Climate Action Plan

Description

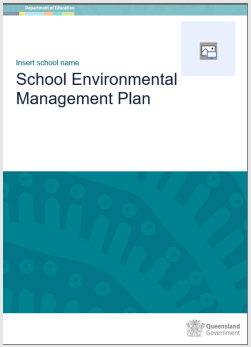
Events will occur in the near and far future as a result of climate change. To minimise recovery time and increase awareness, an action plan to tackle upcoming natural disasters is important. A Climate Action Plan acknowledges the need to adapt to future scenarios.

Key Pointers

- The action plan should be revised annually in line with climatic events.
- The action plan should acknowledge council guidance and policy.
- Appointing an environmental consultant to advise on measures to improve and prepare for climate resilience is beneficial.

Case Study

The Queensland Department of Education provides a School Environmental Management Plan template to help schools become climate-ready. The plan provides a structure that addresses occupants, staff, and the local environment to create a tailored plan.



Source: Sustainable schools (education.qld.gov.au)

Energy Audits

Description

Energy audits track building performance and identify where measures can be implemented to reduce energy consumption. When regularly assessed, their records present trends during in-use stages, which can help recognise methods to improve energy efficiency.

Key Pointers

- Understand energy usage to study energy expenditure.
- Examine lighting and appliances for leakages.
- Plan energy consumption according to energy tariff.
- Appoint a consultant to carry out an energy audit and advise on measures to be implemented.

Case Study

Schools VPP Pilot Project, WA

The project features a Virtual Power Plant (VPP) to share distributed energy resources based on renewable fuels. The goal is to match the supply and demand of use across a range of local educational buildings. Energy audits can aid the project at the design stage to identify pattern uses and utilise the plant's shared capacity.

Source: Schools VPP Pilot Project: WA's first VPP - Synergy

Embodied Carbon

Description

Consideration of embodied carbon is important for reducing carbon emissions across the whole life cycle. This can be measured and assessed through a Life Cycle Assessment (LCA). Use of local, recycled, and low-carbon-intensive materials is encouraged.

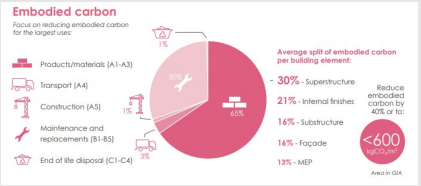
Key Pointers

- Make better choices on construction materials.
- Appoint a consultant at the design stage of a new building element to carry out a life cycle assessment and advise on measures to reduce embodied carbon impact.
- Even a 10% reduction in embodied carbon emissions could avoid significant CO_2 in the long run.

Case Study

LETI UK has benchmarked embodied carbon emissions at **<600kgCO2/m²** for schools based on a collection of studies.

The chart below highlights the average split of embodied carbon emissions from various building elements. The study is based on British statistics.



Source: 252d09_3b0f2acf2bb24c019f5ed9173fc5d9f4.pdf (leti.uk)

Solar Panels

Description

Solar panels are a form of renewable technology that complements the Queensland environment. Their ability to provide a clean energy supply reduces reliance upon carbon-releasing fuels.

Key Pointers

- Continuously improving technology.
- Easy installation and maintenance.
- Appointing a consultant to carry out energy modelling can ensure sufficient panel area is sized according to building energy consumption.

Case Study

Loreto Kirribilli, NSW

Loreto Kirribilli is in the process of installing solar panels on their site. By appointing a consultant, they have established that a 70% reduction in emissions can be achieved, along with a $170,000 savings through selling excess energy back to the grid during low usage periods. Solar panels were previously not deemed feasible due to the age of buildings.

Source: Australia's Most Sustainable Schools | 5-Star Sustainable Programs 2023 | The Educator K/12 (theeducatoronline.com)

Battery Storage

Description

Battery storage technology stores energy that could otherwise be wasted for use during another period. A school's in-use pattern can complement this technology due to its repetitive peak and low demand periods.

Key Pointers

- There is a growing demand to store energy from non-conventional energy sources for later use.
- Reduce dependence on conventional sources of energy.
- Appointing a consultant to carry out energy modelling will present the optimal strategy for battery storage.

Case Study

Chrysalis School, NSW

The school installed smart solar and a battery system to generate energy. In turn, saving $100,000 and avoiding 14 tonnes of carbon emission each year.

Source: Case study: Smart solar and battery solution helps regional school power up (chrysalis.nsw.edu.au)

Natural Ventilation / Mixed Mode Strategy

Description

Reducing reliance upon mechanical systems through optimising airflow with natural ventilation strategies is important to reduce energy consumption.

Key Pointers

- Increased fresh air flow and air quality.
- Reduced energy consumption.
- Reduced running cost.
- Appointing a consultant to conduct energy modelling can ensure sufficient fresh air quantity and comfortable air temperature to internal zones.

Case Study

An international study in university classrooms of Basque country, Spain showed Air Diffusion Performance Index (ADPI) enhanced by 17% and infection risk reduced by 27% through implementing mixed-mode ventilation strategies.

Source: Priority of Mixed-Mode Ventilation during Epidemics: A Comprehensive Investigation | IntechOpen

Site Wide Energy Strategy

Description

A tailored site-wide energy strategy entails details of building performance and fuel supply. It projects performance expectations based on the design details and helps ensure energy audit reports have a baseline.

Key Pointers

- Holistic approach involving all key stakeholders.
- Whole school approach to integrate sustainability principles and practices.
- Development of School Environmental Management Plan. An environmental consultant can advise on measures to include in the plan.

Case Study

Bentleigh Secondary College, Vic

The college commits to sustainable measures across its' built environment and external landscape.
The college developed 6.5 hectares into an urban forest, a large wetland site that treats 6 million litres of water annually, an Indigenous food and vegetable garden, and a cultural centre.
In 2012, the College was named the Most Sustainable Education Institution globally in the International Green Awards and won the Victorian Premier's Sustainability Award for Education in 2013.

Source: Bill Thomas, whole-school sustainability | Getting Started with Sustainability in Schools

Thermal Comfort

Description

Thermal comfort, considering future climate scenarios, provides a comfortable indoor environment for all occupants. Thermal comfort studies also ensure appropriate sizing of building services equipment.

Key Pointers

- Requires an external consultant to produce thermal models to predict indoor temperatures.
- Design for thermal comfort considering future weather scenarios should be acknowledged.
- Appointing a consultant to carry out thermal modelling will help identify areas for improvement and strategies to provide climate resilience.

Case Study

Woodside building at Monash University.

The building features many sustainable measures, which aided its PassivHaus certification. The building envelope and ventilation system provide thermal performance that is resilient to the warming climate and provides healthy and comfortable spaces for occupants.

Source: PASSIVBLOG: Healthy Schools and Classrooms — Australian Passivhaus Association

Climate Resilience Awareness

Description

Understanding extreme climate events that could occur ensures that prevention methods can be established. Knowledge of the current and future local climate can help future-proof the built environment.

Key Pointers

- Awareness of climatic events ties in with the educational curriculum.
- Tailoring awareness lessons to QLD allows students to be wary of future scenarios.
- Having climate-resilient plans in place helps prepare for climatic events.
- Appointing an environmental consultant to advise on measures to improve and prepare for climate resilience is beneficial.

Case Study

Brisbane City Council recognises the following as high warnings. Having a plan in place is the first step in ensuring safety for all occupants.

Additional steps include having an effective ventilation and filtration system with internal scrubbing, as demonstrated by Torrens Early Learning Centre. This meant that during the 2020 Black Summer bushfires, no smoke reached the building's classrooms.

Source: Disasters and emergencies | Brisbane City Council

Materials

Description

Material selection during construction and regular maintenance of the building is important. Encouraging use of recyclable, compostable or biodegradable materials reduces waste consumption.

Key Pointers

- Reduce environmental impacts.
- Alternatives to hazardous and polluting substances.
- Minimise CO_2 emission and global warming
- Acknowledging materials' life cycle journey can help reduce embodied carbon emissions.

Case Study

International Grammar School, NSW

The school focused on procuring sustainable products from reputable suppliers and responsibly consuming materials. This reduced carbon emissions from waste from 375 kg CO2e to 170 kg CO2e between 2020 and 2022.

Source: Australia's Most Sustainable Schools | 5-Star Sustainable Programs 2023 | The Educator K/12 (theeducatoronline.com)

NABERS

Description

NABERs Schools ratings provide an outline to encourage sustainable energy and water performance. This helps identify areas for system performance and potential energy and financial savings.

Key Pointers

- Measure performance to rate the environmental impact.
- Ensures consistency and comparability.
- Keeps track of energy savings and improvements.
- A NABERS assessor is required to carry out the assessment. This person can be internal or external; however, training is needed.

Case Study

Knox Grammar School, NSW

The school has highlighted that targeting a NABERS rating helps them measure and manage their energy and water consumption, drive efficiency, reduce emissions, and create a healthy learning environment for their students.

Source: NABERS fact sheet: Schools