Sustainable Schools

A practical handbook for schools to design their ecological transition, reduce emissions and nurture environmental education.

JESC CARBON INITIATIVE

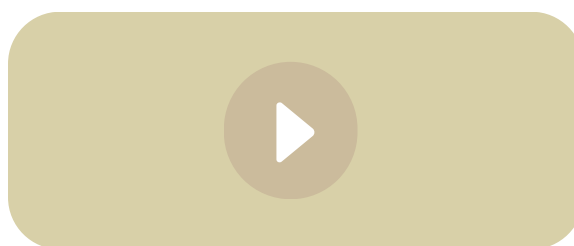JESC Jesuit European Social Centre

Contents

Responding to the ecological crisis

As future-builders, schools are in a unique position to contribute to the ecological transition by disseminating and advancing the cultural and practical foundations of a sustainable society.

● **Schools as environmental actors**

As the effects of the ecological crisis become more visible each year, non-state actors such as businesses and institutions are increasingly called to **contribute to global efforts and implement strategies** to monitor and reduce their ecological impact.

In context of this joint endeavour, educational institutions and, in particular, schools, have a critical role to play. While the contributions of most private institutions revolve around operational improvements (reduced emissions, enhanced resource circularity, etc.), those of educational actors are **both operational and social**.

Eco-consciousness

Emissions

Resource use

Biodiversity
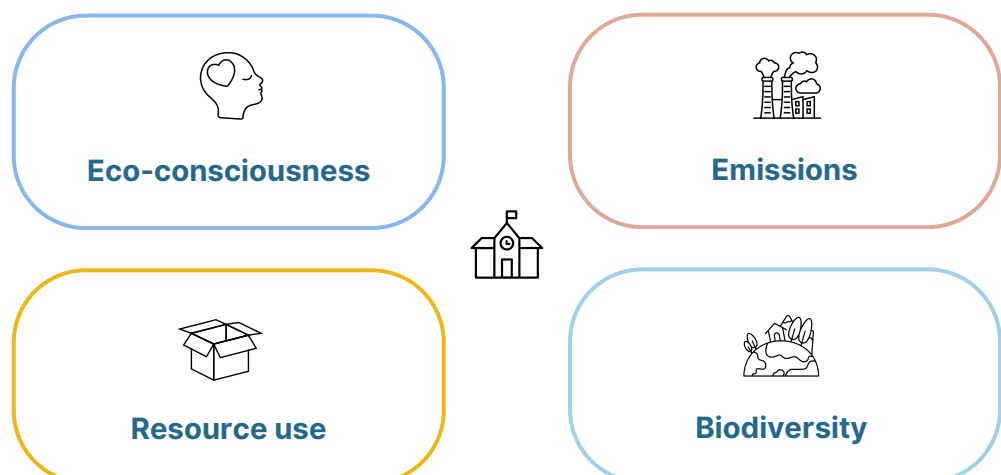
Introduction to the guide and purpose

The role of schools in the ecological transition extends beyond the scope of their operations and supply chains and into their **educational communities**, **local networks** and **future generations**. Because of this, schools have a distinct capacity to influence and shape our societal values, knowledge and behaviours, acting as agents of socialisation and granting them the **ability to produce systemic change**.

Due to this important feature, mobilising schools and educational networks around the topic of environmental stewardship and the ecological transition has become a paramount step in the process of building bridges with a future shaped by climate justice and **life within planetary boundaries**.
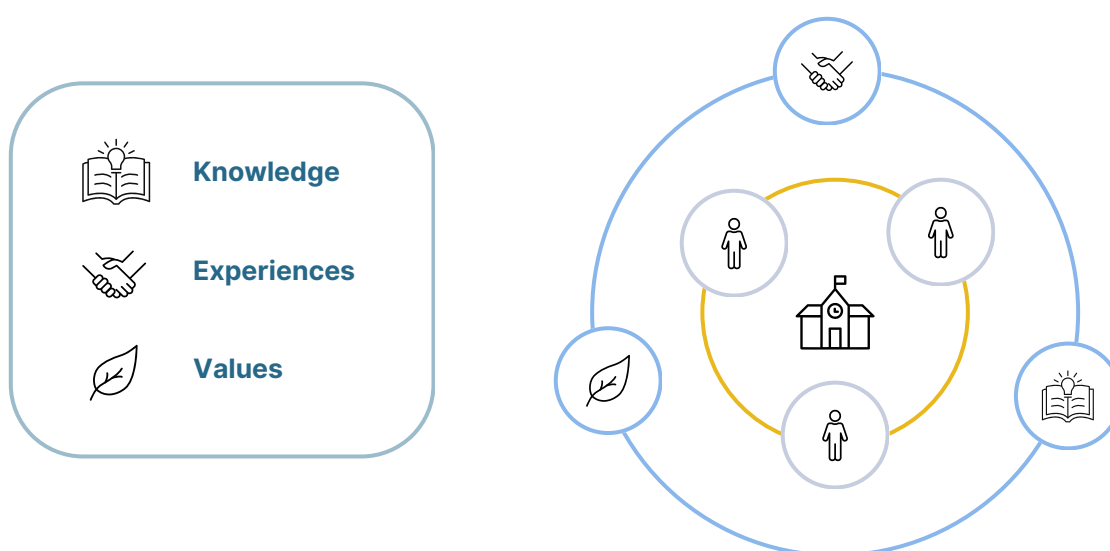
● Empowering schools in their efforts

This practical handbook aims to inform, inspire and guide schools in their journey of ecological transition by offering a comprehensive overview of the topic of **sustainability management** and the promotion of the care for the environment in the context of primary and secondary education.

This handbook follows a **step-by-step approach** in which you will be guided through the different phases, components and areas of the development of an integral care for the environment school strategy - from the forming an eco-team and the outlining of a school's ecological vision to learning about the ways by which a school can align itself with a more sustainable future.

The faces of a sustainable school

Sustainable schools are active drivers of care for the environment-inspired change within their educational communities and beyond, both in practical terms as well as in the realm of values and behaviour.

Formation	**Transformation**	**Influence**

The contributions which a school can make to the ecological transition, can be thematically divided into the three categories depicted above. The purpose of this framework is to **provide structure** to sustainability related actions and work.

● **The goals of a sustainable school**

Form the educational community so each person (student, staff, guardian) can **become an actor** in the ecological transition.

Transform school facilities, policies and practises to minimise **emissions** and the **resource intensity** of the school.

Actively influence, **boost** and **take part** in the local, regional, and national dimensions of the ecological transition.

A window to a better future

Formation

About what?

Eco-counsciousness

Emissions

Resource use

Biodiversity

To whom?

Students

Adults

Management

Staff

Guardians

A sustainable school stands at the centre of an engaged educational community shaped by **environmental knowledge** and a **culture of life within planetary boundaries**. This culture, which draws from the ideas of interconnectedness with nature and **global citizenship**, encourages the development of critical thinking, empathy, and action towards creating a more sustainable and equitable world for all.

A window to a better future

Transformation

Around which areas?

Eco-counsciousness

Emissions

Resource use

Biodiversity

How?

Evaluate

Set goals

Manage

A sustainable school has developed **processes, responsibilities and goals** to gradually reduce its associated emissions and the resource intensity of its activity. This process of transformation is **integrated as an input for the ecological formation** of the educational community.

A window to a better future

Influence

Who?

Wider community

Partnering

How?

Networking

Advocating

Around which topics?

Eco-counsciousness

Emissions

Resource use

Biodiversity

A sustainable school engages with local actors to **develop synergies** and **advance the ecological transition** beyond its educational community. By fostering partnerships with local stakeholders, not only can schools become more sustainable themselves (energy procurement alliances, circular economy schemes etc.), but also catalyse broader societal transformations towards ecological responsibility and climate justice.

Can a school be carbon-neutral?

Without offsetting, due to the inherent emissions associated with the various aspects of its operations, it is almost impossible for a school to become carbon-neutral. Yet, this should not be the goal to aim for.

● **Emissions cannot be cancelled out**

Research has shown that most educational institutions rely on offsetting to claim to be carbon-neutral. Yet, from the viewpoint of climate science, emissions **offsetting is problematic**, both as a concept and as a universal climate action recourse.

Conceptually, future presumed emissions reductions or carbon sequestration cannot equate to certain emissions released today. Furthermore, offsetting not only distracts from the paramount goal of reducing overall emissions, but there are also insufficient carbon sinks available globally to compensate for our current emission levels.
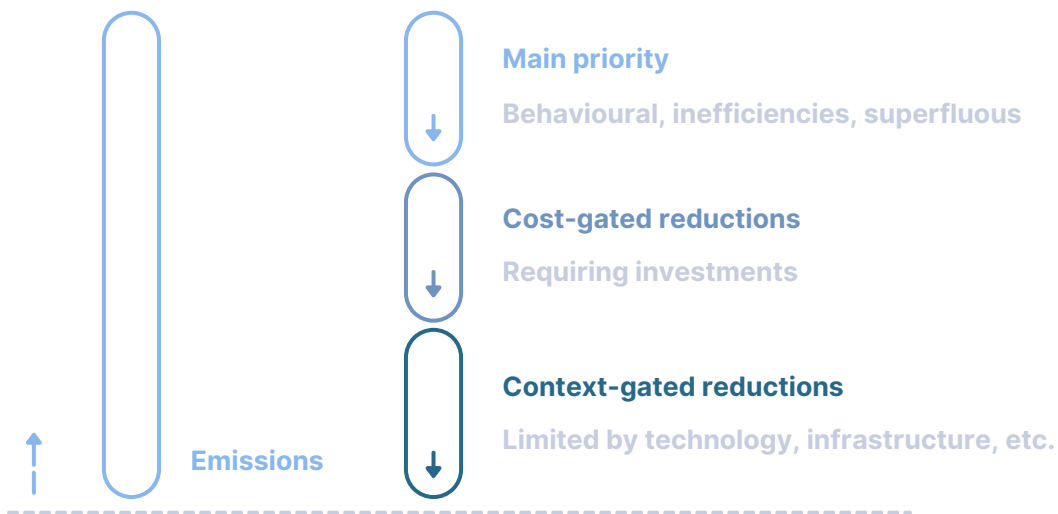
Due to this, in principle, we must **reject the idea that emissions can be cancelled-out**, and interpret offsetting efforts as an extra commitment to climate action which has to be accounted separatedly.

Operations
Emissions
Offsetting
Certain
Immediate
Presumed
Future
?
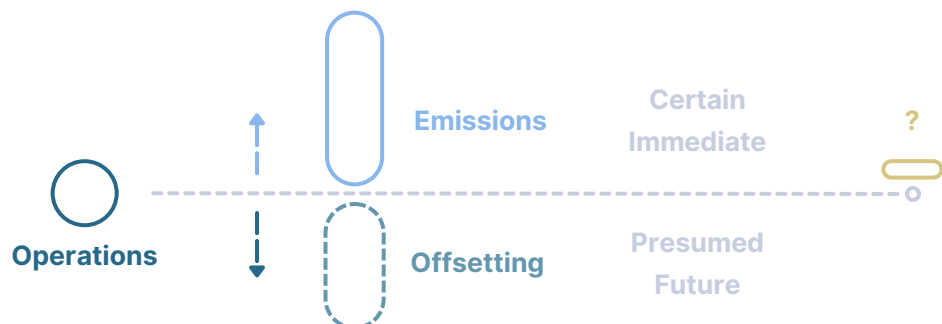
Getting the goalposts right

● **Each school is unique, and so must be its climate targets**

With sustained emissions reductions as the fundamental goal of climate action, schools need to **assess and strategise** decarbonisation taking into account their own particular reality.

Main priority

Behavioural, inefficiencies, superfluous

Cost-gated reductions

Requiring investments

Context-gated reductions

Limited by technology, infrastructure, etc.

Emissions

A practical way to structure a school's decarbonisation efforts revolves around organising reductions based on the following hierarchy of action:

Assess needs

1. Eliminate — "How can we arrange our school activity so its structural emissions are minimised?"

Optimise

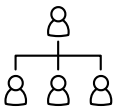2. Reduce — "Can our school's processes become more efficient so we can reduce emissions further?"

Adopt low-carbon alternatives

3. Substitute — "Can our school adopt or use technologies or products which are less carbon intensive?"

Starting with eco-governance

Undertaking and managing your school's ecological journey requires an effective governance structure which is able to promote, propose, coordinate, monitor and communicate change from within.

The purpose of setting up an eco-team is to embed and manage the **care for the environment function** in your school by establishing roles, responsibilities and processes.

This organ will be **responsible** for adapting the principles of the ecological transition into your school's context. It will develop, coordinate and assess your school's sustainability strategy and help bring together stakeholders around the theme of the environment.

● **Principles for establishing an eco-team**

Above all, be **transparent** about the eco-team's functions and decision-making power to avoid disappointments.

Within that frame, try to gradually promote the **participation** of your school's educational community and collect frequent feedback through surveys and other methods.

Once running, **communicate** about the activities, decisions and challenges faced by the school's eco-team to build trust and raise awareness.

Developing an eco-team

● **Choosing an eco-governance model**

There is not a "one size fits all" solution to creating a school eco-team. Each school should **take into consideration** its size, culture and resources when embedding the care for the environment function within its structure.

Despite this, this handbook will present you with different approaches your school can **gain inspiration** from, ranging from simpler structures for small schools to more elaborate models.

Option 1. Appointing an eco-coordinator

Governance   Eco-coordinator

Does what?   **Coordinates with**

Brings together stakeholders

Voice within management   School Board

Coordinates daily operations

Appointing a eco-coordinator or a delegate for sustainability allows those schools looking to **start their eco-journey** to structure, manage and scale-up their environment-related initiatives and ambition.

Developing an eco-team

An eco-commission is a steering organ entrusted with **overseeing** environment-related processes, formulating **strategic direction** and bringing different viewpoints to **promote consensus**.

This model is meant to adapt the eco-coordinator approach to a higher level of ambition or a greater volume of ecology-related work.

**Developing an eco-team**

Option 3. Incorporating working groups to the eco-commission

Over time, developing new layers of ecological decision-making and action can make sustainability work at your school more effective and **participatory**. Thematic working groups help **bring focus** to specific issues and facilitates the engagement of students and staff with an interest in sustainability.

Building your school's eco-vision
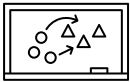
Developing a sustainability strategy at your school not only helps to showcase its commitment to environmental stewardship, it is also a valuable tool to structure efforts, foster cooperation, and educate.

Ideally, the first task or your school's established eco-team would be the process of consensus building and the outlining of a sustainability strategy tailored to your school's reality.

● **What does a sustainability strategy provide?**

It showcases your school's **environmental stewardship** and commitment to the ecological transition.

It helps to set and communicate a **common frame** for your educational community to engage and advance within.

It helps to set and communicate **priorities**, so available resources can be directed to what matters the most.

It introduces your school's educational community to a real-world **practical experience** of eco-management.

It presents your school's goals as collective challenges, serving as a **motivator** for your educational community.

A journey tailored to your school

● **What should your school's sustainability strategy include?**

A sustainability strategy needs to provide your school with a **frame of reference** which links its long term vision on ecology with its current goals and their related lines of action.
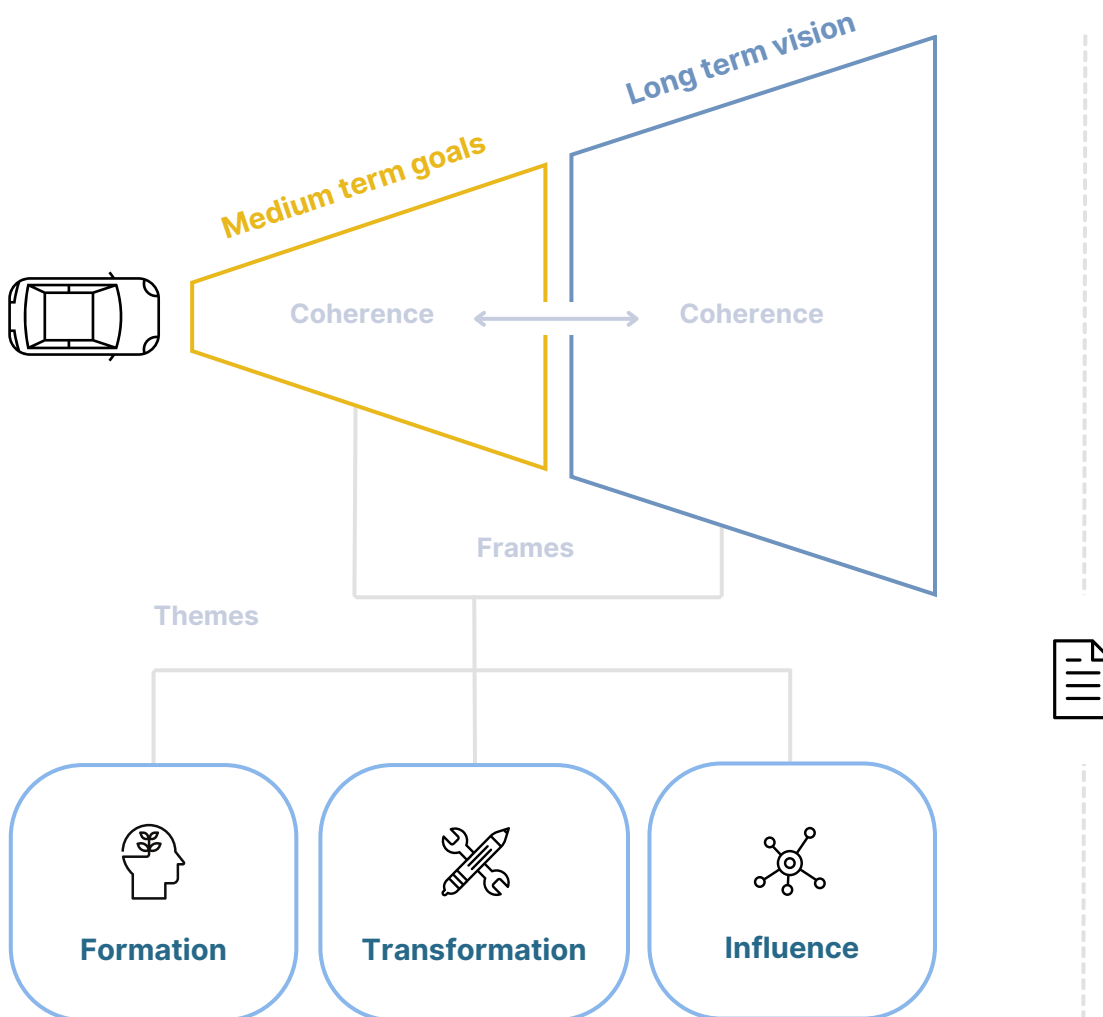
● **Other useful tips for your school's sustainability strategy**

Ideally, your school's sustainability strategy would be a **public document**, include a **review cycle**, and establish **time-bound goals** in different formats (quantitative, of action, checklists, etc.) expressed through indicators.

Audits as tools to inform eco-strategy
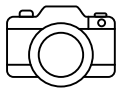
A snapshot into your school's emissions, resource use and your educational community's attitudes towards ecology can provide your sustainability strategy with valuable data to inform direction.

Ideally, an audit should address the **various dimensions** of the ecological transition and provide analysis which can lead to identifying priorities and high-impact actions.

Eco-counsciousness

Emissions

Resource use

Biodiversity
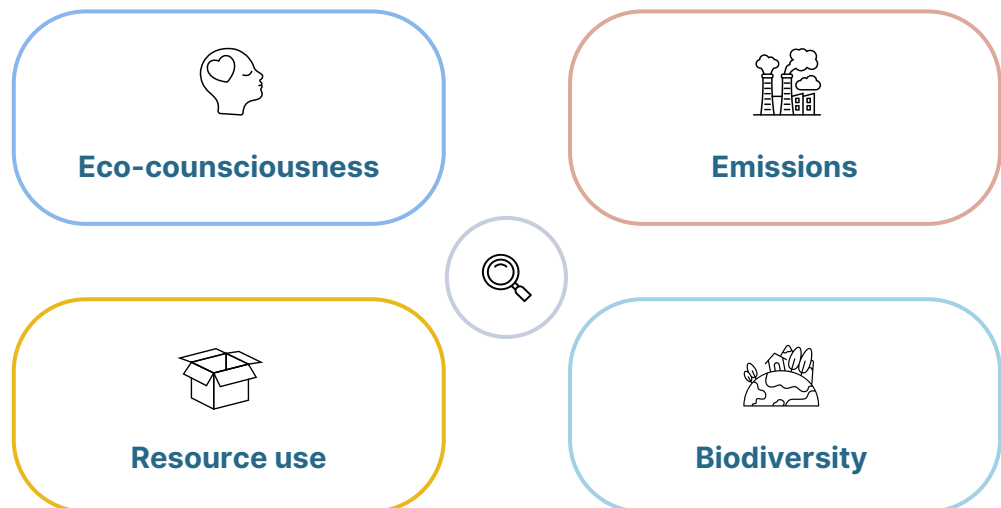
Calculating the ecological impact of your school across different dimensions can be challenging and, often, available audit services would only focus on estimating carbon emissions. While this is not ideal, carbon emissions is generally accepted as an **umbrella indicator**, meaning that it is a good proxy for evaluating your school's resource intensity and the impact of its activities on biodiversity.

Mapping the ecological profile of your school

● **How to get ready for an environmental audit**

Undertaking an audit also requires work from the school. Try to **plan ahead** around these two areas before getting started:

Set a scope	Develop a data-gathering strategy

● **Integrating the results into your sustainability strategy**

To make the most out of an environmental audit, it is important for schools to know how to **strategise** environmental impact related information into actionable **priorities**.

Audit provided		School estimated	
	Impact	Cost	Ease of implementation
Action 1	0-5 points	0-5	0-5
Action 2	0-5 points	0-5	0-5
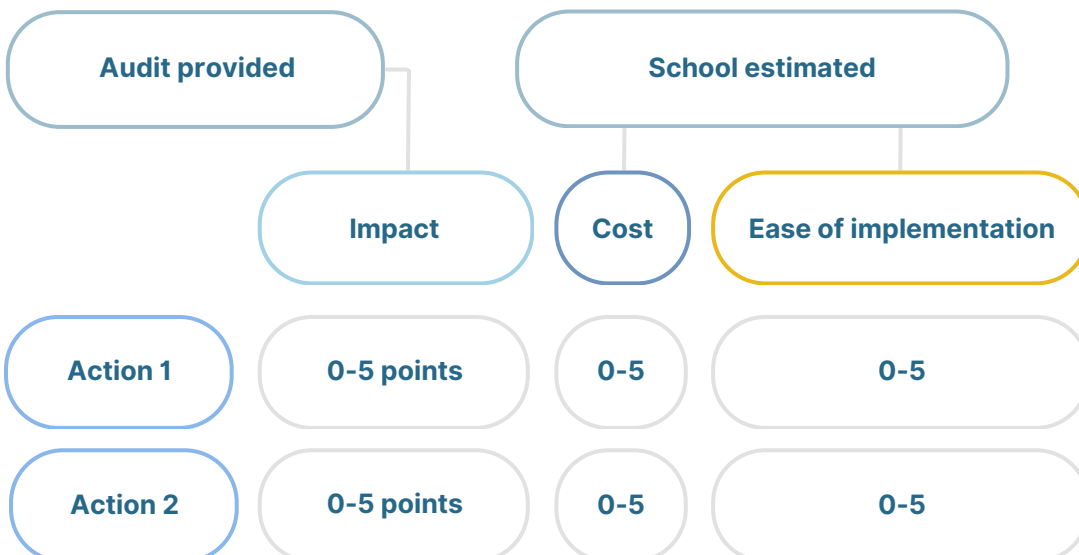
When drafting their eco-strategies, schools should evaluate actions against the backdrop of their own context. A general **method to discern priorities** is to use impact potential, cost and ease of implementation as a criteria for this.

Atlas of a school's ecological impact
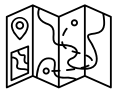
An integral approach to sustainability is based on the concept of ecological pressure, which sees the school as a system of processes which relies on natural resources to operate and carry out its mission.

Construction

Operations

Energy

Resources

Emissions - - - - - **Ecological pressure** - - - - - **Resource extraction**
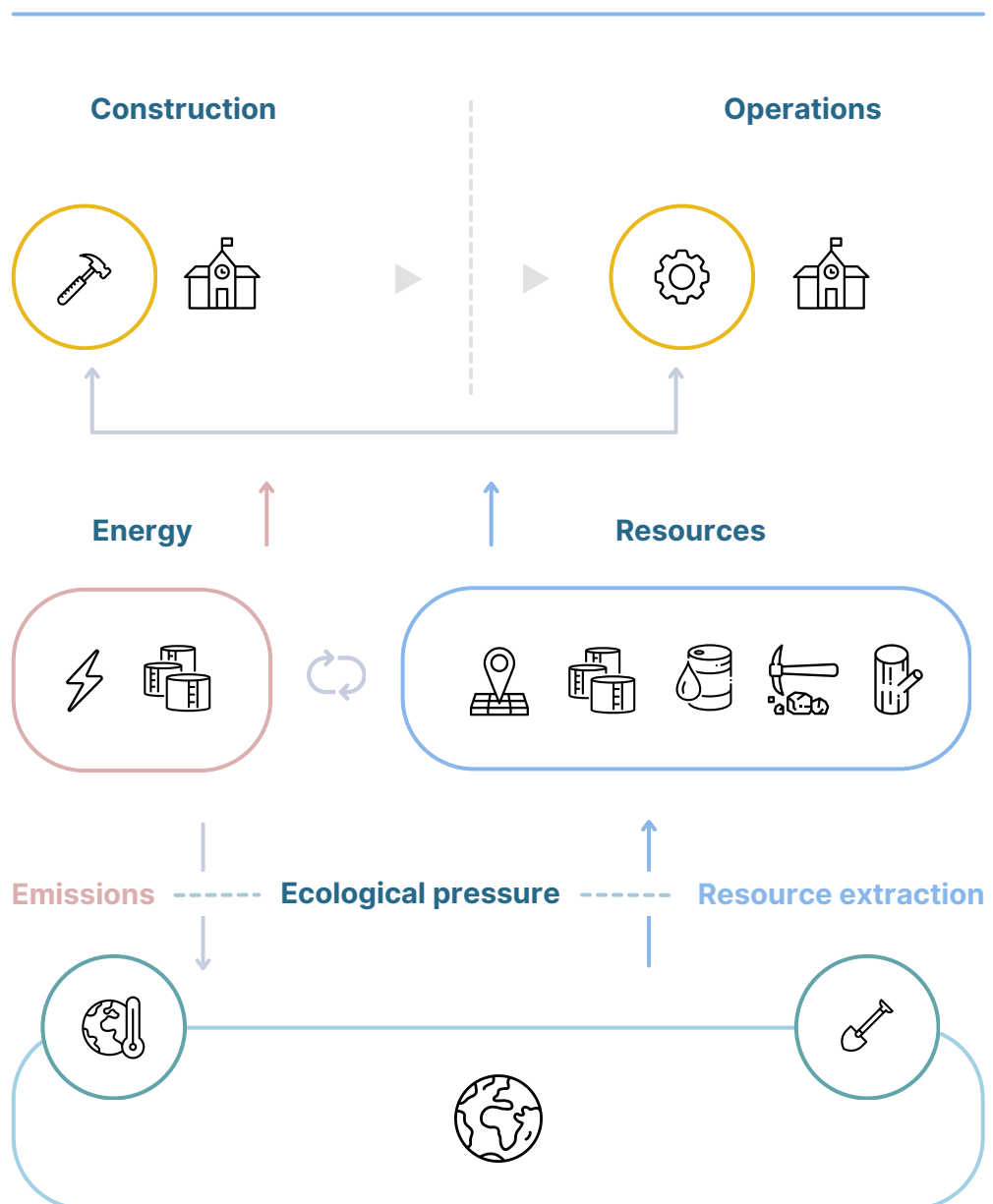
● **Establishing categories of analysis**

In order to make the addressing of a school's ecological pressure **manageable from the point of view of environmental action**, we can disaggregate the environmental impact of a school in the seven areas depicted below.

Based on this thematic outline, and with the purpose of exploring ways to reduce the ecological pressure of a school, this handbook will next address each environmental impact area through the upcoming chapters.

How do school campuses matter?
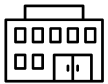
School campuses, as the physical settings in which schools provide education, have an important role to play in the ecological transition - both as infrastructure and as spaces for eco-experimentation.

School campuses play a crucial role in the sustainability equation of a school. Regarding emissions, these facilities account for a school's **embodied emissions**, which stem from the materials and energy utilised in the construction, renovation, demolishing, and the disposing of buildings. Additionally, the campus infrastructure, including its insulation, heating, and lighting, significantly influences the carbon footprint of the operations which take place within these structures - the **operational emissions** of school facilities.

● **Life-cycle of school facilities-related emissions**

○ Embodied emissions   ○ Operational emissions

Products   **Construction**   **Operations**   **End of life**

Renovations

● **Embodied emissions in the context of sustainability efforts**

With improvements in the field of energy efficiency and electrification, the **relative weight** of embodied emissions within the sustainability scene is growing.

Below you can see the global trend of the life-cycle emissions of a building along the evolution of construction standards:
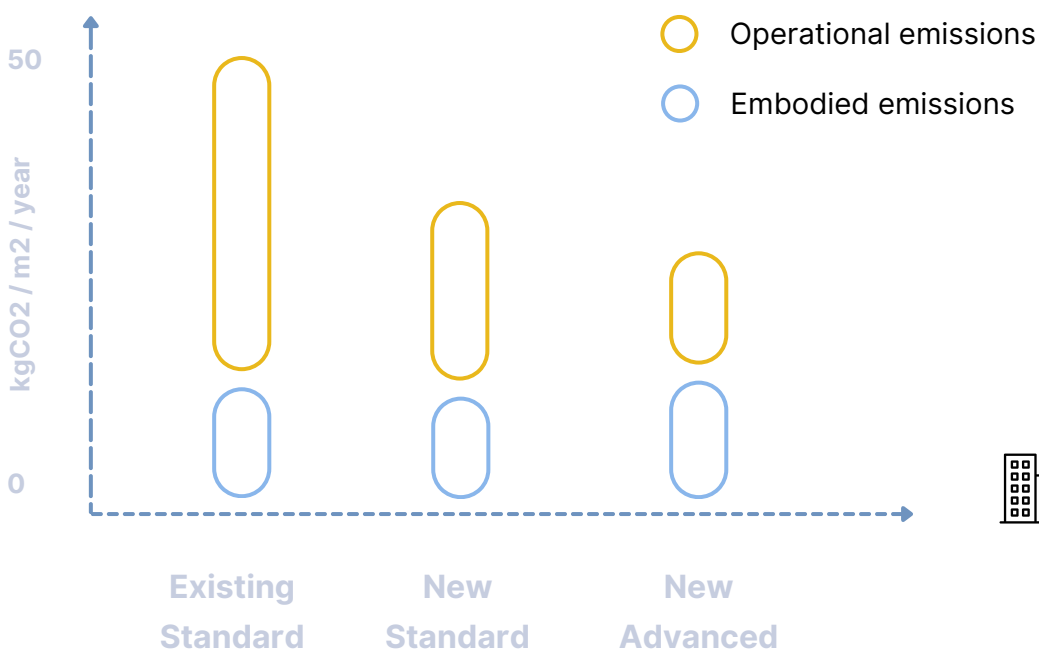
When addressing embodied emissions in the context of existing buildings, sustainability efforts should focus on **extending the operational life** of current structures. Embodied emissions might not be susceptible of being removed, but preventing new embodied emissions from emerging is equally critical in the fight against global warming.

In this regard, while **refurbishing and retrofitting initiatives** around installing better insulation or replacing and upgrading old systems will increase the embodied carbon of buildings, this increase will be insignificant compared to the carbon impact of demolishing, disposing and rebuilding.

Categories of analysis: Facilities

In those instances the construction of new structures is unavoidable, sustainability efforts should focus on aiming for **design and construction specifications** that consciously favour low carbon materials which are preferably locally available or which are extracted, manufactured, and delivered via low-carbon means. Beyond this, using materials and products with longer lifespans and more resilience to change can also help reduce future emissions.

> Studies have shown that sustainably sourced **timber constructions** can reduce embodied emissions between up to 66%.
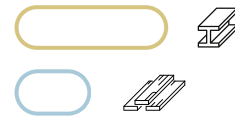
● School campuses beyond emissions: Green spaces

In addition to the nexus between sustainability and school buildings, green spaces within school campuses can also play an important role within the eco-strategy of a school. Green spaces provide the opportunity to **bring environmental theory and concepts to life** and, through the planning of hands-on experiences, to foster a sense of environmental responsibility among students.

Wellbeing

Resilience

Outdoor learning

Biodiversity

● **Green spaces in your school's eco-strategy**

A tool for students' wellbeing

Research has shown that green spaces in schools **significantly enhance students' mental well-being** by reducing stress, improving overall mood, and decreasing depressive symptoms. The presence of green spaces at school also offers opportunities for **physical activity**, which further enhances well-being.

A laboratory for natural conservation

Green spaces in your schools can support local biodiversity conservation by providing natural habitats and serving as **living laboratories** for observing and learning about species and ecosystems. These spaces enhance local ecosystems and **foster environmental stewardship** among students.

A hands-on space for cultivating knowledge and values

By integrating green spaces into the curriculum, schools can enhance the students' understanding of ecological systems and offer a **platform for experiential learning** to complement traditional education. Through natural immersion, outdoor classrooms foster curiosity and has shown to **promote pro-environmental attitudes** and nurture of a sense of eco-responsibility in students.

A tool for building-up resilience against heat

The use of trees, green roofs, and vegetation in landscaping can help **reduce urban heat island effects** by shading building surfaces, deflecting radiation from the sun, and releasing moisture into the atmosphere.
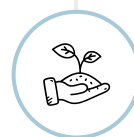
Addressing the energy equation

Energy use is often the largest contributor to the operational emissions of a school, and thus it is a crucial area to explore ways of advancement within the context of its ecological journey.

Schools are increasingly aligning with global efforts to **phase out fossil fuels** and finding ways to overhaul their energy systems. This shift not only is contributing to reducing carbon emissions but also serves as a **powerful educational tool**, providing students with a practical case study of tackling current sustainability challenges.

● **Grams of CO2 equivalent per kWh of electricity produced (median)**

1001

840

469

In 2023, **around 60%** of the total electricity produced globally was generated by fossil fuels (35% by coal).

48 18 16 12 4

Coal   Oil   Gas   Solar   Biomass   Nuclear   Wind   Hydro
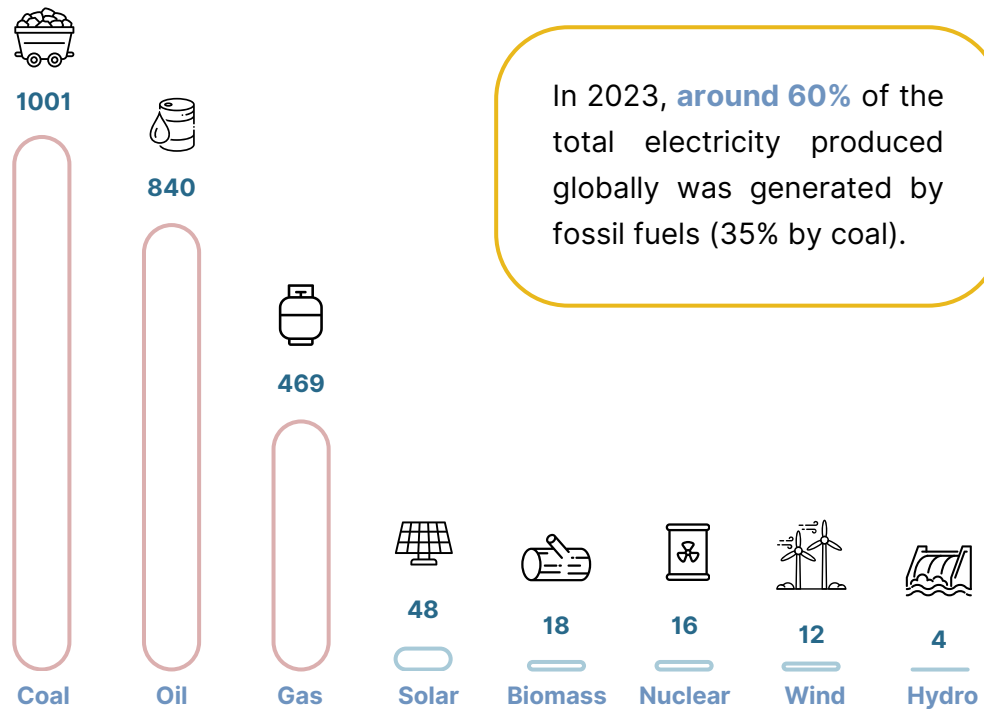
● **Prioritising energy efficiency**

Often, focusing on energy efficiency before investing in altering the energy mix of a building offers a more sensible, immediate and **cost-effective way** to reduce the greenhouse gas emissions derived from energy consumption.

Current energy needs   **Improving efficiency**   **Decarbonising energy**
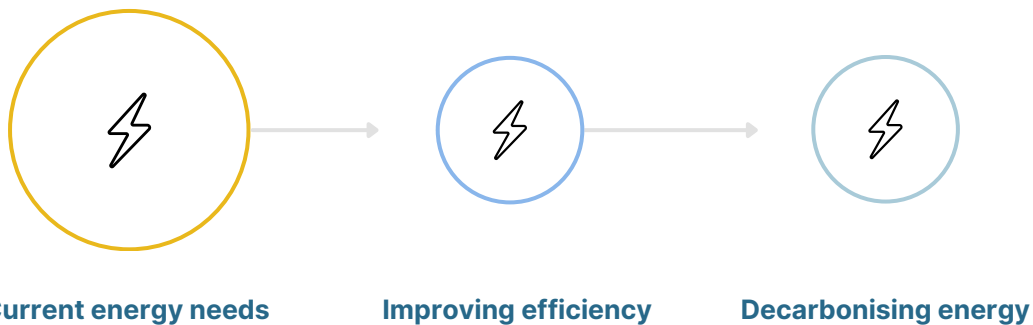
By improving the energy efficiency of existing buildings, schools can **significantly decrease their energy usage** without the need for large-scale, costly, infrastructure changes. In most cases, it is once that the energy needs of a building have been minimised that schools should begin considering transitioning to renewable energy sources.

● **Integrating energy efficiency into your school's sustainability strategy**

Insulation   **Other technology**   **Behavioural**

In order to structure energy efficiency-related efforts, this handbook proposes to categorise efficiency enhancing initiatives into the **three thematic areas** presented above.

Categories of analysis: Energy

Efforts on improving insulation

In this particular field a school can consider:

An **on-site energy inspection** by experts is the best way to assess the room for improvement and map potential actions.

Properly insulating roofs is key as a way to prevent heat loss in winter and heat gain in summer. It is estimated that non-insulated buildings lose up to 40% of their heating through the roof alone.

Check and (if necessary) **replace poor or damaged insulation** or add insulation to areas not previously insulated (walls, attics, etc).

Replace poor or damaged insulation or add insulation to **boilers, pipework, and hot water storage vessels**.

While costly, replacing single-glazing with double or triple-glazing on **windows** can further improve the thermal envelope of buildings.

Energy efficiency through other technology and regulation

In this particular field a school can consider:

Installing **occupancy sensors or timers** in different school spaces to ensure lights are only activated when in use.

Switching to **LED lightbulbs** as old ones break. They use around 60% less energy than standard bulbs.

Pre-programming the running of heating, ventilation and AC (HVAC) systems to optimise energy use based the analysis of occupancy patterns.

Categories of analysis: Energy

Beyond the use of pre-programmable systems, installing **smart thermostats** that can automatically adjust temperature based on the time of the day, occupancy, and even outdoor conditions can further optimise energy use.

In the absence of or complementary to smart thermostats, schools can consider a general **weather compensation sensor** to control heating relative to weather conditions.

Energy efficiency through behavioural change

In this particular field a school can consider:

Hosting **workshops on energy conservation** techniques for students and staff is an effective way to promote and reinforce a culture of sustainability. These workshops are ideal to gather feedback and bring people on board.

In the absence of occupancy sensors, educate staff and students about **minimising** the use of **artificial lighting**.

Ensure that all school appliances and electronic equipment (computers, etc.) are **turned off overnight**.

Educate staff and students on using **natural ventilation** instead of mechanical ventilation when possible.

Educate staff and students on avoiding leaving windows and doors open **when the heating is on**.

Educate staff and students on avoiding the **unnecessary use of hot water**.

● **Beyond efficiency, electrification**

Standing at the crossroads between the deployment of renewables and the decarbonisation of sectors traditionally reliant on high-carbon power sources, electrification plays a **crucial role in the global phase-out of fossil fuels**.

Renewables

Non-renewables

Transport

Heating
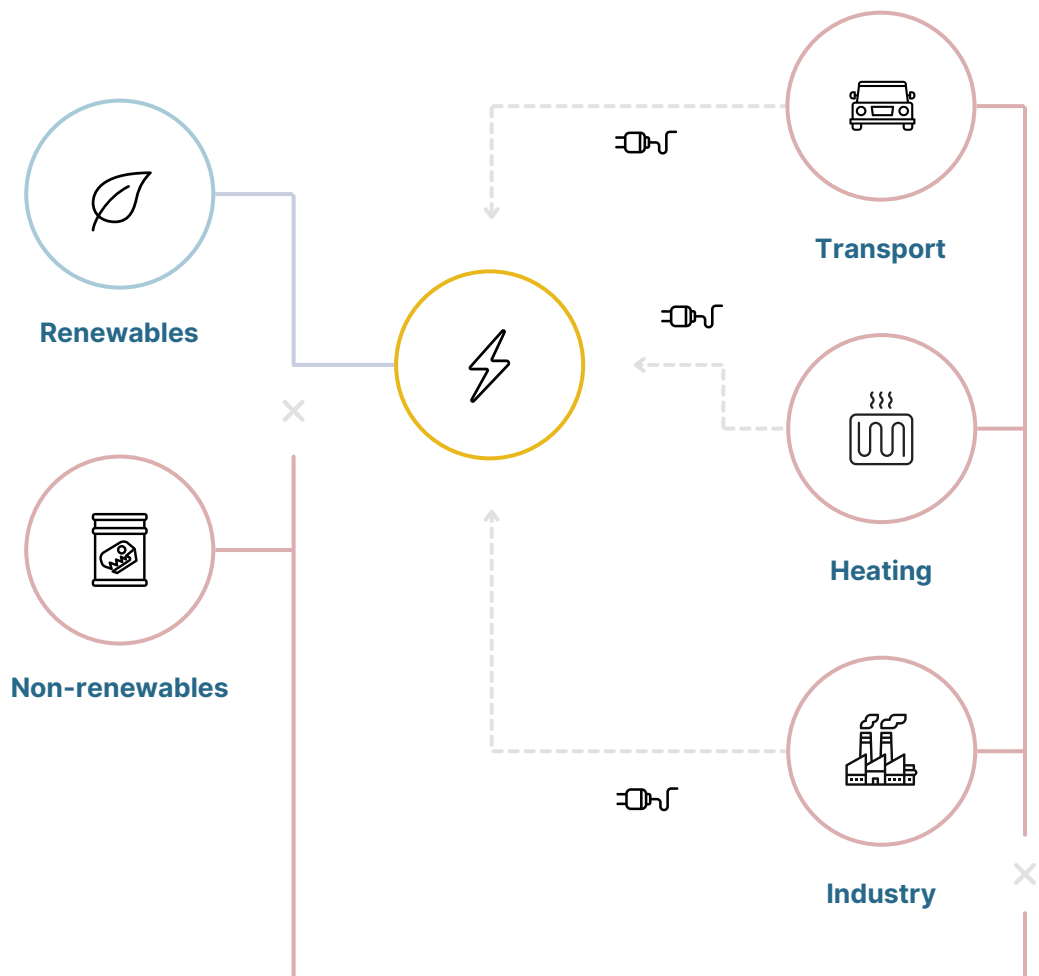
Industry

In the context of a school, while industrial processes fall outside of the picture, the role of electrification remains a **critical component of the sustainability equation**. Schools can find ways to contribute to low-carbon transport systems locally both directly (electric school buses) and indirectly (electric-vehicle friendly infrastructure), as well as envision ways to incorporate renewables into their energy mixes.

Categories of analysis: Energy

● **Renewable energy at school**

Depending on its particular context, incorporating renewables into your school's energy mix can take **many forms**:

On-site

Green suppliers (Grid)

Local green energy projects

Credits

Own projects

Energy Subscription Services

Virtual Power Purchases (VPPAs)

Solar **Biomass** **Geothermal (Heatpump)**
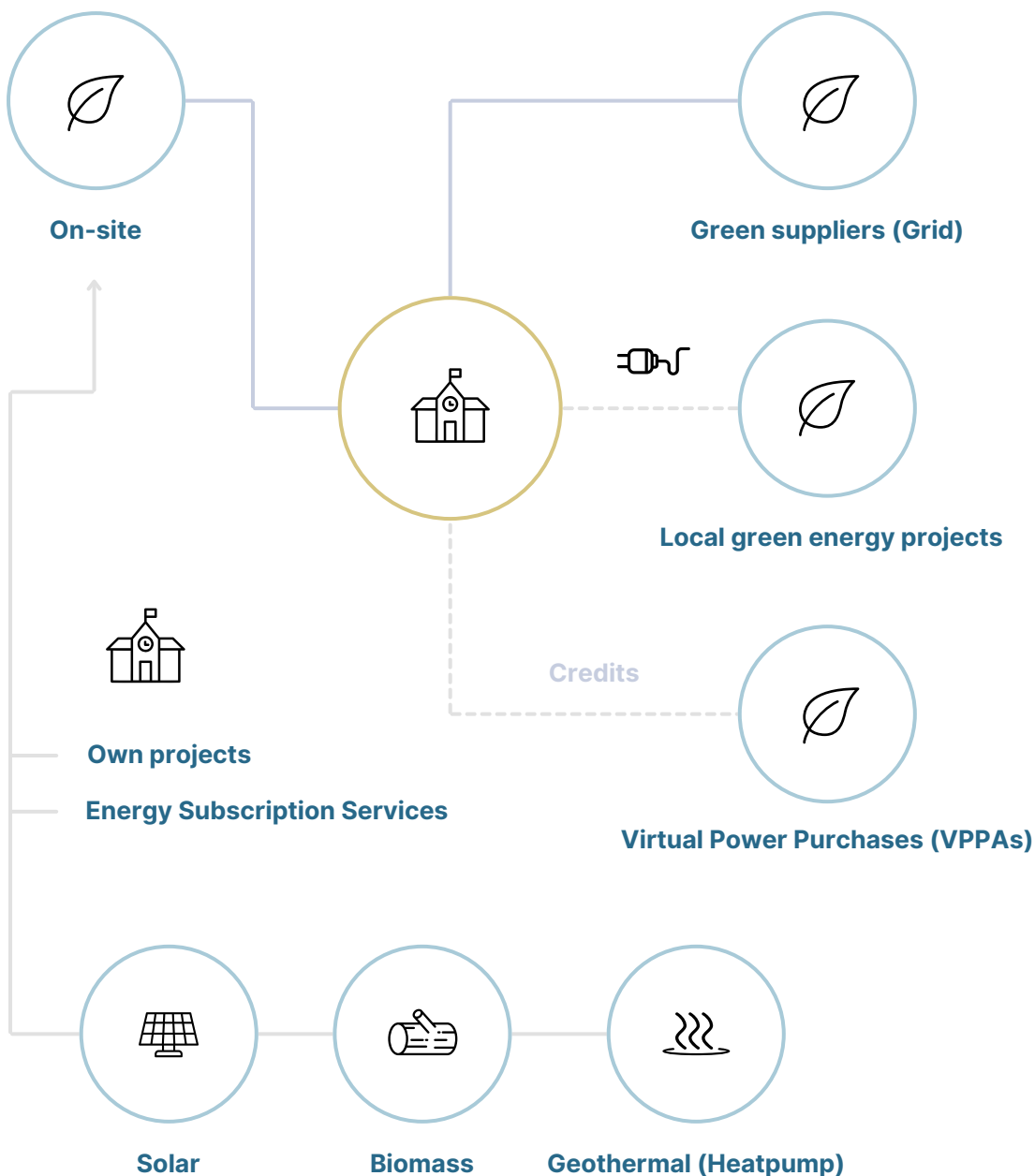
School eco-strategies need to **carefully consider** the financial, technical and environmental dimensions of each option when exploring the way forward.

Climate action in the school menu

Introducing changes in the menu is often the cheapest, most impactful and easiest to implement line of action any sustainability strategy can envision within the context of a school.

The food systems behind what we eat are responsible for more than **one-third of global emissions** every year. Schools are in a unique position to educate future generations about the ecological dimension of food and about how our daily choices can have a profound impact on our planet's biodiversity and natural systems.

● **Emissions per standard meal (France) (kgCO2e per meal)**

7.3

> The World Wildlife Fund (WWF) has estimated that the average emissions per meal compatible with keeping global warming at 1.5 degrees is **0.5 kgCO2e**.

2

1.6

1.1

0.5

0.4

Red meat **White fish** **White meat** **Blue fish** **Vegetarian** **Vegan**
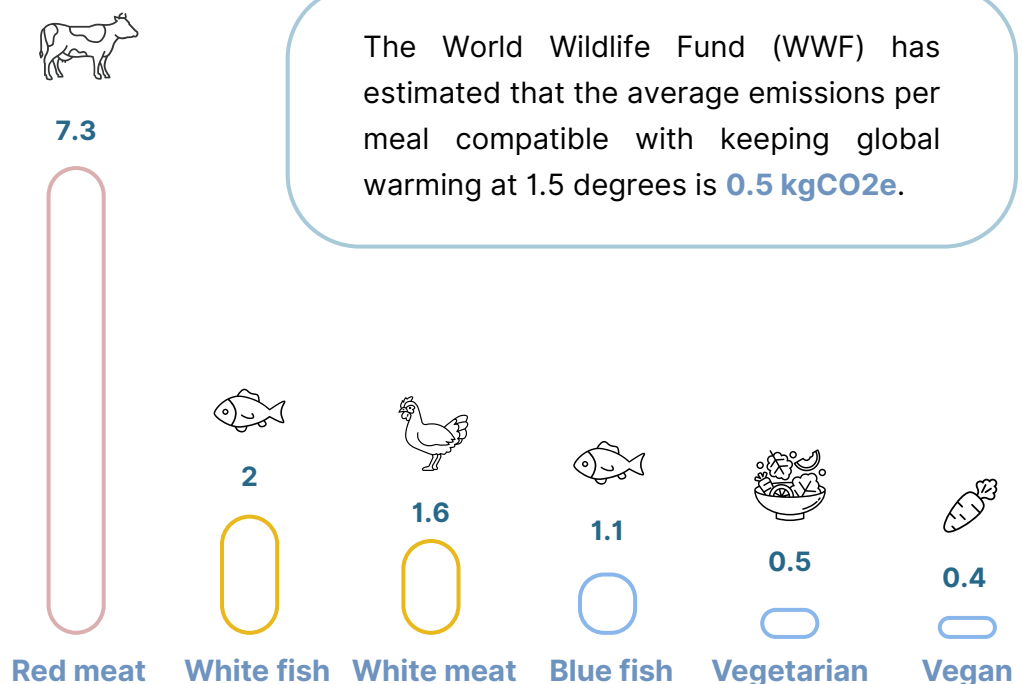
Categories of analysis: Food

Land use (in m2) per 100 grams of protein (global data)

184 Mutton

163 Beef (herd)

Half of the world's habitable land is used for agriculture, with **most of this used to raise livestock for dairy and meat**. The expansion of land for agriculture is the leading driver of deforestation and biodiversity loss.

7 Poultry

4.6 Grains

3.3 Root vegetables
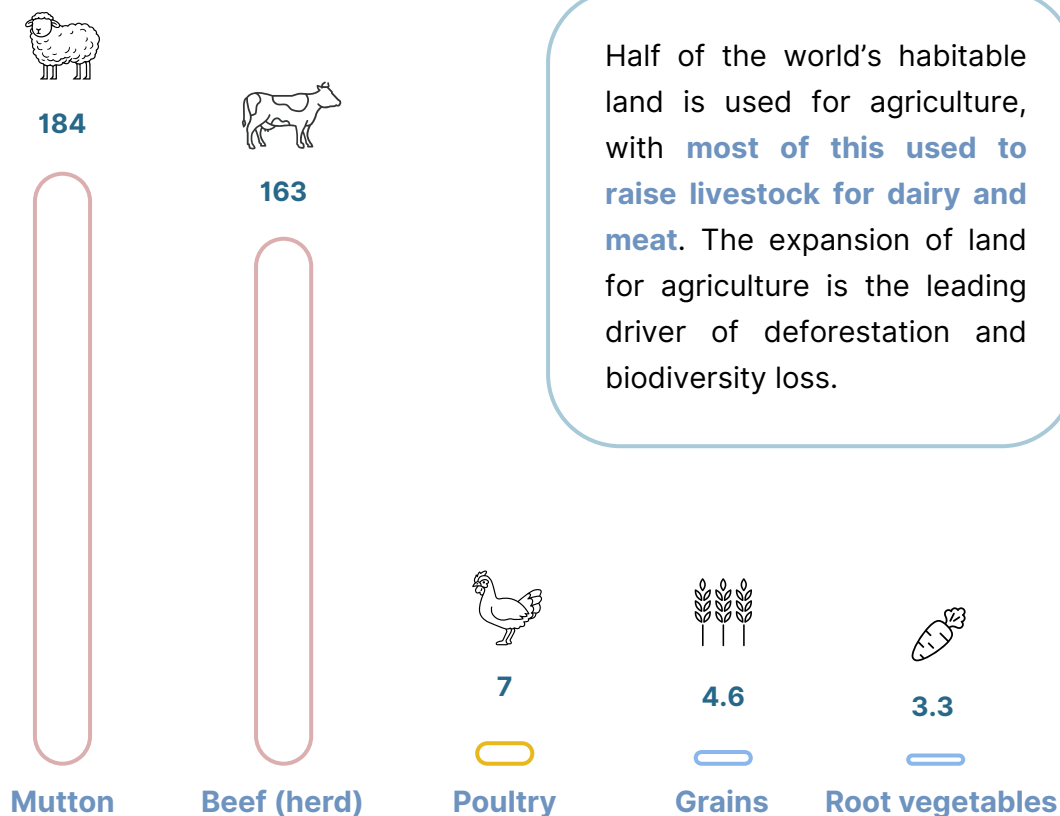
The economic role of schools in shaping food systems

Globally, around **418 million children receive school meals every day**. In economic terms, this investment in meal programmes represents a huge and predictable market for food which can be leveraged to transform diets and how and where food is produced.

Through school environmental policies and an aligned procurement strategy, school meal programmes can help **foster new more sustainable ways of farming** and **empower local production**, **agro-biodiversity** and food sovereignty. This important pull factor can help develop climate action aligned economic webs of proximity which pave the way for larger, more systemic, venues of transformative change.

Categories of analysis: Food

● **The social role of schools in shaping food systems**

Beyond the potential of economic incentives, schools can also play a pivotal role in shaping food systems through education, the promotion of cultural shifts, and the fostering **food related eco-consciousness**.

Integrating food sustainability education into the curriculum can teach students about nutrition and the importance of healthy eating, but also instill a deeper understanding of **where food comes from and how it impacts the environment**.

This practical and formal education around food can nurture future generations informed about diet choices and participants of a culinary culture of sustainability and environmental responsibility.

● **Incorporating sustainability into the school menu**

Fit for the planet		Affordable
Culturally acceptable		Healthy and nutritious
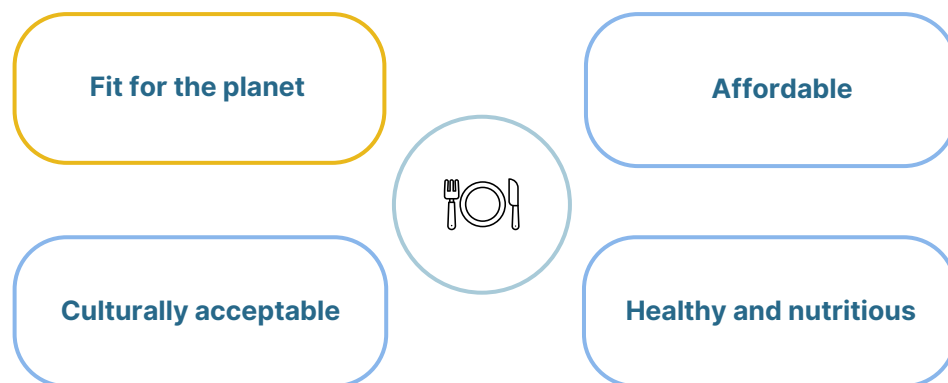
There is not a simple, magical, solution to integrating the ecological variable into the management of school meals, and every sustainability strategy around the theme of food will be **a balancing act**.

Before drafting plans to bring down the greenhouse gas emissions and land use related to school meals, schools should carefully **assess their particular context** to ensure that this transition can be successfully accommodated across three other dimensions.

Categories of analysis: Food

● **What kind of menu should your sustainability strategy aim for?**

A menu which is fit for the planet

To make the school menu more sustainable and protective of biodiversity and ecosystems, schools should aim to **moderate meat consumption**, if possible, trying to avoid red meat, increase **plant-based meals**, increase dietary variety to reduce reliance on dominant crops and, if possible, favour **local** procurement.

A menu which is culturally acceptable

Meals that are **familiar and appealing** to the students are more likely to be accepted and consumed. When greening your school's menu, try to inform decisions by conducting research (via surveys or other feedback tools) to assess preferences and minimise the deviation from current dietary patterns.

A menu which is healthy and nutritious

While aiming for sustainability, it is crucial to keep an eye on maintaining the nutritional value of served meals. This means incorporating a variety of fruits, vegetables, whole grains, and lean proteins to ensure that students receive a **balanced diet** which meets their nutritional needs.

A menu which is affordable

The choice of ingredients and dishes should also take into account cost considerations. In some cases, **sustainable options might sometimes be more costly**, so balancing sustainability with affordability is key. This can involve negotiating with suppliers for better prices for sustainable products or exploring other alternative, cost-effective, ways to incorporate sustainable ingredients into the menu (such as local deals, etc.).

Decarbonising school mobility
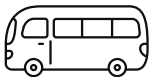
With most modern means of transportation relying on fossil fuels, mapping and addressing the mobility dimension is an important component of any school decarbonisation strategy.

In the context of urban mobility, schools play a important **role in advancing sustainable transportation solutions**, both as active large drivers and consumers of transport themselves and as educational institutions fostering awareness and behavioural change.

● **Emissions per 100 km (including vehicle production) (kgCO2e)**

> Transportation is responsible for nearly **one fifth** of global annual CO2 emissions.

Plane	Car	Bus	e-Car	Train	e-Bus	Metro	Active
26	22	11	10	3	2	0.4	0
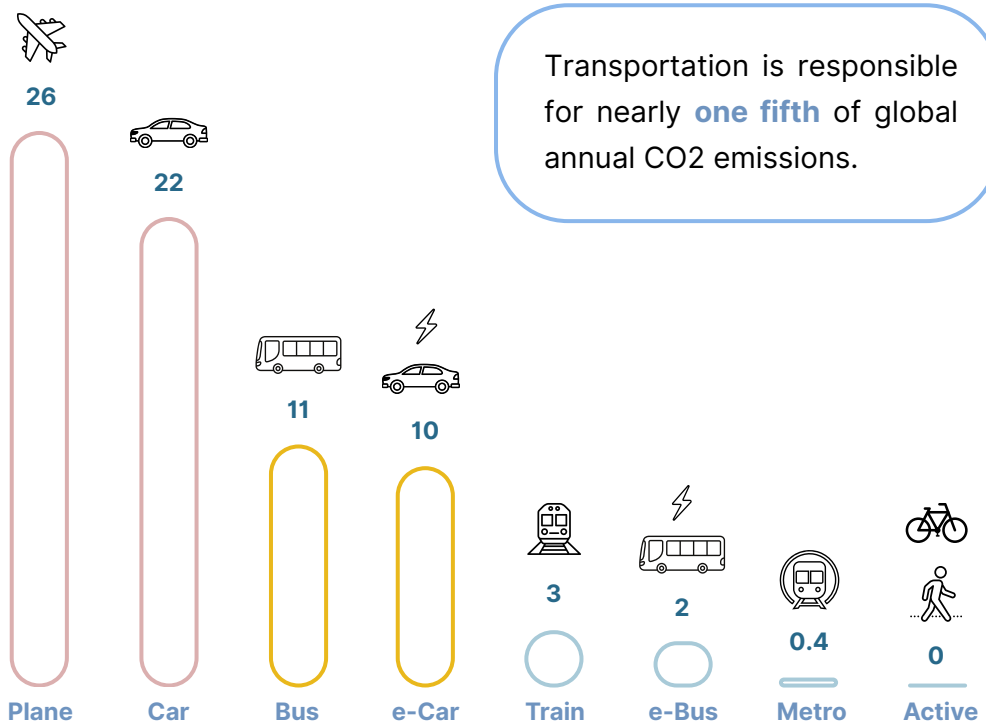
● **The "Avoid-Shift-Improve" framework for mobility**

As in the case of many other environmental action areas, the *eliminate, reduce and substitute* **hierarchy of climate action** is also applicable to addressing emissions reductions in the area of school transport.

1. Avoid

Avoid or reduce travel or the need to travel

Digital first policies
Eco-inspired business travel policies
Promotion of shared transport (car pooling, public)

2. Shift

Shift to more energy efficient modes

Active travel and public transport-friendly facilities
Eco-inspired business travel policies
Education, campaigns, etc.

3. Improve

Improve efficiency through vehicle technology

Provide charging bays for electric vehicles
Transition to an electric school fleet of vehicles
Implementing a bike sharing system

Beyond emissions reductions, gravitating towards more sustainable transport modes also contributes to **reducing traffic congestion**, **air pollution and road safety hazards** within and beyond the campus.

● **Shift to more energy efficient modes - tools**

Subject to the possibilities of their context, schools may have different **ways of enabling and promoting behavioural change** with the aim of reducing transport-related emissions:

Monetary Incentives

Schools can offer **discounts or subsidies** for public transportation passes, bike rentals, or carpooling. This could involve partnerships with local transit agencies or ride-sharing companies to provide **discounted fares or memberships**.

Infrastructure Improvements

Develop **bike lanes**, **secure bike racks**, and **electric vehicle charging stations** on campus. This makes alternative modes of transport more accessible and convenient.

Partnerships with local institutions

Collaborate with local governments, businesses, and community organisations to **enhance bike-friendly routes** and increase **public transport accessibility** near the school. This could include advocating for improved pedestrian crossings, bike paths, and bus stops.

Education and awareness campaigns

Conduct surveys to understand current transportation habits and preferences and tailor educational campaigns highlighting the benefits of sustainable transport. These campaigns can **emphasise the positive impacts** on health, the environment, and cost savings.

Categories of analysis: Transport

● **An example travel policy for staff and school trips**

A sustainable travel policy is a valuable tool to help reduce your school's travel-related emissions and **reach your broader sustainability goals**.

Example travel policy:

Local trips	National trips
Conference call, phone, email	Conference call, phone, email

if travel unavoidable

▼

Local trips	National trips
Cycle or walk	Public transport (train, bus)
Public transport	Car share or coach
Car share or coach	Car of taxi (one passenger)
Car of taxi (one passenger)	Air travel (limited exceptions)

International trips	Good practises
Conference call, phone, email	Quantify the emissions associated with each travel option for easier comparison between alternatives.

(if ambitious) Set a total carbon budget per year for school trips or business-related travel. |
| Train, coach (below X hours) | |
| Air travel | |

Procurement and circular economy
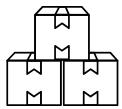
Integrating the principles of circular economics into how a school handles procurement and equipment management represents an opportunity for ecological pressure education and reduced costs.

Schools can serve as **models for circular economy practices**, demonstrating to students and their local community how resource conservation and responsible consumption can contribute to align lifestyles with planetary limits.

● **Principles for a circular economy**

Recycle

Close the loop, remake

Refuse

Don't consume what you don't need

Recover

Re-introduce into the economy

Reduce

The less energy and materials, the better

Re-gift

Share, promote the gift economy

Repair

Fix or upgrade

Reuse

Find new uses, repurpose
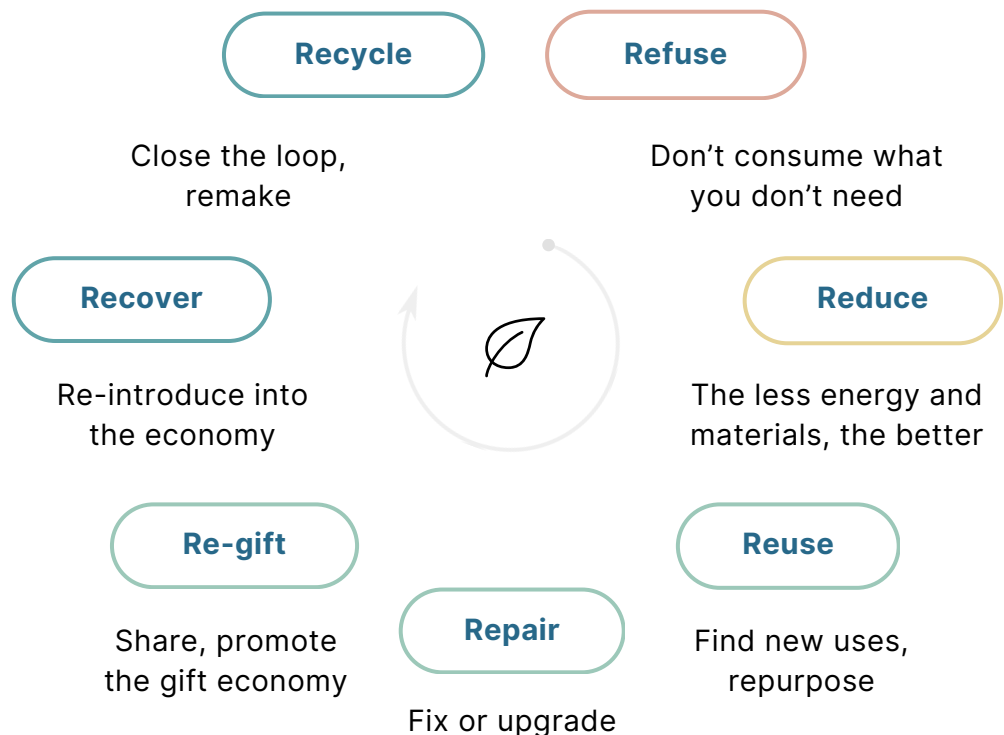
Categories of analysis: Equipment

● **Rethinking our relationship with nature**

Sustainable procurement means participating in an economic vision which aims to minimise the **environmental impact related to the full life cycle of the products we use**.

Ecological ceiling

Raw materials

The economy

Residual waste

Minimise

Minimise

Plan	Source	Manage
Assess needs	Prioritise durable	Extend lifespan
	Prioritise energy-efficient	Repurpose
	Prioritise local	Share
	Prioritise recycled or eco	Donate
	Consider second-hand	Recycle
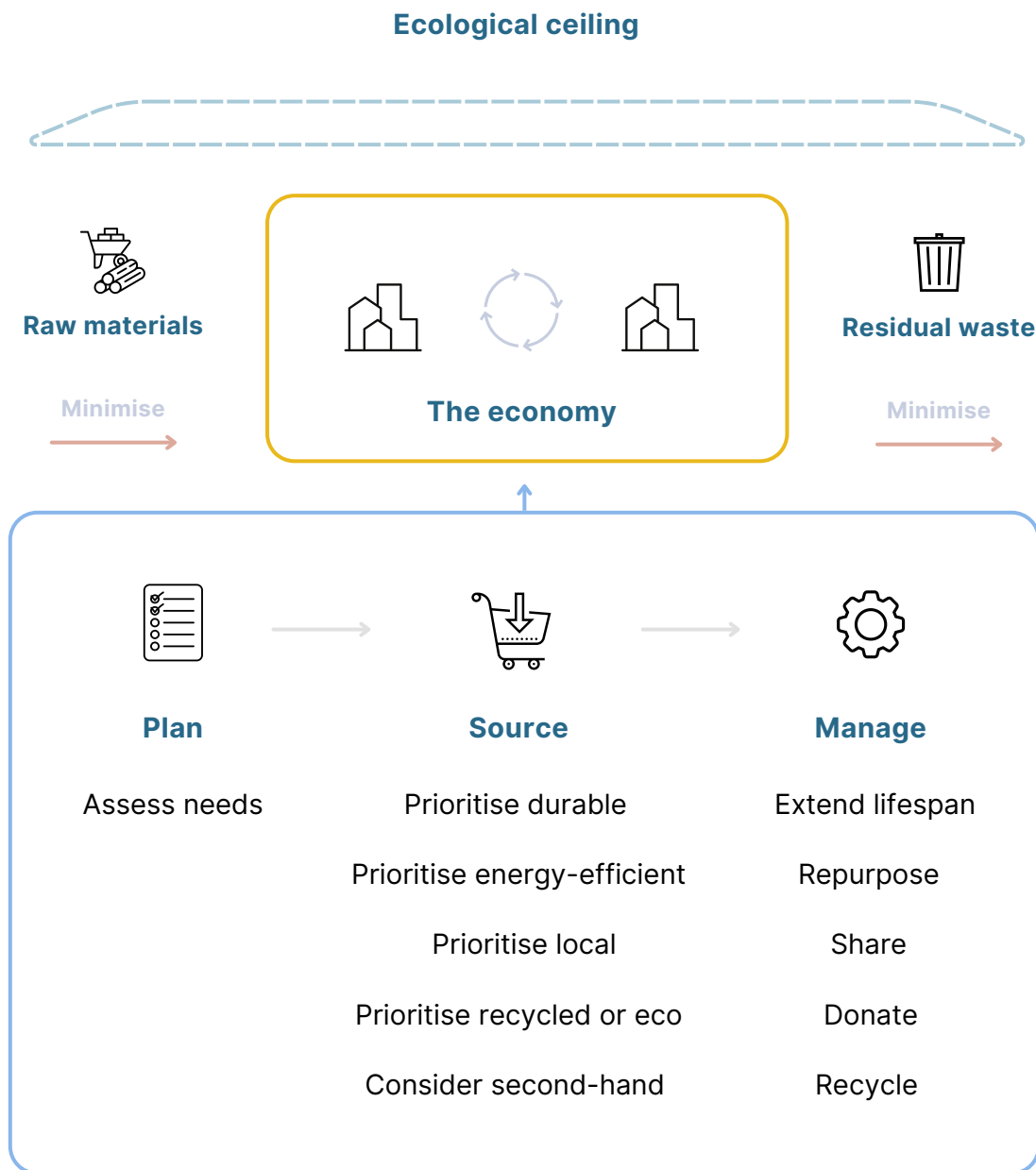
Through **education and local community engagement**, schools can foster and support action and initiatives aimed at minimising resource extraction.

Aiming towards zero-waste at school

The environmental impact from waste can be difficult to estimate and control, but, as a general principle, schools should aim to minimise the waste sent to incineration and, more importantly, landfills.

The need to reduce the resource extraction dependency of our economy, together with the limits and the scalability problems of carbon capture and waste-to-energy technologies today, means that sustainability policies should put the **focus on bringing down or avoiding waste generation altogether**.

● **The hierarchy of waste management**

Environmental impact

Avoid waste-producing products or processes

Minimise the volume of unavoidable waste

Maximise re-use cases

Maximise recycling

Waste disposal

Priority

- **Strategising waste-related action**

Most school waste profiles are dominated by **organic, paper and plastic waste**. School should map and put their focus at exploring ways to reduce waste generation within these streams.

Standard school waste composition

Organic

Paper

Plastic

Other
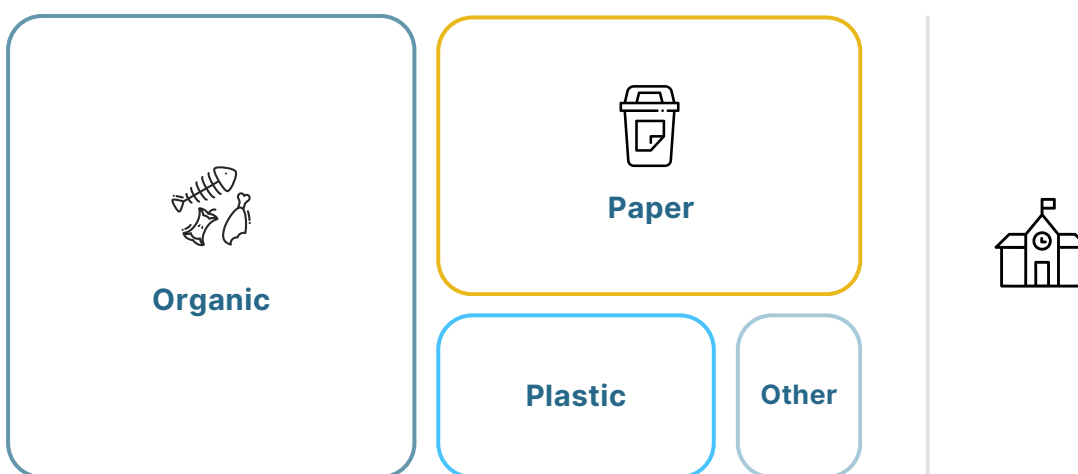
No-waste meals, reusability and digitalisation

Reviewing menus to ensure they align with **student preferences** can help minimise food waste, while setting up a **compost system** for organic waste can turn leftovers into nutrient-rich soil for gardens, reducing landfill contributions. Since a large percentage of plastic and paper waste is food-related, schools should aim for meals with **minimal packaging** and make use of reusable containers.

To further reduce waste, schools can prioritise minimising paper consumption by transitioning to **digital formats** where possible. Promoting reusable over disposable and single-use supplies can also help reduce recyclable waste. Together, these strategies can significantly decrease a school's overall waste generation and offer opportunities for students and staff to engage in the sustainability related initiatives.

Sustainable water use at school

Population growth, increased urbanisation, industrialisation and climate change have led to drinking water becoming an increasingly scarce resource. Ensuring its availability for present and future generations is a key collective goal which should inform school sustainability.

Through **education** and participative school-wide **water conservation initiatives**, schools can equip students with a deeper understanding of the value of water and knowledge about the current and future water-related challenges that our world faces.

● **School water consumption studies (litres per student per day)**

School	Consumption	Year
UK (Primary schools)	11 - 18	(2002)
UK (Secondary schools)	14 - 21	(2002)
USA (Daytime schools)	20	(2001)
USA (Boarding schools)	25	(2001)
Italy (Elementary schools)	10 - 30	(2011)
Sydney (Elementary and high schools)	3 - 9	(2017)
India (Boarding schools)	135	(2010)
Brazil (Boarding schools)	150	(2006)

0   50   100   150   200
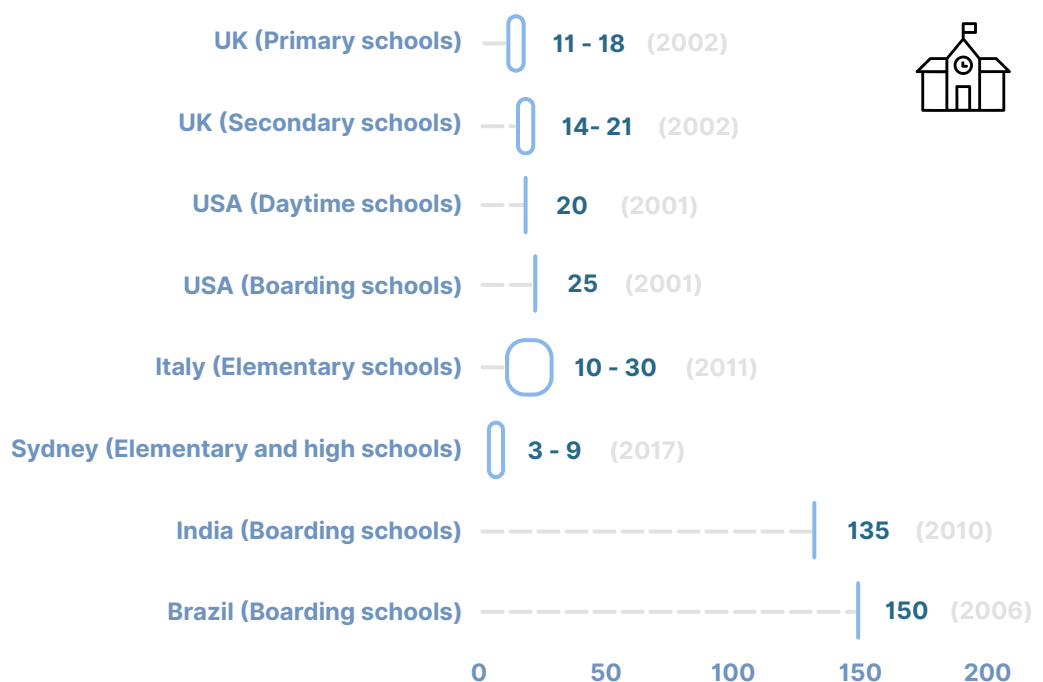
Categories of analysis: Water

● **Water conservation at school**

Schools use significant amounts of water for various purposes like drinking, sanitation, landscaping and cleaning. The diagram below can serve as a model to **structure your school's water conservation efforts**.

Students and staff	Landscapers and janitorial crew
Discuss water conservation with landscapers and janitorial crew	Conduct a **water use audit**
Post signs promoting water conservation where water is used	Install **aereators** and **water efficient fixtures** (low flow, etc.)
Create a **water saving suggestion box** for students and staff	Keep fixtures and irrigation systems in **good repair** and **fix leaks promptly**
Develop programs and initiatives on the topic of water conservation	Landscape with **drought tolerant plants** and **mulch regularly**
	Capture rain water for future use in irrigation, etc.

Caring for biodiversity

Integrating biodiversity protection into school sustainability practices not only can contribute to the health of local ecosystems, but also enrich the learning environment for students and adults.

Climate change, habitat loss, pollution, and resource over-exploitation all contribute to the current **global biodiversity crisis**.

**The Living Planet Index** (LPI), which measures the average decline in monitored wildlife populations, shows that studied animal populations have seen an average relative decline of 69% since 1970.

In the light of this crisis, several organisations are making the case for a **nature positive world by 2030**, meaning ensuring more nature in the world in 2030 than in 2020 and continued recovery after that.

● **Living Planet Index (global)**

-69%

100 %					
80 %					
60 %					
40 %					
20 %					
0	1970	1980	1990	2000	2010	2018
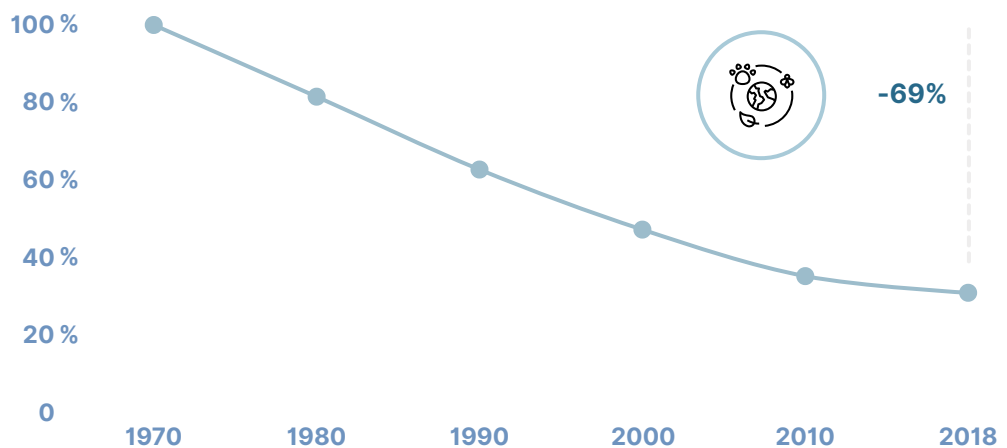
Contributing to a nature-positive world

● **Rewilding school gardens**

In the realm of action, schools who possess the appropriate facilities can include in their sustainability plans the **development of its green spaces** to complement formal education and support local biodiversity. The **diagram below** offers a conceptual overview of the different items which can be combined to develop a natural system project within a school.

Developing a natural system at school

School food waste

School compost

Research at school

Harvested rain

Nutrients and water

School farming

School garden

Local species selection

Green walls and roofs

Sustainable diets

Pollinator hotels

Other habitats
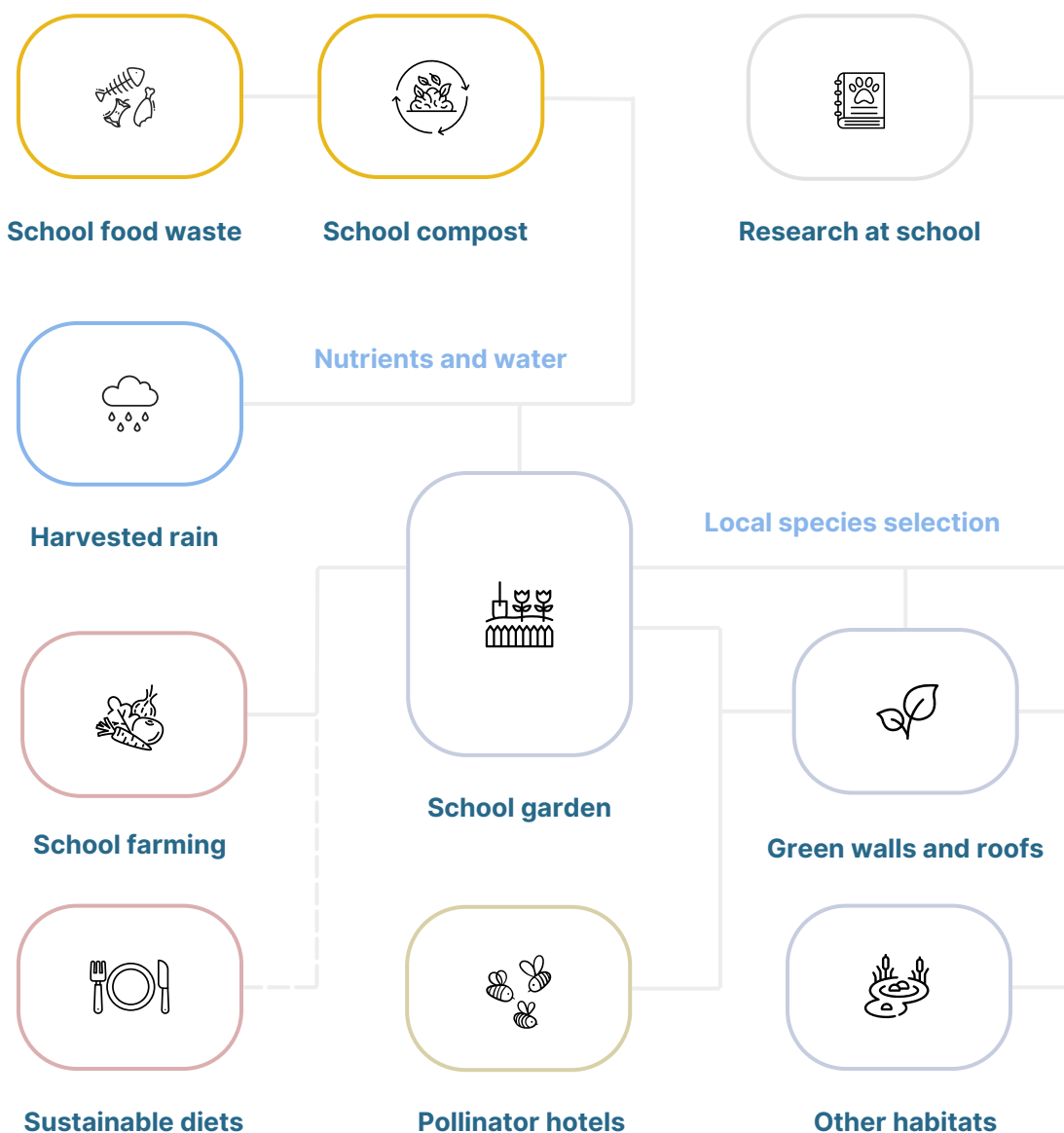
Contributing to a nature-positive world

Depending on the initiative's scope, rewilding school gardens can offer **beneficial synergies across multiple areas** of the sustainability dimension of a school.

Planting local species and building pollinator hotels provide habitats for wildlife, **supporting local biodiversity** beyond school premises.

Using school food waste as compost helps reduce waste sent to landfills, **lowering the school's greenhouse gas emissions**.

Rainwater and plant management provides a **prime hands-on educational experience** on natural systems and cycles. The garden also offers an ideal spot for an **outdoor classroom**.

By participating in the upkeep of the garden, students develop a sense of ecological **responsibility and ownership** while training their teamwork, problem-solving, and project management skills.

Gardening activities can **reduce stress and improve mental health** for students and staff by providing a calm and green space for relaxation.

A vegetable garden can help **reduce food costs** and make more sustainable **plant-based meals more atractive** to students.

The garden can be a focal point for **community involvement**, bringing together students, teachers, parents, and local organisations.

Contributing to a nature-positive world

● **Biodiversity action beyond school gardens**

Beyond school green spaces, there are still numerous ways for schools to engage in biodiversity protection and foster environmental stewardship locally.

Biodiversity-related research initiatives

Schools can participate in local scientific projects that **monitor local wildlife** to contribute to local biodiversity data and broader conservation efforts.

Maintaining community gardens and parks

Schools can partner with local parks or community organisations to **care for and improve nearby natural areas**. This collaboration provides students with hands-on experiences in environmental stewardship and fosters a stronger connection to their local ecosystem.

Clean-up initiatives

Schools can partner with community organisations to participate in **environmental clean-up efforts**.
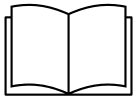
Tree planting initiatives

Schools can liaise with local community organisations to **restore and protect local habitats** by planting trees.

Crafting birdhouses and feeders

To promote biodiversity and conservation awareness among students, schools can organise building **shelter and feeding sites for local bird species**.

Education for a sustainable future

Climate change is a defining issue of our time, and schools have a vital role to play in **equipping students and their communities** with the knowledge, skills and values needed to build a sustainable future. This section explores **core concepts** and practical proposals for schools to approach environmental education in their curriculums.

● **What does sustainability mean?**

> Sustainability is *"meeting the needs of the present without compromising the ability of future generation to meet their own needs"* - **Brundtland Report, 1987**.

The concept of sustainability is rooted in various disciplines, from environmental science and economics to moral philosophy, and today is regarded as a **fundamental framework for addressing current global challenges** such as climate change, resource depletion and social inequality. It also underpins the **17 United Nations Sustainable Development Goals** (SDGs).

Society Economy

Environment
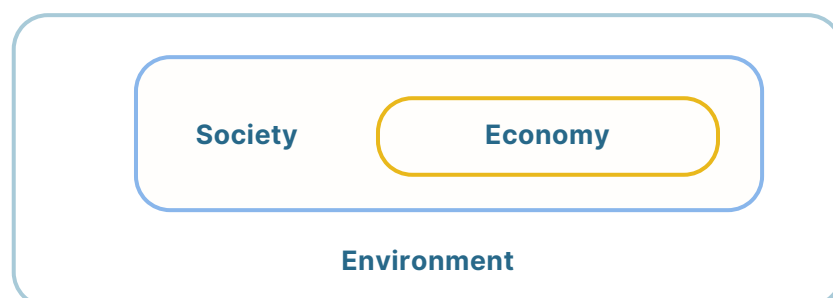
Eco-learning at the classroom

● **What is climate change?**

According to the **United Nations Framework Convention on Climate Change** (UNFCCC), climate change refers to:

> *"A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".*

The UNFCCC has been ratified by 198 state parties, which meet every year at the **Conference of the Parties (COP)**, to assess progress and set targets.

In 2015, in COP21, global leaders ratified the **Paris Agreement**, which aims to confine global warming below 2° Celsius relative to pre-industrial levels by the end of the century. To achieve this, each country must set a **Nationally Determined Contribution (NDC)** - a local action plan to reduce emissions.

Mitigation	**Climate action**	**Adaptation**
Reduce emissions		Reduce vulnerability
Renewable energy	Education	Resilient agriculture
Energy efficiency	Water	Flood prevention
Economic circularity	Green cities	Disaster preparedness
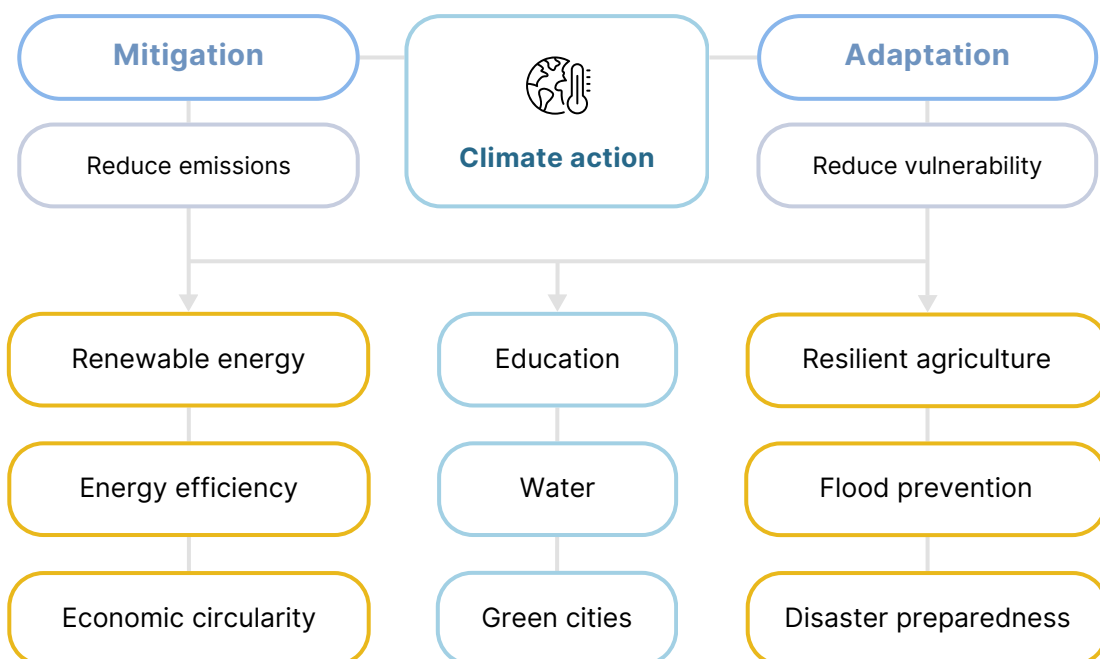
Eco-learning at the classroom

● **Embedding the care for the environment into the curriculum**

There is not a general or simple solution to integrating the **environmental, socio-political, economic, and ethical dimensions** of climate change and the theme of sustainability, along with related practical experiences, into the traditional school curriculum.

If ad-hoc courses or formation are not available or feasible, or as a way of complementing these, your schools can integrate **sustainability-related items into traditional curricular disciplines**.

Below you can find a proposed model for this integration:

Agriculture and gardening

- Design and maintain a **school garden and compost**.
- **Interview local farmers** to learn how climate change affects them.

Arts

- **Create posters** about the impacts of climate change.
- Analyse **music with environmental themes**.

Biology

- Examine how climate change affects the **spread of diseases**.
- **Measure biodiversity** in school yards or local community.

Civics and citizenship

- Plan a **community clean-up** in a local beach, forest or park.

Eco-learning at the classroom

Health and physical education

- Examine the **health risks associated with environmental factors** such as air pollution.
- List the **environmental benefits of healthy practices** such as active transportation.

History

- Examine how different societies have solved conflicts and responded to **challenges related to the environment**.
- Research **ancestral ecological knowledge** and consider how it might apply to current environmental challenges.

Language / Literature

- Practice the communication skills needed to **speak up about local and global environment-related issues**.
- Write **poems and stories** in response to photos or videos about climate change.

Mathematics

- **Design exercises and graphs** about your school's or your country's resource consumption (energy, water, etc.).

Geography, science and technology

- Investigate **how climate change affects differents parts of the world**.
- Explore or organise debates that simulate **international climate negotiations** such as those at the UN, etc.

Climate adaptation and resilience

Around the world, a growing number of schools have started to feel the impact of climate change-induced extreme weather events. These events can pose a risk both to children's safety and access to education, rendering disaster preparedness an important component of school sustainability-related planning.

As natural disasters are becoming **more regular and more intense**, depending on where your school is located, it might be soon exposed to different climate change-induced types of risks.

Water scarcity

Flooding

Heat waves

Food insecurity

Vector borne diseases

Depending on their intensity, these natural hazards can **severely disrupt schools and their local communities**, causing damage to infrastructure, prompting school closures, forcing displacements and inducing psychological stress among students and staff. These disruptions highlight the **necessity for schools to integrate disaster risk reduction** into their core functions, planning ahead to reduce vulnerabilities and ensure a safe learning environment.

Future-proofing your school

● **Mitigating risks through preparedness**

In the context of a school, building up climate resilience involves developing and adopting a strategy that integrates assessing risks, physical infrastructure enhancements and community engagement to **reduce vulnerability** and **increase adaptive capacity** to escalating natural hazards.

1. **Which natural hazards** is my school most likely to face?

Risk assessment

2. **How vulnerable** is my school to these identified risks?

Vulnerability assessment

3. Does my **school infrastructure** need to be improved?

Study the physical impact of identified risks

4. How do I **prepare my school community** for these risks?

Procedures   Communication   Education

Roles and responsibilities

Example ecological transition template
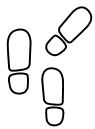
There are infinite ways a school can internally envision and address the topic of the care for the environment and the ecological transition. In this section we outline a proposed blueprint for schools to gradually advance in their journey through a simple stage-based model.

The proposed pathway comprises five successive stages articulated around the **nurturing and the consolidation of the care for the environment function** within your school's internal processes - from the occasional ad-hoc ecology-related initiative to the development of a whole-school scoped eco-management.

Managing sustainability at school
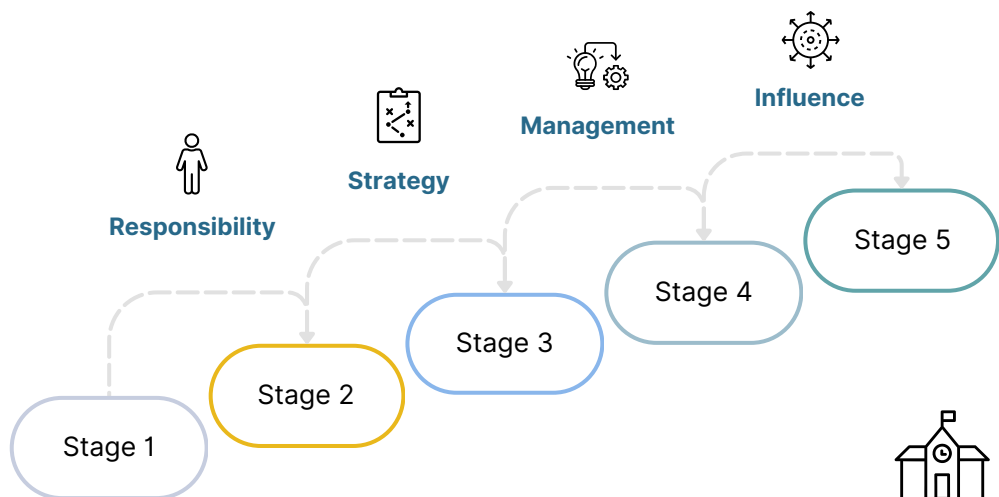
Model from: Ecological Transition Plan, Jesuit schools in France (2024)

A blueprint for your school's environmental journey

Stage 1

The school carries out **sporadic** awareness raising or alternative eco-actions on specific environment-related topics on an **ad-hoc or voluntary basis** (teacher led, etc.).
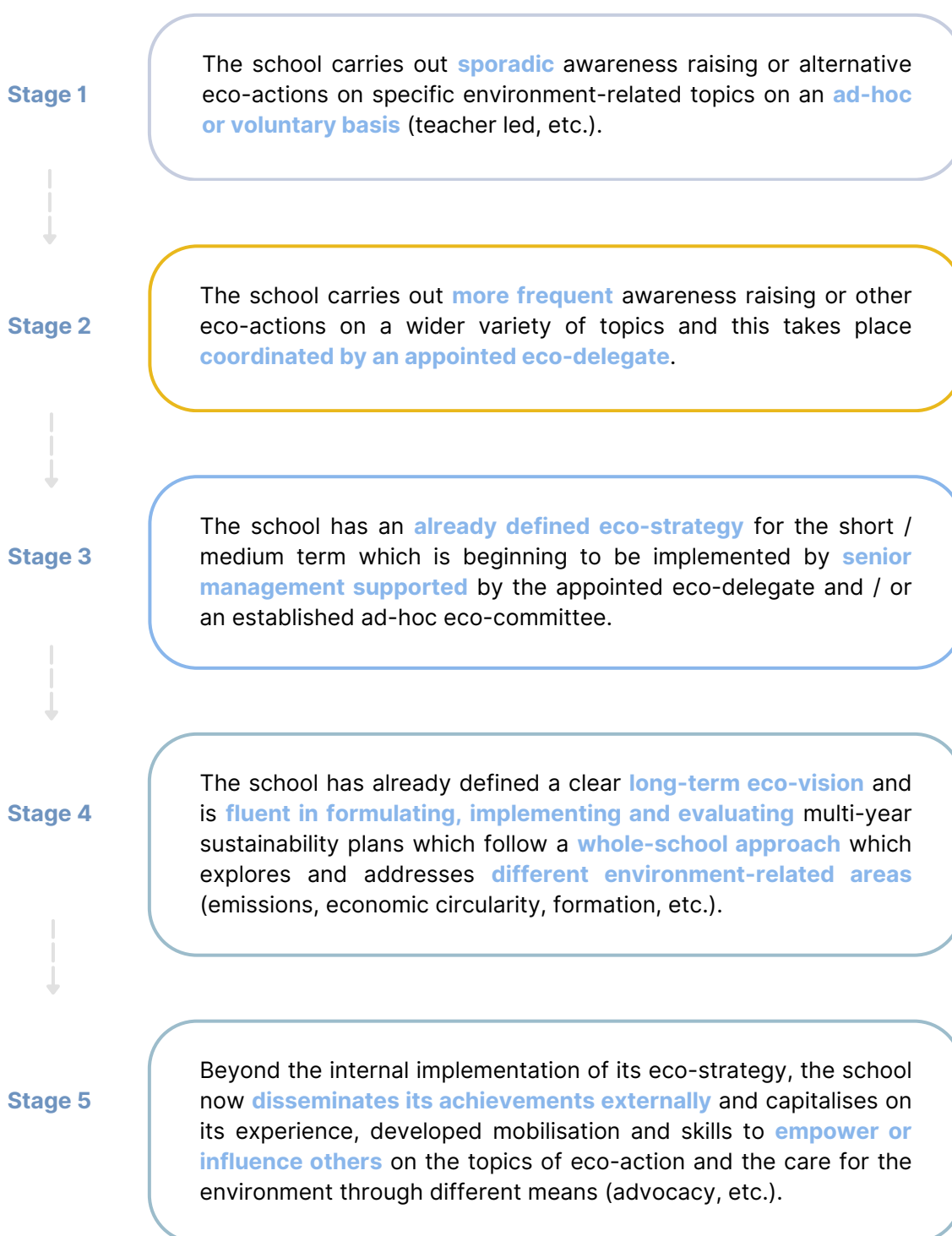
Stage 2

The school carries out **more frequent** awareness raising or other eco-actions on a wider variety of topics and this takes place **coordinated by an appointed eco-delegate**.

Stage 3

The school has an **already defined eco-strategy** for the short / medium term which is beginning to be implemented by **senior management supported** by the appointed eco-delegate and / or an established ad-hoc eco-committee.

Stage 4

The school has already defined a clear **long-term eco-vision** and is **fluent in formulating, implementing and evaluating** multi-year sustainability plans which follow a **whole-school approach** which explores and addresses **different environment-related areas** (emissions, economic circularity, formation, etc.).

Stage 5

Beyond the internal implementation of its eco-strategy, the school now **disseminates its achievements externally** and capitalises on its experience, developed mobilisation and skills to **empower or influence others** on the topics of eco-action and the care for the environment through different means (advocacy, etc.).

This incremental approach offers a simple pathway for schools to structure and accommodate the build-up and the deepening of their work around sustainability and environmental education.

Other available resources

In this section we present you with additional sustainability-related resources your school can use to complement or deepen the information included in this guide.

👆 Click on the name of the resource to access their website:

Biodiversity in Schools

Based in Ireland, the Biodiversity in Schools initiative aims to integrate biodiversity into school curriculums, fostering a connection with nature among students. The website includes a wide range of resources like workshop ideas, school garden project guides and other materials.

Climate Kids by NASA

NASA's Climate Kids offers interactive tools for teaching children about climate science. The site includes games, activities, videos, and articles on topics like weather, water, and energy, making learning about climate change engaging and accessible.

iNaturalist

iNaturalist is a global community platform for nature enthusiasts to record and share observations of biodiversity. It offers tools for identifying species, exploring data, and connecting with other naturalists. The website supports citizen science and helps users contribute to scientific research by documenting their local wildlife.

Beyond this guide

Eco-Schools

Eco-Schools is a global program that promotes environmental education and sustainable practices in schools. The website provides resources and support for schools to implement eco-friendly initiatives, earn Green Flag certifications, and engage students in environmental stewardship through various projects and activities.

WWF UK

WWF UK's Schools Resources offers a variety of educational materials to help teachers incorporate environmental topics into their curriculum. The website provides lesson plans, activities, and information on sustainability, wildlife conservation, and climate change, aiming to engage students in environmental stewardship and awareness.

Jane Goodall Institute

Based in Canada, the Jane Goodall Institute focuses on wildlife conservation, environmental education, and community-centered projects. The website offers resources on conservation efforts, educational programs, and opportunities for involvement in initiatives inspired by Jane Goodall's work to protect the environment and promote sustainable practices.

Getting Climate Ready by UNESCO

"Getting Climate-Ready: A Guide for Schools on Climate Action" is a document by UNESCO aimed at empowering schools worldwide to combat climate change. This resource offers practical strategies, tools, and materials for integrating climate action into school curricula, operations, and ethos. By engaging educators and students, its approach seeks to harness the power of education to address the urgent challenges posed by climate change and build a more sustainable future for all.

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