SEAMEO-Japan ESD Award

PART I: Details of School

1. Name of your school: South Hill School, Incorporated
2. Full address: IPB Road UP College Los Banos, Laguna
3. Postcode: 4031
4. Country: Philippines
5. School's telephone number (country code+city code+telephone number): +63 (049) 536-5465
6. School's fax number (country code+city code+fax number): +63 (049) 536-5465
7. School's email Address: southhillschool@gmail.com
8. Name of the Head Master/Principal/School Director: Carmencita T. Nolasco
9. Name of the Teacher Coordinator: Amando Perfecto dela Cruz Molin
10. Email address of the Coordinator: amandopdlcmolin@yahoo.com
11. School website (if available): N/A
12. Educational level (Such as Kindergarten 1 to Grade/Year 9): ECLP to Grade 12
13. Total number of teachers in your school: 46
14. Approximately number of teachers participated in this programme: 46
15. Total number of students in your school: 705
16. Approximate number of students participated in this programme: 705

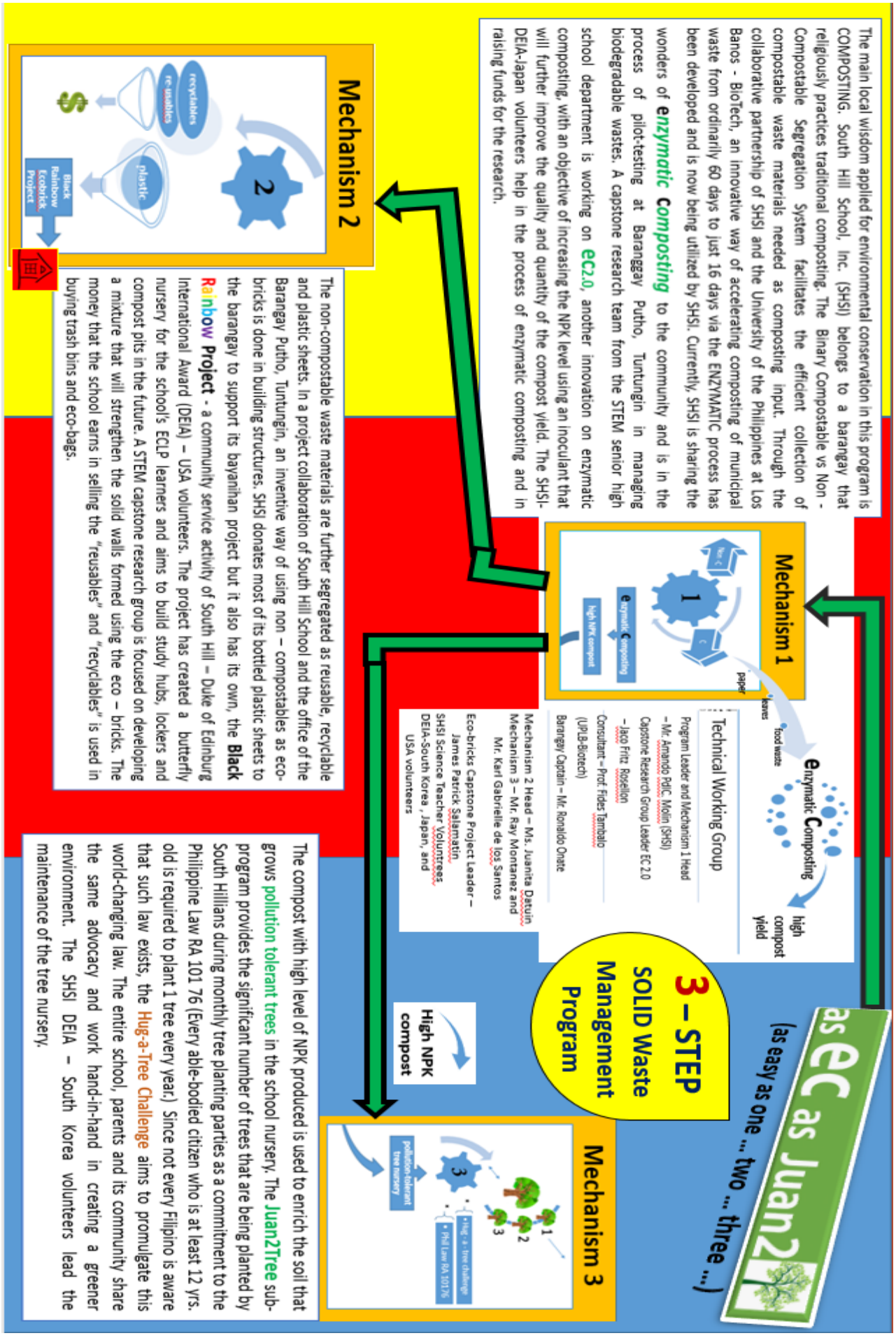
PART II: Information about the School's Programme

The information of part II from no.1 to 13 should be no longer than nine (9) pages long of A4 in total. The information should be written in Times New Roman font, 11-12 point size.

1. Title of the school's programme

as eC as *Juan2Tree* (as easy as one… two… three…)

2. Summary of the programme (one half to 1 page of A4 sheet size)



3. Background information or reasons why the school created this programme

South Hill School has been practicing traditional composting for the past years but it was more often that it resorted to either burning or incineration because the school did not have a clear and effective garbage segregation system. Policies in managing solid wastes are not consistently enforced while the barangay does not require segregation at all. Worse, it has been widely known that the Philippines has become the world's third largest source of plastic leaking into the ocean and has among the highest trash collection rates in Southeast Asia. International environmental groups claim that the pollution arising from these plastic debris and other forms of garbage cause the choking of water ways – consequently making existing environmental problems worse and create increased disaster risks.

as ec as *Juan2Tree* was initiated to simplify the segregation process into mainly a binary concept: compostable vs non-compostable. Such technique of redefining trash as things of value if properly sorted, brings an awareness that there really is no such thing as trash. The program is innovative in that it works on the premise that another person's trash is another person's treasure—except it seeks to make everyone a stakeholder: everyone's trash is everyone's treasure. It invests in the participation of students to guarantee sustainability of good practices. The project positions itself as a profitable to engage communities to support, practice and sustain the technology.

The school seriously takes its responsibility of inculcating among its students the core values it promotes, and thus created the program to provide the opportunities to participate in different community-service endeavors related to environmental preservation. The school is one with the government in responding to the call for action to reduce waste, reverse the cycle of plastic pollution and help in reducing its toxic impact on human health and ecology. The program was created as well to promote volunteerism and train every learner to become selfless global citizens – stewards of Going Green, lover of nature and protector of the environment.

4. Objectives/goals of the programme

The goals of as ec as Juan2Tree are : first, to provide South Hill School with a sustainable and convenient solid waste management system that promotes environmental preservation among its learners and stakeholders; second, facilitate the profitable transformation of municipal wastes; and third, build strong partnerships with the local government and the global scientific community geared towards the end of creating a sustainable, innovative and efficient solid waste management system.

The program targets to share with the community the innovations on composting and enzymatic composting that it has developed through its SHSI Senior HS - STEM Research project collaboration with UPLB BioTech. When shared with communities, small and medium enterprises, this enzymatic composting technology can be a profitable endeavor. Thereby, freeing the local government or lightening its load in addressing the garbage problem.

Through the subprogram Juan2Tree Project, the school aims to rekindle its commitment to Arbor Day by promulgating the Philippine Law Republic Act 10176 while The Black Rainbow Project pledges significant reduction in plastic footprint.

5. Brief details about the local wisdom the school aims for within the programme and its values for environmental conservation

5.1 The local wisdom highlighted as the heart of the **as ec as *Juan2Tree*** program is composting. The school and its community had been practicing this procedure of recycling various organic waste materials in producing soil conditioner for so many generations. South Hill School, in partnership with UPLB Biotech developed an innovative way of accelerating the composting of municipal wastes via the enzymatic process from 60 days down to 16 days, the compost being of higher yield and better quality. Hence, ENZYMATIC COMPOSTING **ec** – is an improved and advanced version of the traditional technique. It had been proven by South Hill researchers to meet the organic fertilizer level, rather than just as soil conditioner as any ordinary household compost. **ec** (easy) is the focal point of the program being an innovative farming practice that not only "gives back" to the soil but revitalizes and sustains its function of strengthening food security – every community's route to prosperity and social harmony.

5.2 From 5.1, please explain its values for environmental conservation

Enzymatic composting mainly helps the soil in holding or sequestering carbon dioxide. In addition to emission reductions, compost replenishes exhausted farm soils by replacing trace minerals and organic material, reduces soil erosion and helps prevent storm water run-off. Enzymatic composting is one recycling process that effectively reduces greenhouse gases and help mitigate climate change. The program has value for money and is sustainable in the manner that it will eventually pay for itself. Although infrastructure in schools and the enzymes to initiate the composting process will require investment, the schools will eventually be generating income for the community and thus be paying for the perpetuation of the project. By tapping public and private schools, the project aims to engage the stakeholders of solid waste management at the grassroots level. Student engagement in the community ensures sustained efforts towards change behavior in the community as students grow up to be their community leaders. Students will come to see the impact of solid waste on climate and land pollution but they will also perceive that the means to drive a change in direction against the declining status of landfill management is within their capacities. Meanwhile, the project also aims to make composting profitable, in terms of either compost sales or savings in fertilizer, for the community to guarantee immediate participation from local communities and barangays where the schools are based on.

Existing enzymatic composting technologies and solid waste management systems will then be transferred to where it can be of most use in the climate change impacted regions of the South East Asian region, where typhoons do not only cause heavy rains but solid waste prevents the immediate drainage of runoff and rainwater. The program aims to inspire and reach urban and rural communities where the most solid waste is created (urban) and where compost products have a market niche (rural) to foster a win-win relationship between the two communities. Thus far, solid waste management is brushed off as a service that a government must perform for its people. It is therefore an improvement to education quality when communities and future leaders are enabled to not only correct solid waste management practices but also to save and to profit from it through higher agricultural productivity.

6. Period of the time when the programme was/has been started

[2013] … conceptualization and exploration of enzymatic composting ec
[2014-2015] … start of research and pilot-testing (as a farming practice)
[2016-2017] … evaluation; consultation and building of partnerships; advocacy promotion of ec
[2018 – present] launching of sub-programs and strengthening of partnership with Barangay Putho, Tuntungin and UPLB Biotech; enzymatic composting ec version 2.0 research and development / pilot testing at the facility provided by the barangay for technology transfer

7. Activities (Actions and strategies of implementation)
   This part is important – please clearly explain all related strategies and activities that the school has implemented. Details of each activity can be attached as a part of attachments.

as ec as *Juan2Tree* (as easy as one… two… three…) is a 3 – step solid waste management scheme that basically branches out to three interconnected mechanisms: 1, 2 and 3. The activities, actions and strategies of implementation are presented below according to mechanism.

Mechanism 1

1. Enzymatic Composting Research and Development Activities (2014-2017) - <Doc 1>
2. Composting Research Evaluation and Consultation
   a) UPLB Biotech b) Royal Roads University and c) British Columbia <Doc 2>
3. ec Technology-sharing at different local barangays and schools
4. Sharing of research technical results with the waste management team of Vancouver Municipal, Canada <Doc2>
5. ec 2.0 (SY 2018)
   a) Capstone Research Ideation – III (Immersion, Investigation, Inquiry) <Doc 3>
   b) Technology-transfer and pilot testing at barangay Putho, Tuntungin
      (4 – compost areas set-up)
6. Promotion of ec Technology at the University of the Philippines Rural HS Ideation Competition and the UPLB Agri-Fashion Show Advocacy Campaign <Doc 4>
7. ec Technology Module and PPT learning materials (in progress)

8. Segregation Mechanism
    a) school and barangay – Compostable vs Non-Compostable Campaign
    b) New Monitoring Policies-Red card, Yellow card <Doc 5>
9. Farming / Gardening – application of compost <Doc 6>
10. SHSI Duke of Edinburg International Award (DEIA) – Japan Group Community Service - Volunteer Work (*enzymatic composting – labor and monitoring) <Doc 6>

Mechanism 2

1. The Black Rainbow Project
    a) Capstone Research – Eco-bricks structural design and development; innovative cementing mixture research; creation of Black bottles (hair waste) and skills development on the use of eco-bricks <Doc 7>
    b) Shoot that trash! Chute that trash! campaign – Earth and Life Grade 11 Class
    c) Project Collaboration with Barangay Kapitan Onate on Plastic Bottle Bayanihan <Doc 7>
    d) Daily Monitoring of Rainbow Bottles <Doc 8>
    e) Building of Project 1 (butterfly garden haus1) <Doc 7>
2. Plastic Awareness Campaign
    a) 15-minute Special Topics - (lessons rendered by science teachers across all grade levels) <Doc 9>
    b) Rainbow PET bottles
    c) Black Hair PETbottles <Doc 8>
    d) Use-of-Plastic Reduction Campaign
3. Re-usable and Recyclables
    Fund-raising activities (buy garbage plastics and bins)
4. DEIA- USA Community Service -Volunteer Work

(* monitoring of Rainbow Bottles; Tree Planting Campaign – delivery of advocacy speeches and room-to-room campaign; and fund-raising activities – Juan2Tree Shirts)

Mechanism 3

1. Building of Tree Nursery that will shelter pollution tolerant tree seedlings <Doc 10>
2. Juan2Tree
    a) Hug-a-Tree Social Media Challenge by Gr 10 Math 10 students via twitter, IG and fb <Doc 11>
    b) Plant-a-Tree - Juan 2Tree , Commit! Video Campaign by Gr 11videographers
    c) JUAN2Tree tree-planting launch <Doc 12>
    d) Fb page, twitter and IG monitoring of RA 10176 promulgation <Doc 13>
3. DEIA-Korea Group Community Service -Volunteer Work

(*Tree Planting Launch Parade; Fund-raising activities for the maintenance of the tree nursery; *launch and monitoring of monthly tree-planting parties for students, teachers, parents and friends in the community) <Doc 12>

Others

Local Radio Broadcast to promote the program <Doc14>
as ec as Juan2Tree Launch <Doc 12>
Social Media Promulgation of RA 10176 via JUAN2Tree facebook page <Doc 16>

8. Teaching and learning approaches that the school has integrated the local wisdom (as identified in point 5) for environmental conservation.

South Hill School has integrated enzymatic composting in a number of research projects in Senior High School. In 2014, a team of students and teachers started working on the Research Milestone Project ec 1.0 - Innovative Acceleration of Composting using Municipal Wastes via the enzymatic process. The research was presented in various Ideation conferences and has won a number of awards and distinction. This year, two groups of Grade 12 STEM researchers are focusing on ec 2.0, with the main objective of increasing the NPK level of compost and accelerating further the composting process by incorporating a whey inoculant. A Composting Biokem-experience module is in the process of being developed as a special STEM laboratory experience for senior high school.

Students learn and get to experience first-hand the process of composting as DEIA Volunteers in ec 1.0 and 2.0 while the Technology and Home Economics (THE) elementary and junior high school students

get to apply in their gardening activities the enzymatic compost in growing vegetables such as radish and Chinese cabbage.

A group student-broadcasters study the ec mechanism comprehensively and use their science communication skills in sharing to the public the information as to how enzymatic composting helps in the mitigation of the impacts of climate change in a radio broadcast stint. Also, a number of Grade 11 student enthusiasts create ***as ec as JUAN2Tree*** infomercials, video and infographics for program campaign and promotion. The school has taken initial steps to share its innovative local wisdom with emphasis on its value for environmental conservation to the entire community. South Hill is currently conducting an ec pilot-test at Barangay Putho, Tuntungin (technology-transfer in progress).

9. A) Participation with the community (How the school and community work together in planning and implementing the school programme)

(A) South Hill School had created an excellent relationship with its immediate barangay. It was able to forge a solid partnership with the barangay captain to develop hand-in-hand enzymatic composting version 2.0 – the collaboration project is now a work in progress between Barangay Putho, Tuntungin and the Community Volunteers. The barangay is also active in facilitating the Black Rainbow Project and in the tree-planting aspect of Juan2Tree. Professor Fides Tambalo of the UPLB BioTech had been very accommodating when it comes to consultative discussions about the technical aspects of the program and had provided relevant suggestions as to how to advance the ec mechanism of the program. The Municipality of Los Banos, particularly the Management – Engineering Natural Resources Office (MENRO) department, had been very helpful in formulating possible collaborative activities related to solid waste management.

(B) 0) UPLB Biotech– technical consultation on enzymatic composting
1) Del Biologics – source of enzymes
2) Office of Barangay Putho, Tuntungin – Bayanihan PET, assistance in Juan2Tree planting projects
3) Environmental Research and Development Bureau – provided a consultation on Pollution Tolerant Trees
4) Dairy Training and Research Institute (DITRI) and Philippine Carabao Center – source of whey and milk wastage inoculant
5) ecobricks.org – provides design assistance on the use of eco-bricks
6) South Hill Duke of Edinburgh International Award (DEIA) Volunteers - render labor and conduct fund raising activities: Japan Group – Mechanism 1 USA Group – Mechanism 2 South Korea Group – Mechanism 3
7) Facebook - (free social media advocacy campaign)

10. Activities that the school has contributed to the community related to the school programme and when

1) Segregation of compostable wastes to facilitate the traditional composting mechanism of the barangay – (on-going)
2) enzymatic composting seminar to different barangays (Putho, Maahas, Batong Malake etc.), MENRO Los Banos, local schools, composting groups and local farmers (2017 – present)
3) Pilot – testing of composting ec 2.0 at barangay Putho, Tuntungin (in progress)
4) Shared the practice to the Municipality of Vancouver (January 2016)
5) Arbor Day tree planting (sporadically since 2003) and JUAN2Tree tree planting of VolunTREES (on-going)
6) Promulgation of the Philippine Law RA 10176 via Social Media Juan2tree sub-program (August 2018 - present)
7) PET bottle campaign of local barangay (August – present)

11. Monitoring and evaluation mechanisms and summary of results

Monitoring and Evaluation Mechanisms

1) Enzymatic Composting
   a) Technical evaluation of quality, yield percentage and pathogen analysis of compost product with UPLB Biotech (see summary of results <DOC 18>)
   b) Consultative evaluation with experts from Royal Roads University, British Columbia and the solid waste management team of the Municipality of Vancouver (see summary of report <DOC 2>)
   c) Technical evaluation of the pilot-testing at barangay Putho, Tuntungin (on-going)
2) Juan2Tree sub-program

a) Fb page – social media platform in promulgating the Philippine Law RA 10176
- Page reached
- likes and share
- Tree diagram of commitment to hug-a-tree challenge (see <DOC 11>)

b) Tree Planting commitment of all South Hillians who are 12 years old and above
- annual monitoring and monthly assessment (see <DOC 15>)

3) The Black Rainbow Bottle Project – monitoring of number and masses of the Rainbow plastic bottle, black hair bottles and other plastic bottles. (see DOC 8)
4) Yellow/Red card and Reward Monitoring Mechanisms – an on-going scheme to monitor the students' adherence to the segregation policy; strict monitoring is done by DEIA volunteers, science teachers and the school principal (on-going)

12. Resources used for programme implementation

The management of School Hill School provides access to facilities and financial support both for the research aspect and program implementation. Fund-raising activities are initiated by student-volunteers, parents and teachers to supplement the funding given by the school. The UPLB Biotech share their expertise through free consultations while Del Biologics provides the industrial enzymes for a very minimal fee. The Office of the Barangay Captain mobilizes *bayanihan* to provide the labor required in enzymatic composting.

13. Benefits/Impacts/ positive outcomes of the programme to students, school and the wider community

The as ec as Juan2Tree Program is rooted in the South Hill School core values of Charity, Truth, Justice, and Excellence. Students learn these virtues only when they live by them on a daily basis. That is why, the regular lessons and consistent practice of waste segregation, composting, tree planting are envisioned to be developed as habits that students will bring into adulthood and for the rest of their lives. On the community level, dialogues between school and Barangay officials were essential in locating areas of collaboration. For one, the school was able to convince the Barangay to use enzymatic composting techniques to improve on their old practice. Meanwhile, students are collaborating with the Barangay in developing innovative ways of repurposing plastic wastes. Students who have taken part in the program have a greater appreciation of their community leaders and elders, inspiring a desire for community service. On the school level, classes have been involved starting from the program ideation process. There is high program awareness of its importance as well as mechanics. Moreover, the students embrace the program as they see their ideas come to life. But the greater impact can be seen in changes in individual student behaviors. Across grade levels, students are doing actions beyond those required by the program. For example, several students have taken on the habit of bringing their own personal trash bins in their bags; a habit they have taken up from waste segregation. Students volunteer to work on the construction of a butterfly house, in the tree nursery, even in the monitoring of the programs. Students have also come to realize that their engagement in social media can yield positive effects when used to advocate for relevant causes.

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

The ***as ec as Juan2Tree*** program is closely linked with other SDGs such as 2, 3, 11, 13 and 15. At the core of the program is the enzymatic composting which restores the natural, healthy, life-giving characteristic of the soil. As we share this technology with the community, it makes food growing more robust without harming the environment and even provides mechanisms that help diminish the impacts of climate change. As we use enzymatic compost in planting pollution-tolerant trees, we are making our community safe, and sustainable. Overarching these efforts is educating our students and community on the difference our local efforts are making on mitigating our global problems.
SD Goal 2: The heart of the program, enzymatic composting, facilitates an innovative sustainable farming practice that produces high percentage yield nutrient-rich compost that has been proven to be an effective organic fertilizer resulting to a highly remarkable agricultural yield. Thus, the innovative acceleration of composting via the enzymatic process facilitates the attainment of food security.

SD Goal 3: The Juan2Tree aspect of the program aims to build a tree nursery and plant as many pollution tolerant trees that essentially helps in building a cleaner and greener environment and in promoting Going Green.
SD Goal 11: The Juan2Tree program serves as a catalyst in mobilizing communities in facing various forms of environmental challenges in managing rapid urbanization—from ensuring good air quality to confronting the environmental impact of municipal congestion with significantly reduced vulnerability to risks. The end goal of the Black Rainbow Project is to provide adequate housing and infrastructure to support growing populations using the eco-bricks as fundamental solid foundation.
SD Goal 13: The good practice of enzymatic composting minimizes greenhouse gas emissions and the use of compost provides numerous greenhouse gas benefits both directly through sustained excellent soil health, reduced soil loss, increased water infiltration and storage.
SD Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss. Thus, widely practicing enzymatic composting would result to a return of nutrient back to the soil consequently yielding a highly productive land. In its small way, Juan2Tree would contribute greatly in managing forests. ***as ec as Juan2Tree*** aims to contribute greatly in promoting sustainable agriculture, reforestation, sustainable harvest and trade, and reversal of land degradation.

15. Plan for sustainability and plan for scaling-up/expansion

15.1 Plan for Sustainability

Maintain a strengthened partnership with the following institutions:

1. UPLB Biotech/Del Biologics
2. Barangay Putho, Tuntungin
3. MENRO - Los Banos Municipal
4. Ecobricks.org
5. South Hill School Parents, Teachers and Students

15.2 Scaling-up

Build Partnership with

1. Other barangays, cities and countries
2. Private institutions – (social responsibility projects and activities)
3. Local farmers
4. Department of Education
5. Composting Council (US, ASEAN Centre)
6. NGOs with the same advocacies

Intensify mechanism efforts for Juan2Tree and the Black rainbow Project

16. Achievements from the school's programme "Applying Local Wisdom for Environmental Conservation"

Ideation Champion UP Rural (see <Doc 4>)
3rd Place UPLB Horticultural Advocacy Campaign (see <Doc 4>)
It is an achievement in itself that through the program, every South Hillian is now more connected to the environment, responsive to the global challenges concerning the preservation of the earth and is one with the government in building a greener world.

17. List of supporting documents such as a copy of the school operational plan or school management plan, action plan, learning/ teaching materials, lesson plans, samples of student worksheet, manuals, etc.

Document 1) *Summary (research abstract) of the STEM Research ec 1.0*
Document 2) *Evaluation Report on Enzymatic Composting Research Consultation at UPLB Biotech Royal Roads University, British Columbia and the Municipal of Vancouver*
Document 3) *Capstone Research ec2.0 Ideation – III (Immersion, Investigation, Inquiry) Lesson Plan and Student Outputs*
Document 4*) Promotion of ec Technology at the University of the Philippines Rural HS Ideation Competition and the UPLB Agri-Fashion Show Advocacy Campaign*
Document 5) *Memorandum from the School Principal regarding the New Monitoring Policies-Red card, Yellow card on Trash Segregation*
Document 6-7) *Documentation photos on the use and application of the compost in the different THE gardening activities and DEIA volunteer work*
Document 8) *Sample Monitoring Sheet being used as a Scheme for the schoolwide Rainbow Bottles collection*
Document 9) *Plastic Awareness Campaign - Sample 15-minute Special Topic Lesson Plans - (lessons rendered by science teachers across all grade levels)*
Document 10) *Building of Tree Nursery that will shelter pollution tolerant tree seedlings as initiated by DEIA Volunteeres Japan Group*
Document 11) *Special Project of Math 10 Class – Promulgating RA 10176 applying the principle of geometric series via Facebook as a social media platform- Lesson Plan and Sample Outputs*

Document 12) *Launching of the as ec as JUAN2Tree Program and Sample Volunteer Community Service Report of DEIA South Korea Group as students-in-charge of Juan2Tree*
Document 13) *Sample of Fb page, twitter and IG monitoring of RA 10176 promulgation*
Document 14) Practice –PREP for the *Promotion of as ec as Juan2Tree via live Broadcast*
Document 15) *Sample MONITORING SCHEMES OF STUDENTS AGED 12 YEARS OLD AND ABOVE IN COMPLIANCE TO REPUBLIC ACT NO. 10176*
Document 16*) Sample Infographic Posters - Social Media Promulgation of RA 10176 via JUAN2Tree facebook page and Conceptual Framework of the Program embedded in the School Plan*
Document 17. *Sample Memorandum of Agreement with Partner Institutions*
Document 18. *Sample Summary of Monitoring Schemes in the different Mechanisms: 1. Compost Quality Monitoring and Evaluation Results 2. Juan 2 Tree Social Media Statistics*

18. Photos related to the activity/programme

as ec as Juan2Tree - Doing enzymatic composting is as easy as counting from one… to… three…

Wonder Investigate Innovate - A consultation with Prof. Fides Tambalo of the UPLB Biotechnology department and the students of South Hill School on **e**nzymatic **C**omposting 2.0

The TREEggered Juans! South Hillians commit to VolunTREE ☺

ec2.0 with the CommuniTREE – Young South Hillian Scientists working on ec 2.o pilot-testing with the barangay captain of Putho-Tuntungin

JUAN2Tree meets The Black Rainbow –DEIA South Korea Volunteers build A Tree Nursery for pollution tolerant trees while DEIA-USA Volunteers build a Butterfly garden using plastic bottles