

CarbonTrack: Empowering Youth Climate Action through a Gamified Platform for Carbon Footprint Reduction

Short Overview of CAP:

CarbonTrack is a youth-led carbon accounting platform designed to promote environmental education and daily green action among teenagers worldwide. Through our website and app, users log eco-friendly behaviors, calculate their CO2 emission reductions using authoritative, research-based algorithms, and use the “Carbon Credits” they earn to compete on leaderboards and exchange gifts in the “Credit Mall.” This gamified process incentivizes young users to repeat positive actions consistently until a green lifestyle is formed.

To date, 12 high schools worldwide have joined this movement, engaged over 145 active users, and cumulatively saved 158 kg of carbon dioxide emissions. By transforming personal sustainability actions into tangible impact, CarbonTrack aims to educate and empower the next generation of climate leaders and advocates.

Reflection on CAP Journey:

Goals (and how they shifted): Broadly speaking, since the San Francisco Summit in November, our main tasks have been to refine the website based on beta-testing feedback, promote our platform worldwide, grow our user base as much as possible, and eventually develop a mobile app to make it more convenient for our users. I can confidently say that we have made significant improvements to the website, successfully increasing our user base to 145 users and establishing partnerships with 12 schools. However, we had to postpone the release of the first version of the mobile app due to technical challenges encountered.

Challenges and Solutions:

1. The most significant challenge we faced was technical issues. We firmly decided not to hire professional companies to develop for us, as we viewed this as a valuable learning opportunity for students. We spent a considerable amount of time studying and overcoming various technical difficulties, including improving collaboration efficiency through GitHub, strengthening our database, enhancing cyber-security, and making our algorithms more scientific and accurate.
2. Between December and February, user engagement grew relatively slow. To incentivize greater and consistent participation, we introduced a more convenient “Amazon eGift Card reward system”, successfully avoiding the shipping cost issues we previously concerned about. In addition, we learned animation from Apple and improved the visual experience in our "Website Version 2.0", which significantly attracted more users.
3. During platform promotion, we realized that reaching out to potential users one by one was extremely time-consuming. Therefore, we shifted our strategy to reaching out to envi-club leaders at other schools and establishing partnerships with them, which became a far more efficient and promising method.

Timeline and Process:

October 2024: Ideation and initial website development.

November 2024: Beta testing; expanded the core team by recruiting more talented individuals.

December 2024: Beta testing across 6 schools and gathering detailed feedback; accumulated approximately 50 users.

January 2025: Public launch of CarbonTrackApp.com. Began promotion via Instagram and WeChat, publishing green tips weekly.

February 2025: Introduced the “Amazon eGift Card reward system” in the Credit Mall as a more practical incentive. Continued refining the website. Reached up to 10 partner schools across Asia, North America, and Europe.

March 2025: Released “Algorithms Version 2.0” and “Website Version 2.0”. Expanded to 12 partner schools with 145 active users. Began development of the iOS app (encountered some major technical challenges with coding in Swift language).

“Algorithms Version 2.0” incorporates a total of 38 daily actions, scientifically categorized into “Circular Economy,” “Green Lifestyle,” “Low-Carbon Diet,” and “Sustainable Mobility.”

“Website Version 2.0” featured a refreshed UI with Apple-style animations and a dark mode, which significantly increased user satisfaction.

Present and Future: Continuing development of the iOS mobile app, expected to be released by late May.

Key Learnings:

- **Team-wise:** We are not alone! Our CarbonTrack core team now consists of 15 members, each working enthusiastically in their areas of expertise, including scientific research, social media management, graphic design, and coding. More and more students are expressing their interest in joining us. Some have led their schools to establish partnerships with CarbonTrack, while others with specialized skills have joined our core team directly. Visit [this page](#) to learn more about our current team members and partnerships.
- **Tech-wise:** Admittedly, we are not professionals, and we have made countless mistakes while developing the website and app (the app release had to be postponed). However, maintaining a positive and open mindset when facing challenges has helped

us overcome obstacles. Our tech team works collaboratively to solve every issue encountered and continuously benefits from the valuable, constructive feedback given by our lovely users and mentor team.

- **Promotion-wise:** It is not easy to run and build a well-supported Instagram account like [@turninggreenorg](#). We have been working on writing promotional articles & green-living-tips to attract followers on our Instagram account, [@CarbonTrackOrg](#), but so far we have only gained 57 followers. Not every user of our website has a personal Instagram account; in some countries, Instagram is blocked by the government; and in some cases, parents only allow their children to use our website because it's non-profit and free from the potential-harmful information found elsewhere on the Internet. We will continue working on boosting our social media influence in the future. On a positive note, we currently have over 105 followers on our official WeChat public account.

Impact and Outcomes:

- Established partnerships with 12 high schools across Asia, Europe, and North America. The primary contacts are environmental club leaders and enthusiastic advocates, with whom we frequently discuss and share on-campus sustainability problems and solutions existing within our respective communities.
- With the efforts of approximately 145 active users, a cumulative 158 kg of CO2 emissions have been reduced, recorded through around 240 activity logs per month.
- Delivered 3 public speeches at our own campus to promote environmental awareness and introduce CarbonTrack usage. Partner schools are planning such speeches and lectures as well.
- Continuously updated and refined our carbon calculator algorithms, expanding the number of supported green actions from 15 to 38. The new categorization algorithms help users cultivate more practical and impactful habits, offering a comprehensive approach to environmental protection. Click [here](#) to visit the main article referenced.
- With over 239 commits on GitHub, we have been updating our website, CarbonTrackApp.com, on a weekly basis and have received remarkable improvements in the user feedback regarding its appearance and user-friendly design. The website is currently operating stably without noticeable bugs and has an efficient feedback and bug-reporting channel. An iOS mobile app is also under development and is expected to be released in late May.
- Received a total of \$209 in donations from our community, which demonstrates strong support and helps to ensure the sustainability of the initiative.
- **Unexpected Outcome:** We are gaining much more from the collaboration with other schools than we anticipated, not just limited to user-base increase. For instance, Helen from the Material Club at Kingswood Oxford School (CT) suggested adding a section showcasing practical ways to recycle and reuse everyday items, aligning with their club's main mission. We have agreed to incorporate these tips into our website and plan to enhance our mobile app's camera-based visual recognition feature to further support this initiative. We are drawing on the strengths of various sources.

Potential for Ongoing Impact: As more schools from different regions, cultures, and backgrounds join our initiative, we envision establishing a global youth advocates network, with representatives from each school sharing their campus and community environmental solutions through monthly online summits (with the help of universal platforms like ZOOM and Discord). By inviting experienced professors from prestigious institutions to participate, teach, and offer expert guidance, we aim to foster a broader range of impactful ideas and practical solutions.

Closer and more in-depth partnerships will also benefit the future development of CarbonTrack's educational mission. In the long run, as these high school advocates start their academic career in university, an even more powerful network can be expected to have. Ultimately, our goal is not only to cultivate individual sustainable living habits within a generation, but also to foster large-scale, globalized environmental protection projects that can become a reality in everyone's life.

What I am Most Proud Of This Experience:

As I stayed up late on the very last night of the PGC October challenges, I could never have imagined that CarbonTrack would grow from a simple "tracking tool" into a model of a vibrant, youth-led platform for climate action, inspiring and uniting so many of my peers. Frankly speaking, the past five months have not been the most politically stable or peaceful period globally. Yet, what I have witnessed among this generation of students worldwide is a unified and passionate drive for environmental protection — creative, bold, and full of strength. I am truly honored to be a part of this. I feel incredibly blessed to have received so much support and encouragement from those around me (many of whom were complete strangers when this journey began). I sincerely hope that, united, we can continue moving forward toward achieving the goals of the Paris Agreement and building a more sustainable future that exists not just in our imagination or in theory, but in reality.