% of the school and the sample must be representative of the different school levels/years.

From adults, that include teachers and staff, we will also demand at least a sample of 30% from each group. The LC Brigade must be identified when answering the questionnaires in order to compare with the other questionnaires in the school. The questionnaire will be answered online except for primary schools where other methods can be used if necessary. Some questions are not applicable to under 10 years.

School Identification	Teacher Identification	Class	Low Carbon Brigade Member
			Yes [] No []
Student []		Age	Gender
Teacher []	Staff []		F [] M []
Questionnaire ClimACT 1		Answers	
1. Waste			
1.1. Do you separate recyclable waste at school and put it in the recycling bin?		Never [] Sometimes [] Almost Always [] Always []	
1.2 Do you separate the paper/cardboard at home?		Never [] Sometimes [] Almost Always [] Always []	
1.3. Do you separate the plastic/metal packaging at home?		Never [] Sometimes [] Almost Always [] Always []	
1.4. Do you separate the glass packaging at home?		Never [] Sometimes [] Almost Always [] Always []	
1.5. Do you separate the organic waste to use it as fertilizer at home?		Never [] Sometimes [] Almost Always [] Always []	
1.6. Do your family use reusable bags for shopping?		Never [] Sometimes [] Almost Always [] Always []	
1.7. Do you deliver electrical and electronic equipments for recycling?		Never [] Sometimes [] Almost Always [] Always []	
1.8. Do you try to repair electrical and electronic equipment when they break down?		Never [] Sometimes [] Almost Always [] Always [] Not applicable to under 10 years []	
1.9. Do you use any second hand scholar book?		Never [] Sometimes [] Almost Always [] Always [] Not applicable to under 10 years []	
2. Energy			
2.1. Do you switch off the lights when they are not needed?		Never [] Sometimes [] Almost Always [] Always []	

2.2. Do you leave the TV on standby at home?	Never [] Sometimes [] Almost Always [] Always []
2.3. Do you turn the computer into hibernation mode instead of shutting it down in the evenings?	Never [] Sometimes [] Almost Always [] Always []
2.4. Do you leave chargers plugged in when they are not charging any device?	Never [] Sometimes [] Almost Always [] Always []
2.5. Do you have solar panels installed at home?	No [] Yes [] No, but I plan to [] Not applicable to under 10 years []
2.6. Could you reduce energy consumption at home?	No [] Yes [] If yes, how? Not applicable to under 10 years []
2.7. Does your home have an energy efficiency accreditation?	No [] Yes [] If yes, what is? _____ Not applicable to under 10 years []
2.8. Do you take into account energy efficiency labelling when you buy a new electrical or electronic equipment?	Never [] Sometimes [] Almost Always [] Always [] Not applicable to under 10 years []
2.9. Do you take into account the lifespan of a product when you buy a new one?	Never [] Sometimes [] Almost Always [] Always [] Not applicable to under 10 years []

3. Indoor Environment Quality

3.1. Do you consider that the indoor air quality within your school is important for your health?	No [] Yes [] I don't know [] If yes, why? _____ Not applicable to under 10 years []
3.2. Do you feel cold in your classroom during winter?	Never [] Sometimes [] Almost Always [] Always []
3.3. Do you feel heat in your classroom during summer?	Never [] Sometimes [] Almost Always [] Always []

4. Transports

4.1. Do you travel to the school by foot?	Never [] Sometimes [] Almost Always [] Always [] If yes indicate the time you spend going from your home to school: ___ minutes
4.2. Do you travel to the school by bicycle?	Never [] Sometimes [] Almost Always [] Always [] If yes indicate the time you spend going from your home to school: ___ minutes
4.3. Do you travel to the school by bus?	Never [] Sometimes [] Almost Always [] Always [] If yes indicate the time you spend going from your home to school: ___ minutes
4.4. Do you travel to the school by subway?	Never [] Sometimes [] Almost Always [] Always [] If yes indicate the time you spend going from your home to school: ___ minutes
4.5. Do you travel to the school by train?	Never [] Sometimes [] Almost Always [] Always [] If yes indicate the time you

	spend going from your home to school: ____ minutes
4.6. Do you travel to the school by tram?	Never [] Sometimes [] Almost Always [] Always [] If yes indicate the time you spend going from your home to school: ____ minutes
4.7. Do you travel to the school by boat?	Never [] Sometimes [] Almost Always [] Always [] If yes indicate the time you spend going from your home to school: ____ minutes
4.8. Do you travel to the school by car?	Never [] Sometimes [] Almost Always [] Always [] If yes indicate the time you spend going from your home to school: ____ minutes
4.9. Do you travel to the school by motorcycle?	Never [] Sometimes [] Almost Always [] Always [] If yes indicate the time you spend going from your home to school: ____ minutes
4.10. Do you practice car sharing when you travel to the school? If yes, how many passengers go to your school with you?	No [] Yes [] ____
4.11 Do you go back to your home and return to school more than once per day?	No [] Yes []
4.12. What is the distance between your home and school?	_____ km
4.13 How much do you spend on your trips home – school, using car or motorcycle each month?	_____€
4.14 How much do you spend on your trips home - school using public transports each month?	_____€
4.15. If there was a bike path between your home and the school, would you rather the bike?	Never [] Sometimes [] Almost Always [] Always [] Not applicable to under 10 years []
4.16. Do you use the public transport when you go out with your family on the weekends?	Never [] Sometimes [] Almost Always [] Always []

5. Citizenship

5.1. How often do you eat meat at home?	Never [] Once a week [] Sometimes [] Everyday []
5.2. How often do you eat fish at home?	Never [] Once a week [] Sometimes [] Everyday []
5.3. Have you ever subscribed any environmental petition?	No [] Yes [] No, but I plan to [] Not applicable to under 10 years []
5.4. Have you ever reported an environmental offence in your town?	No [] Yes [] No, but I plan to [] Not applicable to under 10 years []
5.5. Do you belong to any association/Non-Governmental Organization (NGO)?	No [] Yes [] No, but I plan to [] If yes, what is? ____ Not applicable to under 10 years []
5.6. Have you ever participated in a beach, forest or other cleanup?	No [] Yes [] No, but I plan to []
5.7. Have you ever participated in tree-planting campaigns?	No [] Yes [] No, but I plan to []
5.8. Would you like to participate in keeping a vegetable garden?	No [] Yes [] Maybe []
5.9. What do you think you could do, or help to do, in order to transform your school in an environmentally and climate friendly school?	(open question)