



7. School website (if available): <https://tanarata.net>
8. Approximate number of teachers participated in this programme: 1
9. Approximate number of students participated in this programme: 2

## PART II: INFORMATION ABOUT THE SCHOOL'S PROGRAMME

**The information of part II from no.1 to 14 should not be over five (5) pages long of A4 in total. The information should be written in Times New Roman/Calibri font, font size 11.**

1. Title of the school's programme

Green Synergy

2. Summary of the programme (maximum of 300 words)

The Green Synergy Programme has been created in 2017 and slowly implemented in school for the past six years with new ideas and projects being added every year linked to sustainability. Through the new compulsory class called Project Based Learning implemented since then, all students of the school develop their creativity and thinking towards global issues linked to global warming, sustainability and eco-friendly development. Various activities and projects have been designed and created by the teachers in order to have the students working on these topics in a different approach than the classic academic teaching. Students are facing a global problem through an activity proposed and they have to try to solve this problem on their own. It requires critical thinking, creativity, hand skills and teamwork. All those aspects are being encouraged by the teachers who are there to guide the students throughout the activities without giving them the solutions.

The Green Synergy Programme is also meant to reduce the carbon footprint of the school in terms of energy, pollution and food consumption. It includes various projects and events being carried in school by students, teachers and other members of the school community.

3. Objectives/goals of the school's programme

To expose students to major global problems linked to environmental concerns and understand them.  
To have students creating innovative solutions towards major global problems.  
To transform the school environment to a more sustainable and eco-friendlier place.  
To reduce the amount of energy used and to produce our own renewable energy.  
To promote the consumption of organic crops and ways to grow them.  
To implement the 3Rs policy on the campus: recycling, reusing and reducing.  
To stop using single use plastic on the campus.  
To learn the wildlife living on the campus and how to protect it.

4. Period of the time when the programme has been started

The Green Synergy Programme started in September 2017.

5. Activities (strategies/activities of implementation, and brief information of each activity)

- Windmill model project: students design and make mini models of windmills using recycled materials to create electricity.

- Solar panel project: students learn what a solar panel is and they use mini panels to power LED light in a house model they design and build.

- Solar powered cars: students design and build small cars supplied by mini solar panels. Upon completion, students compete in a race to see which car is more efficient.

<https://fb.watch/miYcqFeXF0/?mibextid=Nif5oz>

- Solar panel spotlights: solar panel spotlights are lighting up the surroundings of the school building at night for safety purposes.

- Reducing the energy consumption: students and staff members are regularly reminded to switch off the Air Conditioning devices, lights and ceiling fans whenever they leave the class or school offices.

- Occasional events and talks: the school is occasionally participating or hosting events and talks related to renewable energies in order to raise awareness, inspire and encourage students. For example, on the 14th of October 2022, the secondary students had a live virtual visit of the Energy Observer, an innovative catamaran that runs purely on renewable energies (including solar) and that has the mission to show everyone, through its 6 years long journey around the globe, that a boat can be fossil-fuel free (<https://www.energy-observer.org/>).

- Campus building strategy: our buildings orientation vis-à-vis sunlight direction and the roofs are designed to passively evacuate hot air and to minimize heat gain and thus reduce air conditioning energy use. The school is able to use a 2.5 HP aircon for a standard 550sf classroom area this way. Otherwise a 4+ HP aircon would be required as it is normally recommended. Moreover, the positioning of trees around the buildings and its siting at the base of hill slopes allows cool air to flow in.

- Passive air-cooling system: the school greenhouse is being cooled using a passive system. Copper pipes are running at the bottom of the school river for one hundred meters before entering the bottom of the greenhouse. An air pump is placed at the end of the pipes to suck the air out of the pipe in the greenhouse. The air is cooled down in the pipes that are in contact with the cold water at the bottom of the river. A chimney at the top of the greenhouse is used to allow the hot air to escape and create a natural air flow in the greenhouse. The top of the chimney is covered by a solar panel that prevents rain water from entering the greenhouse and to power the air pump.

## 6. Teaching and learning approaches/strategies that the school has integrated into the programme

The Project Based Learning class has been implemented and made compulsory to all students of Tanarata in order to put students in front of global issues, think about them and find possible solutions. Among several issues like pollution, sustainable farming or the loss of biodiversity, the school is focusing on renewable energies with the upper secondary classes.

Firstly, our Grade 8 students learn what electricity is and how it is made using simple experiments with copper coils and magnets. Then, they move forward to design their own windmill models to generate electricity. Through this work, students explore the different designs and study the efficiency of their windmills in order to power a LED light.

Secondly, our Grade 9 students are exposed to solar panel technology through the house modeling project. They learn in class the concept of solar energy converted into electricity and then use mini solar panels in order to power LED lights in their 3D house models. After designing and building the houses of their dreams, students build their models in groups and finally connect solar panels to wires to light up different rooms of the house. Another group of students is working on the same concept of solar panels applied to miniature cars.

With these different projects done during their studies at Tanarata International Schools, our students are exposed to different ways to produce renewable energy. By experimenting on their own, they understand the concepts and can realize it is easy to produce clean energy with a minimal impact on the environment.

## 7. Engagement with the community and sharing of school practices to the community

- The school joined the United Schools network in 2022 (<https://app.unitedschools.world>). This website is an international platform to connect schools from all over the world in order to share projects/ideas and create links between teachers and students worldwide. The school is using this platform to share its practices related to the Green Synergy Programme with other schools (see Supporting document 1).

- The school is making a yearly magazine called “The Chronicle”. The magazine’s team is composed of students and teachers who write articles and take photos of all events and works done during the academic year. It is compiled and the magazine is printed and distributed to all the student’s parents at the end of the academic year (<https://tanarata.net/index.php/school-life/the-chronicle-yearbooks>).

- The school is very active on social medias to share the work done by students and encourage people to go towards sustainable practices.

- The school is communicating weekly with the parents and their representatives through meetings and newsletter to update the school community about the new practices and strategies implemented.

## 8. Monitoring and evaluation mechanisms

Since 2017, the school has raised more and more awareness towards green energies and electricity's consumption. Students have been encouraged to switch off all lights, fans, and air conditioners in their classrooms when they are not in use. This initiative aims to promote energy conservation and raise awareness about the importance of reducing electricity consumption. The objective of implementing this measure is to reduce the electricity consumption, as an increase in electricity usage would require the burning of additional fossil fuels. The data below illustrates the cumulative amount of electricity used in school over the course of several years.

- 2017: 215,702 kW
- 2022: 200,423 kW

Over the course of five years, it is evident that the school has achieved a significant reduction in energy consumption, as indicated by a decrease of 15,279 kW. This yearly evaluation helps to know if the raise of awareness and initiatives taken have a positive impact. Throughout the academic year, students' projects are being monitored and evaluated by their teachers with a grading system. In this way, teachers can measure year after year the growing impact of their teaching method and projects on students.

## 9. Measurable achievement of the school's programme to students, teachers, parents, and wider community

In 2022, a group of students from Tanarata participated in The Outstanding Cambridge Learner Award for Action on Climate Change and won the third prize of this nationwide contest. They had to present the actions taken in school to fight against climate change. This falls exactly in the Green Synergy programme <https://www.cambridgeinternational.org/why-choose-us/action-on-climate-change/>.

Link of the video done by the students for the contest: <https://www.youtube.com/watch?v=tHflo6gJUQc>

## 10. Plan for future

- The school is currently in the process of applying for the installation of solar panels on the school's rooftops. A private company has been commissioned to do the complete study of the project and recently handed over its final report on the project (see Supporting document 2). The next step, once the project is approved by the authorities, will be the installation of the 204 solar modules.

- The three aquaponic farms modules that are currently using a water pump plugged to the conventional power grid will be adapted to be powered by small solar panels.

- Grade 8 students will be working on watermill models using the school river in the coming academic year 2023-2024 (in addition to windmill models).

## 11. Interrelationship of the school's programme with other Sustainable Development Goals (SDGs) (Please refer to page 2 in the Information Note or <https://sustainabledevelopment.un.org/sdgs>)

The Green Synergy Programme includes different features of sustainability besides renewable energies. Below are the other SDGs correlated to the programme:

7. Affordable and clean energy. The school has started to work on installing solar panels on the roof of the school in order to produce its own clean electricity.

11. Sustainable cities and communities. Our secondary students work on innovative ideas for future cities in Project Based Learning class. In the project called "Future city planner", students must think about an innovative and sustainable infrastructure to be built in a city that just benefit the local community (see an example of work done by a student in section 13, photo 3)

12. Responsible production and consumption. The school has started organic farming using two different techniques. The first one is compost grown fruits and vegetables grown on the school land. The second one is aquaponic farming managed by students. The aquaponic farming modules will be soon using solar panels to power the water pumps.

13. Climate action. By implementing the 3Rs policy on the campus, the school is participating in the fight against climate change.

15. Life on land. The school campus has a rich biodiversity. Students learn about the species found and how to preserve them. They also understand why organic farming helps preserve biodiversity.

12. Link(s) to the information of school’s programme in social media platforms such as facebook, website, youtube

<https://www.facebook.com/tanarata.intl.schools/>  
<https://www.youtube.com/user/tanarata070907>

13. Photos related to the activity/programme (Maximum of five (5) photos with captions in English)

Photo1



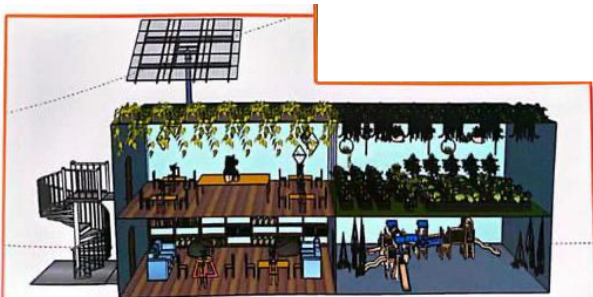
The Grade 9 students built a house from scratch by utilizing recycled wood and used the concept of solar energy to provide electricity to the entirety of the house as part of their Project Based Learning curriculum.

Photo2



Our school’s campus spotlight that is completely powered by solar energy to light up our campus lake at dusk.

Photo3



Grade 8 student’s Sketchup designs of a modernized café powered by solar panels as part of their Project Based Learning curriculum.

Photo4



Windmill designed and made by the Grade 8 students using recyclable materials to power a light bulb using wind energy as part of their Project Based Learning curriculum.

Photo5



Students, Jennifer and Pranav and their teacher Mr Yannick, attending Malaysia's largest award giving to receive their certificates and prize for winning third place in The Outstanding Cambridge Learner Award for Action on Climate Change Competition, November 2022.

14. Supporting documents of the programme:

1) Screenshots of the Tanarata International School profile and posts on United Schools, sharing the work of our students with other schools engaged towards sustainability all over the world.

<https://app.unitedschools.world>

2) Solar project scheme for Tanarata International Schools with details and quotation done by Micro Energy Holdings company.