ENERGY TRANSITION PARTNERSHIP

IIEE
Indonesian Institute for Energy Economics

ENERGY EFFICIENCY AND ENERGY CONSERVATION AWARENESS RAISING IN THE EDUCATION SECTOR, INCLUDING AN ENERGY SAVING COMPETITION

GRANT REF.: ETP-CFP-VIP2-08/2021

Final Report

2022

illustration by Atlascompany - Freepik.com

Submitted:

December 30th, 2022

PROJECT INFORMATION AND RESOURCES

Project title:	Energy Efficiency and Energy Conservation Awareness Raising in the Education Sector, Including an Energy Saving Competition
Grantee Name	Indonesian Institute for Energy Economics (IIEE)
Responsible Person:	Ade Djunainah
Telephone Number:	+62 812-9415-729
Email Address:	ade@iiee.or.id

Project Starting Date	**Project Completion Date**	
	Originally planned	Current estimate
1st week of March 2022	3rd week of August 2022	3rd week of September 2022

Approved Total Budget (US$)	**Latest Signed Amended Budget (US$)**
50,167	60,044

Approval Date of Amendment	**Nature of the Amendment**
20 August 2022	a. Increase of the grant budget b. Additional activities c. Extension of the Amendment duration d. Revision of the payment schedule

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

The “Energy Efficiency and Energy Conservation Awareness Raising in the Education Sector" is a program initiated by ETP-UNOPS, Indonesian Ministry of Energy and Mineral Resources, and Indonesian Ministry of Education, and was executed by IIEE. The program had been set up to provide a lower cost and shorter-term solution for energy consumers by increasing the Energy Efficiency and Conservation (EEC) awareness, in this case, among the students in East Java province. The primary objective of this program was to teach students to contribute to the reduction of energy consumption in schools and homes. They learned about energy savings and efficiency and the implementation in their surroundings.

As the specific objectives of this program, students learned where electricity comes from, how it is made and how it impacts the environment and the people. Then they were taught that they can play a part in saving the use of electricity and in turn, help to save the environment. This is of course, done within their capabilities as students. Students learned how they can save energy in their everyday life, at school and at home to encourage energy savings behavior changes, such as, turning off lights when not in use, and turning down the AC temperature to an optimal level.

During this program, there were some key activities held to achieve these objectives:

(i) School Screening
Participating schools in this program were selected in coordination with the Education Office of East Java Province and Surabaya City, based on the requested criteria to ensure an optimal result after the program.

(ii) Online Training and School Visits
IIEE conducted online training to all students and energy ambassadors to the participating schools about energy efficiency and its implementation. School visits were held after the training phase to evaluate and monitor students' understanding as well as their EEC program implementation both in schools and homes.

(iii) Energy Saving Competition
Each participating schools competed to lower their electricity consumption in three months duration. One of the criteria to determine the winner were the schools with the highest percentage of electricity consumption reduction.

(iv) Program Publication
The publication of this program was done by IIEE in cooperation with Ministry of Energy and Mineral Resources and ETP-UNOPS through social media (Instagram, LinkedIn, YouTube) and other platforms (Television, Website, and Newsletter).

A total of 24 schools participated in the city of Surabaya and Gresik, 8 schools from each level (elementary, junior high school and senior high school), with total participants of 119 students and 26 teachers.

During the 3 months of training and monitoring, it was accumulated the amount of electricity consumption in all schools participated, had gone down by up to 69 MWh. This was equivalent to the reduction of CO_2 emission, as high as 60.4-tons. Based on the result of plenary meeting between competition judges and the facilitator team from IIEE, it was determined the top 3 Best

School winners from each education level. Elementary School State of Jajartunggal III/452, Junior High School State 39 of Surabaya, and Senior High School State 15 of Surabaya were selected as the first winner from each level.

As part of the media campaign and social engagement, this program had succeeded in creating a snowball effect by directly involving 20,295 people to participate in energy-saving behavior, as well as indirectly engaging up to 93,803 people.

The success of this program gives encouragement for future programs to be conducted in other regions in Indonesia. To realize this in a broader framework, however, strong support from various parties, particularly the government, at both the national and regional levels is required. Such assistance is required not only for technical assistance, but also in terms of fund and morale. Government support will encourage implementing units in the government respective authorization area to work together to support the energy efficiency and conservation program as part of a strategic effort to support Indonesia's energy transition in a sustainable manner. Departing from this thought, actions to the existing conditions of program implementation should be considered so that it can focus on the type of support, whether from the government or from other stakeholders and escalate the potential results.

1. BACKGROUND

Problem Statement

Global energy consumption has risen significantly over the last sixty years since the Industrial Revolution. In the 1960's the global primary energy consumption reached 43,301 TWh, with coal and fossil fuel as the main source of energy. In the 1990's, the consumption had reached 101,049 TWh, with unaltered source of energy. This means, in the span of 30 years, the global primary energy consumption had increased by 51,749 TWh or more than 30 billion BOE. This escalation is also directly proportional to the production of CO_2 emissions which consequently raising the global average temperature. This effect can be seen from the global temperature anomaly difference between 1968 and 2021 which is -0.08°C and 0.85°C respectively.

In 2015, 197 countries signed the Paris Agreement, which legally binds international treaty on climate change, adopted by 196 Parties at COP 21 in Paris on 12 December 2015 and entered into force on 4 November 2016. The goal is to limit global temperature rise well below 2°C, preferably to 1.5°C, compared to pre-industry levels. Indonesia has committed to reduce greenhouse gas (GHG) emission reduction by 29% through self-effort and up to 41% with international assistance. With this commitment, demand-side energy efficiency and conservation (EEC) would serve as a lower cost and shorter-term solution than the supply-side EEC. The National General Energy Plan (RUEN) has targeted 17% and 39% efficiency in 2025 and 2050 from the total energy demand compared with the business-as-usual scenario. EEC would also reduce environmental impact (pollution and greenhouse gas emission from fossil fuel burning) and increase national energy self-sufficiency due to fuel import reduction.

In 2020-2030 Indonesia will have a massive demographic bonus. Systematic efforts should be prepared the future productive-age generation to support the demand-side EEC action. Collaborating with UNOPS intention, the proposed project will raise the younger generation's awareness on energy efficiency and conservation and will build their energy conservation behavior. Education sector or school institution, as a representative of younger generation, is chosen as the project's main beneficiary.

The Program

"Good habits formed at youth make all the difference." - Aristotle

With this in mind, UN has initiated a habit-forming program in schools to raise awareness of energy efficiency. With the increasing awareness of energy efficiency and conservation (EEC), we are challenged to come with initiatives and innovation to serve as a lower cost and shorter-term solution than the supply-side EEC. The National General Energy Plan (RUEN) has targeted 17% and 39% efficiency in 2025 and 2050 from the total energy demand compared with the business-as-usual scenario. EEC would also reduce environmental impact (pollution and greenhouse gas emission from fossil fuel burning) and increase national energy self-sufficiency due to fuel import reduction. This will contribute to Indonesia's commitment to greenhouse gas emission reduction as ratified by Indonesia in the Paris Agreement.

Objectives

The primary objective of this program is to contribute to the reduction in energy consumption in schools and homes. Through this program, students will be assisted to learn about energy savings and efficiency and the implementation on their surroundings.

The specific objectives of this program are:

(v) students learned where electricity comes from, how it is made and how it impacts the environment to increase their awareness and capacity about energy efficiency in the selected schools in East Java,

(vi) students learned how they can save energy in their everyday life, at school and at home to encourage energy savings behavior changes,

(vii) students, teacher, and schools implemented what they are taught in the energy efficiency programs and activities to their everyday life by designing bottom-up energy-saving policies.

2. DISCUSSION OF THE RESULTS PER ACTIVITIES

Major Outcome *: Stakeholders (relevant Government entities, Public sector companies, Financial institutions, Private entities, Academia, and Consumers) involved in the RE/EE value chain, are knowledgeable and better informed to advance the energy transition agenda*

Project Indicator *: Increasing awareness and capacity about energy efficiency and conservation of students and teachers in the selected schools in East Java*

Meeting with stakeholders

In the selection of schools, coordination had been initiated with the Ministry of Energy and Mineral Resources c.q., Directorate of Energy Conservation. One of the expected results in this coordination was the issuance of a cover letter addressed to the Education Office of East Java Province as the organizer of the program. This letter explained about program information and a recommendation request for 8 schools from each level as the prospective participants to participate in this program.

Furthermore, the school's selection was determined based on discussions with the Education Office of East Java Province. The recommendation given by the Education Office became a valid basis for the school to issue a Decree from the Principal so as to make this program one of the school's priorities. The process of involving selected schools was carried out through the stages of socialization to each of these schools.

Figure 1 – Documentation of Meetings with Stakeholders

Develop work plan and training modules on energy efficiency and conservation

Training modules were developed in Bahasa Indonesia as a main reference for training sessions. Modules prepared separately for each school level. The topics covered in the modules include:

- What is energy?
- Electricity consumption at home
- Energy saving behavior
- Energy saving to reduce global warming
- Energy saving campaign
- Introduction to renewable energy

The printed version of all training modules had been submitted to the ETP-UNOPS Indonesia Country Manager.

Figure 2 – Training Modules for Each School Levels

Socialization to participating schools

After the school selection, the next step was to introduce the program to each selected school regarding the goals and benefits of the program in general and the series of activities including energy-saving implementation competitions. The socialization of the program was carried out through online meeting with the principal of selected schools or vice principal in the field of student affairs and/or the program. This socialization was intended to introduce the overall program and obtain initial assessment about the inventory of school profile data, school plans and technical preparations of the energy-saving ambassador program.

Figure 3 – Documentation of Program Socialization

Program launching

Program launching was intended to officially engage all stakeholders to support the success in achieving the objectives of this program. During this event, all stakeholders involved delivered their expectations and support towards the implementation of this program. The agenda of this program launching event consisted of several opening remarks by the representatives from each stakeholder group (i.e., IIEE, ETP-UNOPS, Education Office of East Java, and Directorate of Energy Conservation, MEMR), also official inauguration of the Energy Ambassadors. On the other hand, this program launching also assisted the Energy Managers and the Energy Ambassadors in perceiving several topics that were closely discussed along the program, including:

- Energy efficiency and conservation programs, also the objectives of this program
- Understanding enhancement regarding interrelationship between energy and environment
- Development of conservation energy policy at school

This event had been held on April 5th, 2022, through online meeting platform. All stakeholders were invited to attend this event; however, the representative of Education Office of East Java could not join the event due to unforeseen agenda on that time. The agenda started with an opening by MC and singing the national anthem “Indonesia Raya”. The next agenda was remarks from Indonesian Institute of Energy Economics delivered by the Secretary of IIEE, Mr. Hakimul Batih. Then followed by the remarks from Energy Transition Partnership (ETP) UNOPS delivered by ETP Country Manager for Indonesia, Mr. Aang Darmawan. Next agenda was the remarks and official inauguration by the Directorate of Energy Conservation, Ministry of Energy and Mineral Resources. This session was led by the Director of Energy Conservation, Ms. L.N. Puspa Dewi. Lastly, the MC assisted for documentation session and concluded the event.

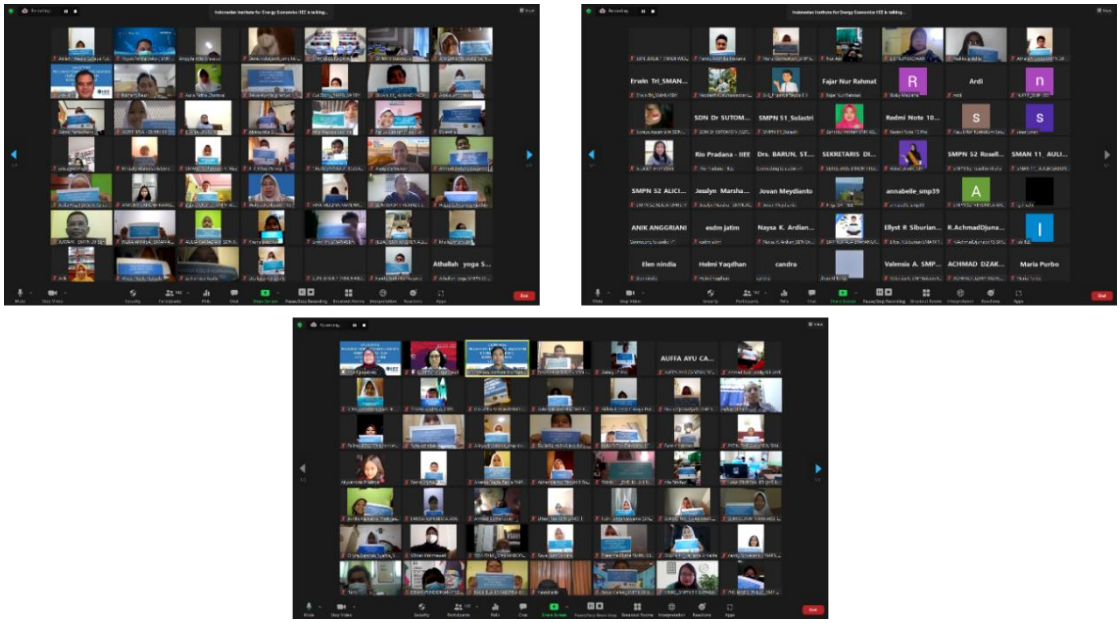


Figure 4 – Documentation of Program Launching Event

Awareness raising training on EEC for teachers and students and Training for energy saving behavioral changes for teachers and students

The training for awareness raising on EEC and energy saving behavioral changes for teachers (Energy Managers) and students (Energy Ambassadors) were intended to give the initial capacity building for all participants in this program. The topics discussed were divided into several days of training. The first day of training was dedicated to the Energy Managers and the school's top-level management (Principal, etc.). After the training for Energy Managers had been conducted, it was then followed by 3 (three) days of training for Energy Ambassadors on each school level.

TRAINING FOR ENERGY MANAGERS

Training for Energy Managers was held on April 5th, 2022. Teachers who had been appointed by the schools as the Energy Managers were introduced on energy efficiency and conservation materials during this event. A pre-test was conducted for the teachers to assess their knowledge of energy and energy efficiency issues.

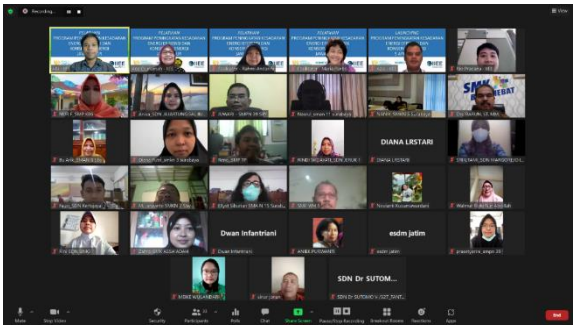


Figure 5 – Training for Energy Managers

In the concept of energy conservation, there was the term Energy Management. The energy management model was adopting financial management; to make an inventory of expenditure items and manage them. The concept of PDCA – Plan, Do, Check, and Act was also applied to Energy Management. In implementing Energy Management, commitment was needed, and for that, all the teachers were encouraged to submit a commitment form to carry out energy management in this program.

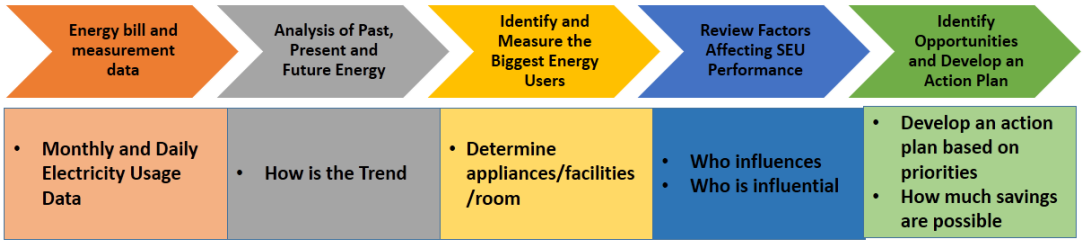


Figure 6 – Action Plan Flow

Another material presented was about the largest users of electrical energy in various sectors, especially in households. In the commercial sector, the equipment that consumed the most electricity is HVAC equipment. The Figure 7 below shows the results of the research on electricity consumption per household appliance.

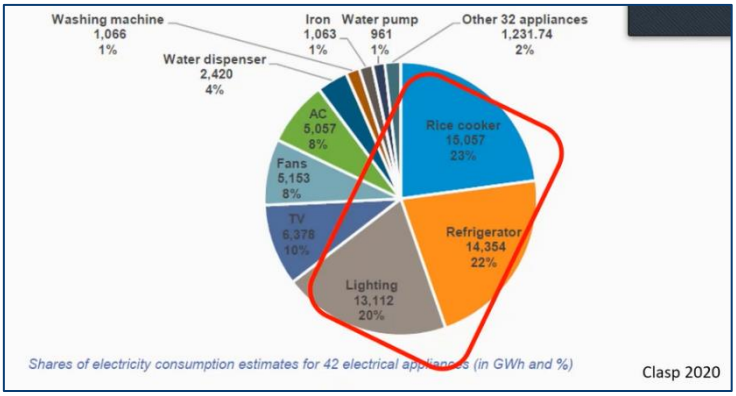


Figure 7 – Most Consumptive Households' Appliances

The end of the training, followed by an explanation of the action plan that would be carried out from April to July 2022 which was summarized in the following activity stages, including outputs, outcomes, and goals.

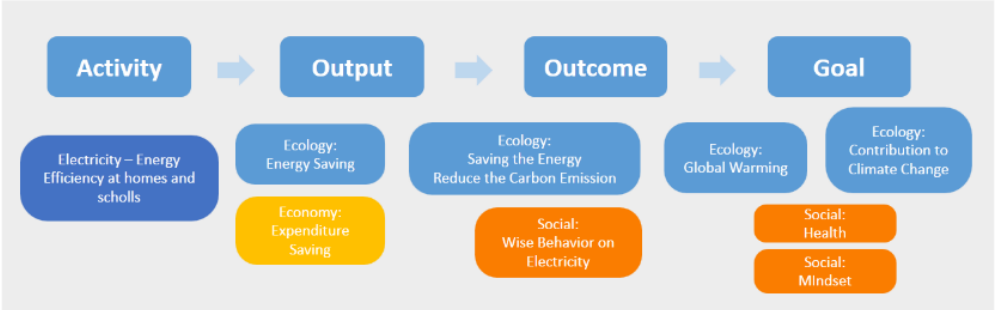


Figure 8 – Activity Plan

Number of trainees

There were 28 teachers participating the Training for Energy Managers. Out of the 28 teachers, 5 of them were the principals. From a total of 23 energy manager participants, there were 5 male teachers and 18 female teachers. Out of 5 principals who also attended the training, consisted of 4 male and only 1 female principals.

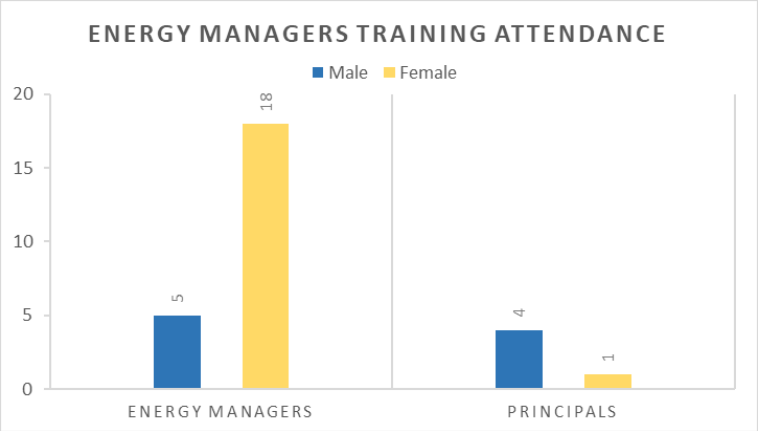


Figure 9 – Number of Participants on Training for Energy Managers

TRAINING FOR ENERGY AMBASSADORS – ELEMENTARY SCHOOL

Training for Energy Ambassadors of the elementary school level was conducted online 3 times. The first, second and third training was held on 6th, 11th, and 18th of April 2022, respectively.

In the first training, it began with a pre-test to measure the initial understanding of energy. Next, the team presented interactive material, regarding the introduction of energy, why we should save energy and examples of behaviors that could save energy. During the presentation of material, it was interspersed with group discussions in breakout rooms and real-time polls. Students were asked to estimate the 3 household appliances consuming the most electricity in the household. Students were also provided with how to read numbers on the kWh-meter and to calculate daily electricity consumption. The first training closed with the delivery of information on the data that students had to collect to support the energy-saving ambassador program.

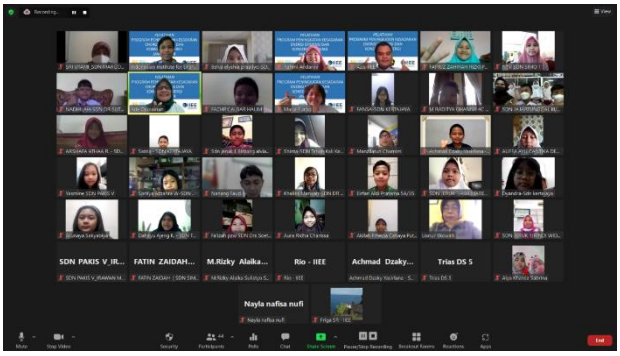


Figure 10 – First Training of Energy Ambassadors for Elementary School

The second training focused on behavior change, examples of energy-saving campaign activities and the introduction of renewable energy. At the beginning, the trainers reviewed about energy

vampires and examples of habits in the house that could lead to energy vampires. In the "behavior change" material, it was stated that people do not immediately "care" or even "do" what we were campaigning for, but there were stages such as:

ANGRY - DON'T LIKE - DISTRUCTED - APATISTIC - NEUTRAL - KNOWN - CARE - DO - HABITUAL - SPREAD

Data collection tasks

In the early stages, the activities carried out were to identify the use of electricity in homes and schools. The data required was the type of kWh-meter (pre-paid or post-paid), layout of homes and schools, daily electricity usage data, and identification of electronic devices and lights (wattage and duration of use). Data from Energy Ambassadors was submitted through a pre-determined cloud storage and online form.

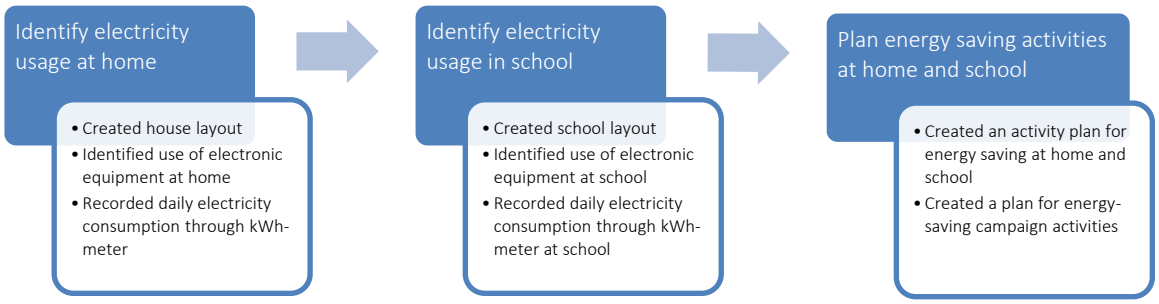


Figure 11 – Task Flow

Number of trainees

From a total of 40 participants, 35 Energy Ambassadors attended the first training consisting of 11 male and 24 female. In the second training there were 34 Energy Ambassadors, consisting of 9 male and 25 female. On the third day, there were 37 Energy Ambassadors attended the training consisting of 9 male and 28 female.

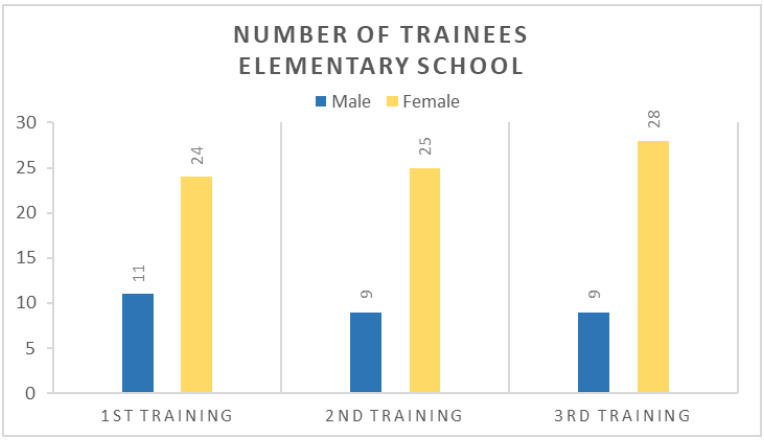


Figure 12 – Number of Trainees for the Elementary School Level

TRAINING FOR ENERGY AMBASSADORS – JUNIOR HIGH SCHOOL

Training to increase awareness of energy saving and behavior change for the Energy Ambassadors from the junior high school level was conducted 3 times online. The first training was held on April 7th, 2022, the second training on April 13th, 2022, and the third training on April 20th, 2022.

The first training began with a pre-test to determine the initial understanding of energy from Energy Ambassadors. The pre-test using the Quizizz platform consisted of 15 questions. Of the 42 Energy Ambassadors, 3 people did not take the pre-test. The training continued with the introduction of energy, types of energy and energy changes. Basically, the Energy Ambassadors were familiar with these materials because they have acquired them at school. There were discussion sessions between students in breakout rooms, they were asked to discuss examples of changes in energy forms and identify appliances in their home that use electrical energy. The first session ended with a poll on the household appliances that consume the most electricity.

During the second session, the Energy Ambassadors were provided with materials on why we should save energy and examples of energy savings that they could do, such as using natural light, using air conditioning wisely, using natural ventilation, and killing energy vampires. Knowledge of energy vampires was a new knowledge for them, and they realized that there were many habits at home and at school that caused energy vampires. They were also invited to calculate energy costs and recorded daily electricity consumption at home and at school.

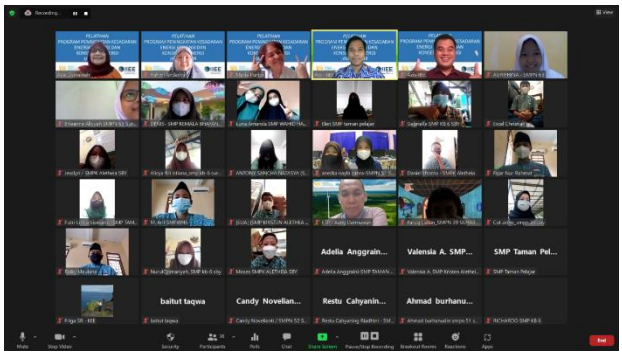


Figure 13 – First Training of Energy Ambassadors for Junior High School

On the second day of training, the Energy Ambassadors reviewed the material from the previous meeting, examples of habits that led to energy vampires. Furthermore, the training also discussed the materials on behavior change, energy-saving campaigns, and the introduction of renewable energy. In the behavioral changes' session, it was conveyed that changes should be done gradually. Stages of behavior change, including:

ANGRY - DON'T LIKE - DISTRUCTED - APATISTIC - NEUTRAL - KNOWN - CARE - DO - HABITUAL - SPREAD

Data collection and work plan tasks

To implement energy savings, the Energy Ambassadors were required to work as individuals and as a team. As an individual, they would identify the use of electrical energy at home, starting from making house layouts, recording daily electricity consumption, and identifying electronic equipment in their homes (wattage and duration of use). Meanwhile, as a team, they would identify the use of electricity in schools, starting from making school layouts, recording daily

electricity consumption, and identifying electronic equipment used at school (wattage and duration of use). In addition, they created their plan on energy-saving activities including energy-saving campaigns, based on the data and identification of problems that had been obtained.

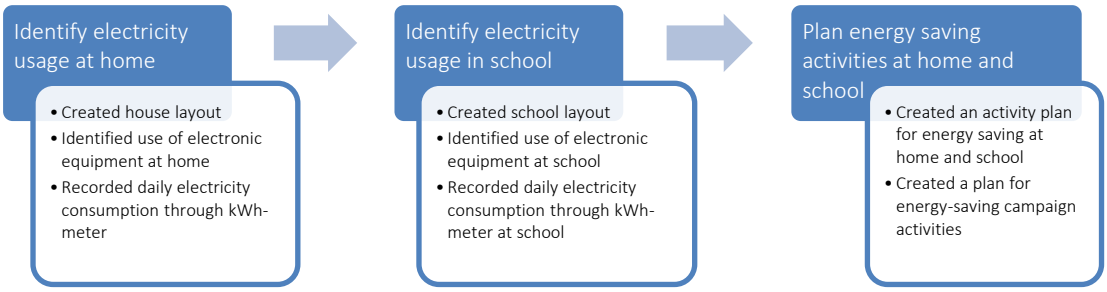


Figure 14 – Task Flow

Number of trainees

The number of Energy Ambassadors for the junior high school level was 42 students, there were 2 schools that sent 6 students to join the trainings. Of the 42 people, the number of Energy Ambassadors who participated in the first training was 32 people, consisting of 11 male and 21 female. While in the second training the number of students who attended was 36 people consisting of 12 male and 24 female. In the third training, 34 of the Energy Ambassadors were present, consisting of 10 male and 24 female.

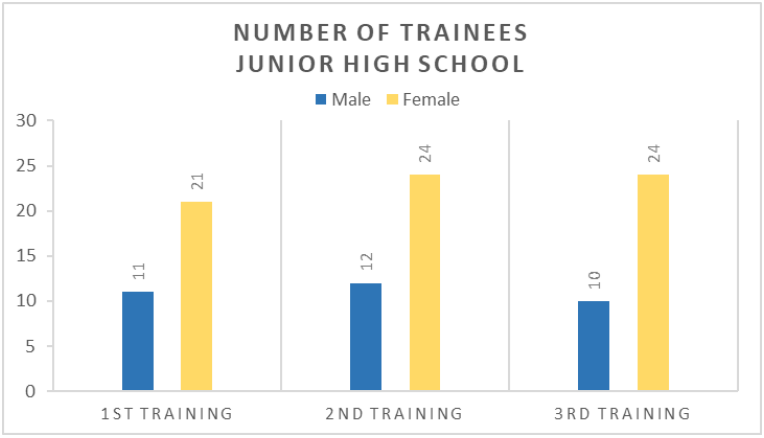


Figure 15 – Number of Trainees for the Junior High School Level

TRAINING FOR ENERGY AMBASSADORS – SENIOR HIGH SCHOOL

Training for Energy Ambassadors of the senior high school level was conducted online 3 times. The first, second and third training was held on 8th, 14th, and 22nd of April 2022, respectively.

Figure 16 – First Training of Energy Ambassadors for Senior High School

"What does it mean to be an Energy Saving Ambassador?" was the opening question of the first day of the training. This question was answered by one of the students, “An energy saving ambassador is someone who pioneered in energy conservation action.” Continued with the pre-test activities after the lighter questions. Among three of the highest pre-test score result, two of whom were female students and one was a male student.

After the pre-test, the facilitator presented a picture to show the stages of behavior change process. All of the students were asked to respond according to the variety of emotions or actions available in the picture when they know, hear, or see one of their peer spread information and awareness in their environment. The stages of reactions and emotions, including:

ANGRY - DON'T LIKE - DISTRUCTED - APATISTIC - NEUTRAL - KNOW - CARE - DO - HABITUAL - SPREAD

Data collection and work plan tasks

All Energy Ambassadors were requested to work both individually and collaboratively to implement energy-saving programs. Individually, they had to identify the use of electrical energy at home, starting with mapping their house layouts, recording daily electricity consumption, and identifying electronic equipment in their homes (wattage and duration of use). Meanwhile, the Energy Ambassadors also worked together to identify the use of electricity in schools, starting with mapping the school layouts, recording daily electricity consumption, and identifying electronic equipment used in schools (wattage and duration of use). Furthermore, the Energy Ambassadors developed their plan of energy-saving activities, such as energy-saving campaigns, based on data and problem identification.

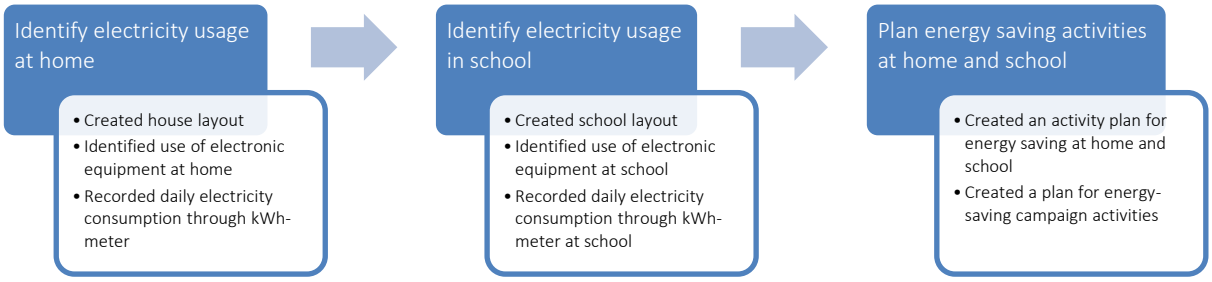


Figure 17 – Task Flow

Number of trainees

From a total of 38 training participants, 33 of them attended the first training consisting of 14 male and 19 female students. On the second training there were 33 attendees, consisting of 16 male and 17 female students. On the third day, 38 Energy Ambassadors attended the training consisting of 18 male and 20 female students.

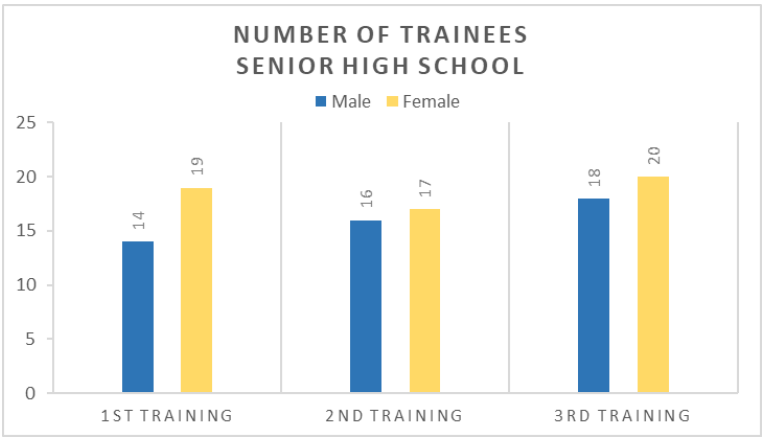


Figure 18 – Number of Trainees for the Senior High School Level

Monitoring and evaluation

After series of awareness raising and energy-saving behavioral changes training, the team progressed towards the next phase of the project i.e., the Monitoring and Evaluation. Monitoring and Evaluation (abbr. Monev) was a very important series of activity in a program. Monev activities aimed to ensure the achievement of program objectives and reviewed the process and progress of the program implementation by the Energy Ambassadors.

Monev activities were conducted 3 times. There were changes in the implementation during this project. The third monev was originally planned to be conducted online. Based on the evaluation of previous activities and consideration of inputs and discussions with stakeholders involved in this project, this activity was then carried out offline.

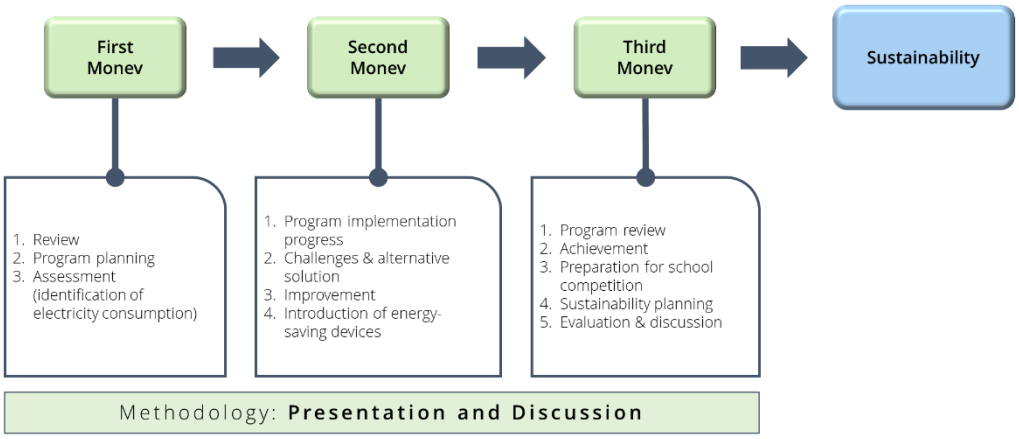


Figure 19 – Stages for Monitoring and Evaluation

Below are some topics that were discussed throughout the series of Monev activities:

- The attendance of the participants including their punctuality
- Energy efficiency program planning both in school and homes
- Program implementation, evaluation, and development plan
- Testimonial and documentation

MONITORING AND EVALUATION #1

The first monitoring and evaluation was conducted online on May 17th – May 23rd, 2022, for all participating schools. The facilitators were divided into 3 groups of breakout room and the participating schools were assigned to each of the breakout rooms.

During the breakout room session, each participating school was given 30 minutes to present their energy saving and campaign activities. Following their presentation, the facilitator team provided feedback to further improve their work plan. In these meetings, the team assisted schools to make:

- Assessment & data collection (identification of electricity consumption)
- Program planning

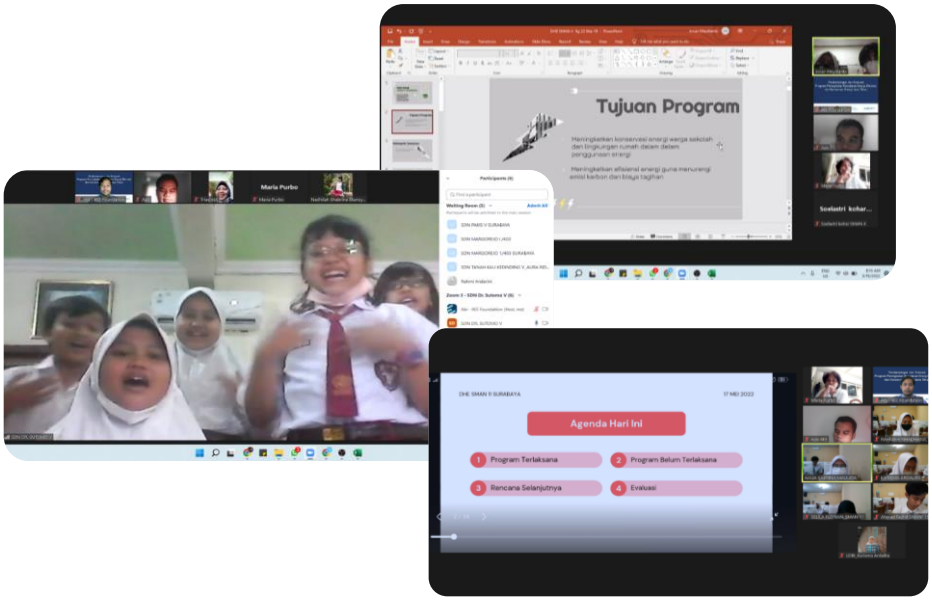


Figure 20 – Documentations of Monitoring and Evaluation #1

Takeaways during the Monev #1

- Some students did not understand about how to read kWh meter and monitor their electricity consumption. The facilitators re-explained about this material in Monev #1.
- Some students were not confident to present their progress. The facilitators then encouraged and motivated them while asking for assistance from their teacher.
- Some schools had not prepared their program planning due to the limited time and lack of understanding about how to implement EE program in their area. The facilitators tried to assist these schools step-by-step.
- There was instability of internet connection issue both from the teachers and students. While not all students had their smartphone at school.
- Some schools had more than 1 kWh meter. The facilitators suggested to determine 1 kWh meter with the highest load or the easiest to monitor the behavioral changes.
- Teachers as the Energy Manager had significant role to drive and ensure schools' commitment towards the EE program.

MONITORING AND EVALUATION #2

The second monitoring and evaluation had been carried out offline on June 20th – June 23rd, 2022. The IIEE team was divided into 2 groups of facilitators to visit 12 schools each group. This activity was focusing on having the coherent perspective regarding this program implementation including the challenges faced by each participating school.

The objective of this monitoring and evaluation activity was to see the Energy Saving Ambassadors' progress in carrying out the programs, including:

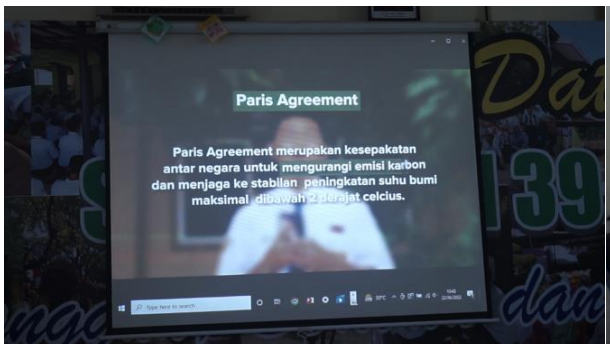
- Program implementation
- Challenges & alternative solution
- Opportunity identification

- Introduction to the measurement of device's electricity consumption

The implementation of this activity went smoothly. All participants both the students and teachers expressed their enthusiasm by asking questions and engaged in discussions with the facilitators about their implementation, constraints, and program plans.

Graffiti competition held by one of the participating schools

Banner used by school for campaigning the EE behavior



Banner used by school for campaigning the EE behavior

Graffiti competition held by one of the participating schools

Figure 21 – Documentations of Monitoring and Evaluation #2

Takeaways during the Monev #2

- Overall, most of the schools' program had been accomplished accordingly.
- There were several schools that were lagging in their program implementation progress.
- Some schools with fair progress needed further development for the implementation. The facilitators were providing feedback for refining their implementation.
- Some schools already had better accomplishment compared to the initial expectation.
- A few schools had not been able to visualize their electricity consumption using graph (bar or line chart). The facilitators then provided quick tutorial on how to create a chart.
- Some of the school's campaigns material (poster, sticker, illustration, etc.) had not incorporated the ETP-UNOPS and MEMR logo. The facilitators requested to revise their design by providing a handbook for the next activity.

MONITORING AND EVALUATION #3

This was the last activity for the project Monev phase. The third monitoring and evaluation was initially planned to be conducted through online meetings. However, based on schools' inputs during the second Monev also discussion with ETP's Programme Manager, the third Monev was changed to offline meetings by visiting all the participating schools as the previous Monev. This activity had been carried out on July 25th – July 28th, 2022. The purpose of this activity was to see the progress from the previous monitoring, with highlights during the discussion including:

- Program review & evaluation
- Achievements
- Preparation for school competition
- Sustainability planning

Figure 22 – Documentations of Monitoring and Evaluation #3

Takeaways during the Monev #3

- Almost all participating schools had indicated a satisfactory progress towards their EE program implementation. They made an exceptional adjustment from the Monev #2.
- Some minor issues including the absence of Principal's Decree as one of schools' commitment had been addressed by the facilitators.
- Students' confidence in presenting their material had improved compared to the previous Monev activities.
- Several campaigns had been managed by the Energy Saving Ambassadors team both through the social media and direct campaigns.
- The Energy Saving Ambassadors had been able to point out the reduction (if any) or justification of the electricity consumption both in school and homes.
- Some schools especially the Senior High had been capable to explain GHG (CO_2e) emission calculation from the data that had been collected.

Energy Saving Competition

The Energy Saving Competition was held as one method of encouragement to the Energy Saving Ambassadors in carrying out their program implementation during this project. This competition also proven to motivate the participants in preparing and executing thoughtful planning and implementation to maximize their achievement.

Series of activities that had been carried out to support the preparation for this competition are:

JUDGING SCHEDULE ARRANGEMENT

The arrangement of judging schedule was held on Thursday, August 4th, 2022, through online meeting. The team had invited the Energy Managers from all participating schools to attend this online meeting for determining the schedule. To ensure fairness, the team only set the allocated time schedule for each school level (i.e., Elementary, Junior High, and Senior High). Then for each school schedule were plotted based on wheel of fortune that was drawn during online meeting.

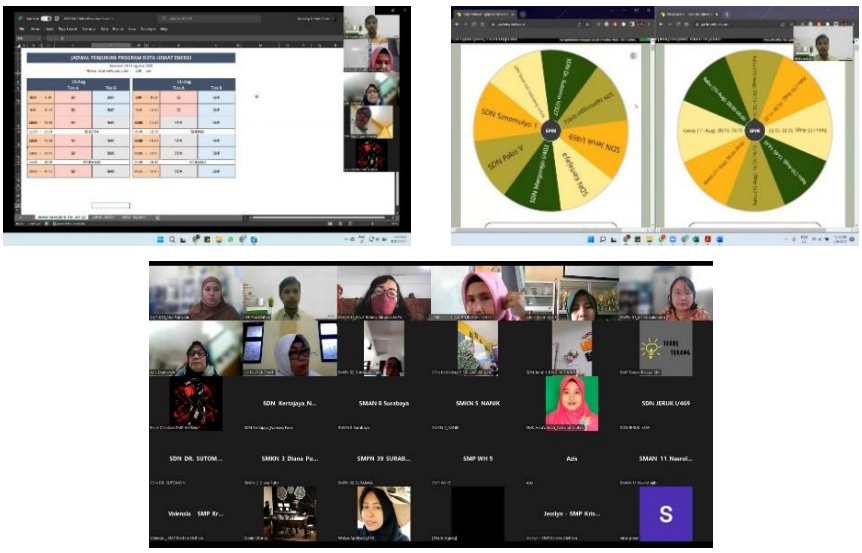


Figure 23 – Documentation of Judging Schedule Arrangement

The scheduling result are shown in the following figure.

COMPETITION SCHEDULE

Surabaya, 10-11 Agustus 2022

Total allocated time per school : 1:00 hour

10-Aug	Group A	Group B
8:00 - 9:00	SDN Jeruk I/469	SMPN 39
9:15 - 10:15	SDN Margorejo I/403	SMP Wachid Hasjim 5
10:30 - 11:30	SDN Tanah Kali Kedinding V/579	SMKN 3
11:30 - 12:30	BREAK	
12:30 - 13:30	SDN Pakis V	SMKN 5
13:45 - 14:45	SDN Dr. Sutomo V/327	SMK Assa'adah
14:45 - 15:15	BREAK	
15:15 - 16:15	SDN Simomulyo 1	SMKN 2

11-Aug	Group A	Group B
8:00 - 9:00	SDN Jajartunggal III/452	SMP Taman Pelajar
9:15 - 10:15	SDN Kertajaya	SMP Kemala Bhayangkari 6
10:30 - 11:30	SMAN 15	SMPN 52
11:30 - 12:30	BREAK	
12:30 - 13:30	SMAN 11	SMPN 51
13:45 - 14:45	SMAN 4	SMP Kristen Alethela
14:45 - 15:15	BREAK	
15:15 - 16:15	SMAN 8	SMPN 63

Figure 24 – Competition Judging Schedule

ONLINE BRIEFING TO THE JURY

The briefing to the jury was held on Friday, August 5th, 2022, through online meeting. During this activity, the team introduced the judges' team and schedule, also explained the judging criteria and other technical information regarding the competition judging day. The judges for this competition were selected from several organizational elements, as follow:

- Representatives of the Ministry of Energy and Mineral Resources
- Representatives of ETP-UNOPS
- Representatives of the East Java Provincial Education Office
- Representatives of the Surabaya City Education Office
- Representatives from academic entity/University (i.e., ITS Surabaya)

Judges Team	
Team A	Team B
Dr. Erick Hutrindo (MEMR - *Leader*)	Hakimul Batih, Ph.D. (IIEE - *Leader*)
Aang Darmawan, S.Sos., M.Sc. (ETP-UNOPS)	Dr. Wawan Aries W, S.T., M.T. (ITS)
F.F. Hendro Gunawan, S.T., M.Sc. (MEMR)	Nurcahyanto, S.T., M.Sc. (MEMR)
Drs. Hari Indarjoko, M.Pd. (Education Office)	Dra. Heni Inawati Indah P, M.Pd. (Education Office)
Yoyok Hadisaputro, S.Sos. (Education Office)	Kunaefi, S.T., M.Sc. (MEMR)

Judges Team	
Team A	Team B
Dr. Erick Hutrindo (MEMR - *Leader*)	Hakimul Batih, Ph.D. (IIEE - *Leader*)
Aang Darmawan, S.Sos., M.Sc. (ETP-UNOPS)	Dr. Wawan Aries W, S.T., M.T. (ITS)
F.F. Hendro Gunawan, S.T., M.Sc. (MEMR)	Nurcahyanto, S.T., M.Sc. (MEMR)
Drs. Hari Indarjoko, M.Pd. (Education Office)	Dra. Heni Inawati Indah P, M.Pd. (Education Office)
Dr. Dipl.-Ing. Sri Nastiti N. Ekasiwi, M.T.	Yoyok Hadisaputro, S.Sos. (Education Office)

Figure 25 – Composition of Judges

Judging Criteria

The judging criteria were divided into 4 (four) main criteria, and each main criterion consists of several assessment points. Each of the following criteria had different score proportion to the final score. Breakdown of each judging criterion as well as the score proportion are described below.

I. **The School Commitment (20%)**
   I.1 Program Legality
   I.2 The Activity Energy Manager and Energy Saving Ambassador
   I.3 Efficiency Achievement
   I.4 Continuity/Sustainability

II. **Program at School (30%)**
   II.1 Program Tracking and Monitoring
   II.2 Program management skills through teamwork
   II.3 School People's involvement
   II.4 Behavioral changes of the School people

III. **Program at Home and Non-School Environment (30%)**
   III.1 Activities behavior changes at home
   III.2 Efficiency Achievement
   III.3 Socialization to other parties

IV. **Creativity (20%)**
   IV.1 Number of Houses involved in energy efficiency
   IV.2 Innovations
   IV.3 Presentation and portfolio completeness
   IV.4 Others (Point for Senior vocational high schools) CO2 Emission Calculation

PRESENTATION MATERIAL SUBMISSION

All participating schools were required to submit their presentation material before the competition judging day. The submission was done through cloud storage that had been determined by the team at the latest on Tuesday, August 9th, 2022, at 20.00 local time.

COMPETITION JUDGING DAY

The judging day was held on Wednesday and Thursday, August 10th– 11th, 2022. This activity was taken place at the Education Office Building of East Java Province Surabaya. In the judging session, each school were given a total allocation time of 60 minutes consisting of 15 minutes for presentation from school and 45 minutes for Q&A from the judges.

Figure 26 – Documentation of Competition Judging Day

PLENARY MEETING TO DETERMINE WINNERS

The plenary meeting was held on Thursday, August 11th, 2022, at 19.00 – 21.00 local time, taken place at the meeting room of Santika Premiere Gubeng Hotel Surabaya. This activity was attended by IIEE team and the judges. The purpose of this plenary meeting was to determine the winner of the competition and reach an agreement between all judges and the IIEE team. This plenary meeting started with presentation of recapitulation result from assessment sheet used by each of the judges during the competition judging session and ranked top 5 of each level with the highest score. The next agenda was to discuss the considerations from IIEE facilitators based on the results of Monev activities to determine the top 3. After the rank had been confirmed, all judges and IIEE team put an agreement on the winner list.

Figure 27 – Documentation of Plenary Meeting

Program closing and awarding

Program closing and awarding was intended to officially close this program as well as to announce the Energy Saving Competition winners. The agenda of this program closing event consisted of several speeches by the representatives from each stakeholder group (i.e., Directorate of Energy Conservation – MEMR, Education Office of East Java Province, and ETP-UNOPS), program implementation report from IIEE, competition winner announcement, also testimonials from program participants.

The closing ceremony had been held on September 28th, 2022, through online meeting. All representatives gave positive remarks about this program during their speech, including:

"I believed that the participants could earn the program benefits and disseminated the awareness in school, family, and surrounding communities, especially in East Java" said the Director of Energy Conservation of the Ministry of Energy and Mineral Resources, Dr. Ir. Hendra Iswahyudi, M.Si., during his speech. He also hoped that all the participants captured fruitful experience from this program not only to compete but also to implement real actions for sustainable energy development and management to support Indonesia's vision to reduce carbon emission by 29% in 2030 and Net Zero Emission in 2060.

Figure 28 – Speech from the Director of Energy Conservation, MEMR

While Drs. Hari Indarjoko, M.Pd. as a representative from the Education Office of East Java Province stated, "This kind of program was impactful as schools in East Java sometimes consumed excessive electricity and the program itself had brought positive results for the participants in terms of energy-saving awareness and behavior". He also gave his support and expressed appreciation of the program for its significance on students in East Java.

Figure 29 – Remark from Representative of East Java Provincial Education Office

"ETP-UNOPS' support in this program through IIEE was a commitment from the international community on how this energy-saving action could bring the impact to reducing emission in the future and believed to the sustainability of this program" said ETP-UNOPS Indonesia Country Manager, Aang Darmawan. He stated that the global issue right now was about transitioning from high-emission energy to lower emission energy sources, such as renewable energy, and there was one energy transitioning activity that people sometimes forget even though it played a significant role, which was the energy-saving action. He also had witnessed the participants' enthusiasm from elementary, junior high, and senior high school students in their action to save energy and this had brought trust that the younger generation could participate in actualizing Indonesia's commitment to reduce carbon emissions in the future. And. At last, he thanked the participants' commitment throughout the program and said that ETP-UNOPS was ready to continue energy conservation efforts in Indonesia.

Figure 30 – Speech from ETP-UNOPS Indonesia Country Manager

The Winner Announcement

The event continued with a session that the participants anticipated the most, the Best Schools announcement of the Energy Saving Ambassador program in East Java, presented by Dr. Hakimul Batih, representing the judges' team. The Best School winners are:

Figure 31 – Winner Announcement by the Representative of Judges' Team

Table 1 – Best School Winners

Best School	Elementary School	Junior High School	Senior High School
1st Place	SDN Jajartunggal III/452	SMPN 39 Surabaya	SMAN 15 Surabaya
2nd Place	SDN Dr. Sutomo V/327	SMP Kristen Aletheia	SMK Assa'adah
3rd Place	SDN Jeruk I/469	SMPN 51 Surabaya	SMKN 3 Surabaya

There were also category awards presented by Mrs. Ade Djunainah from IIEE to reward other participants' hard work and efforts. The awards were given specifically to each school based on what they had shown to the judges throughout the 3 months program. Here are the award winners from all school levels:

- **Elementary School:**

Best Duta Hemat Energi Team: **SDN Margorejo I/403**
Best Home Program Implementation: **SDN Kertajaya**
Consistency: **SDN Simomulyo I**
Best Leadership Implementation: **SDN Pakis V**
Creative Socialization: **SDN Tanah Kali Kedinding V/579**

- **Junior High School:**

Consistency: **SMPN 52 Surabaya**
MPK Involvement: **SMP Taman Pelajar Surabaya**
Best Home Program Implementation: **SMP Wachid Hasjim 5**
Socialization to the Traditional Market Communities: **SMP Kemala Bhayangkari 6**
Responsible Duta Hemat Energi Team: **SMPN 63 Surabaya**

- **Senior High School:**

Best School Support: **SMAN 11 Surabaya**
Socialization to Other Schools: **SMKN 5 Surabaya**
The Most Complete Data: **SMAN 4 Surabaya**
Independent Duta Hemat Energi Team: **SMKN 2 Surabaya**
Creative School Program: **SMAN 8 Surabaya**

Soon after the winner and awards were announced, the event continued with testimonials from the participants, represented by Duta Hemat Energi from SDN Margorejo I/403, SMP Wachid Hasjim 5, and SMAN 4 Surabaya. The ambassadors said that the program had raised their awareness of energy consumption and the importance of electricity and water for the younger generation, changed their behavior to save more energy, and helped their parents to reduce electricity bills in their houses.

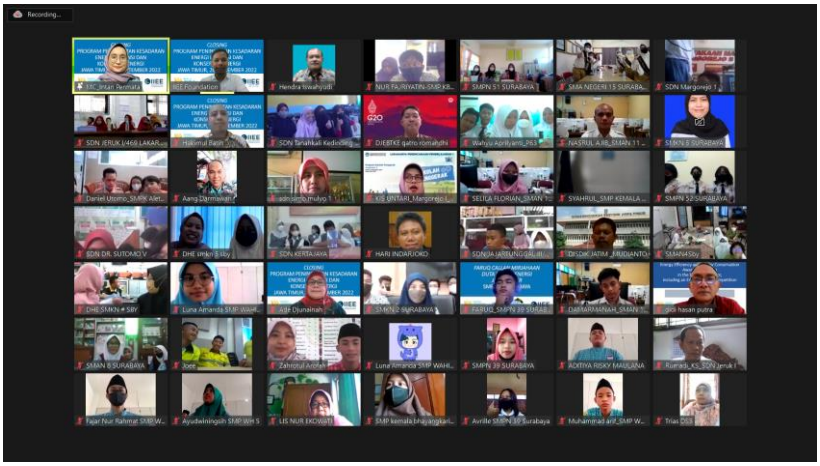


Figure 32 – Documentation of Program Closing and Awarding Event

3. ACHIEVEMENTS

Reduction of Monthly Electricity Consumption in Schools

Throughout the program activities, all participating schools were requested to provide their electricity consumption data. This data could be obtained both by monitoring daily/monthly electricity consumption from the kWh-meter or by checking the electricity bills that were paid every month. From this data, it was known that the total monthly electricity consumption of 24 schools prior to the program implementation in April 2022 was 107,972 kWh. This total was calculated from the average of monthly consumption for each school. The aggregate of average monthly consumption from all schools then used as the baseline to calculate the total monthly reduction.

By continuing to monitor their monthly electricity consumption after the program started, the Energy Saving Ambassadors together with their Energy Managers could calculate the monthly reduction compared to the baseline. From this calculation, it was known that there was a decrease in total electricity consumption of 24 schools by 9,767 kWh (9%) in May and 22,381 kWh (20.7%) in June. The highest reduction occurred in July which reached 37,250 kWh or 34.5% compared to the baseline. The total accumulated decrease in electricity consumption during the program (3 months) was 69,398 kWh as shown in the Figure 33 below. This achievement was mostly performed by the participating schools through behavioral changes in using electricity without having to replace any equipment.

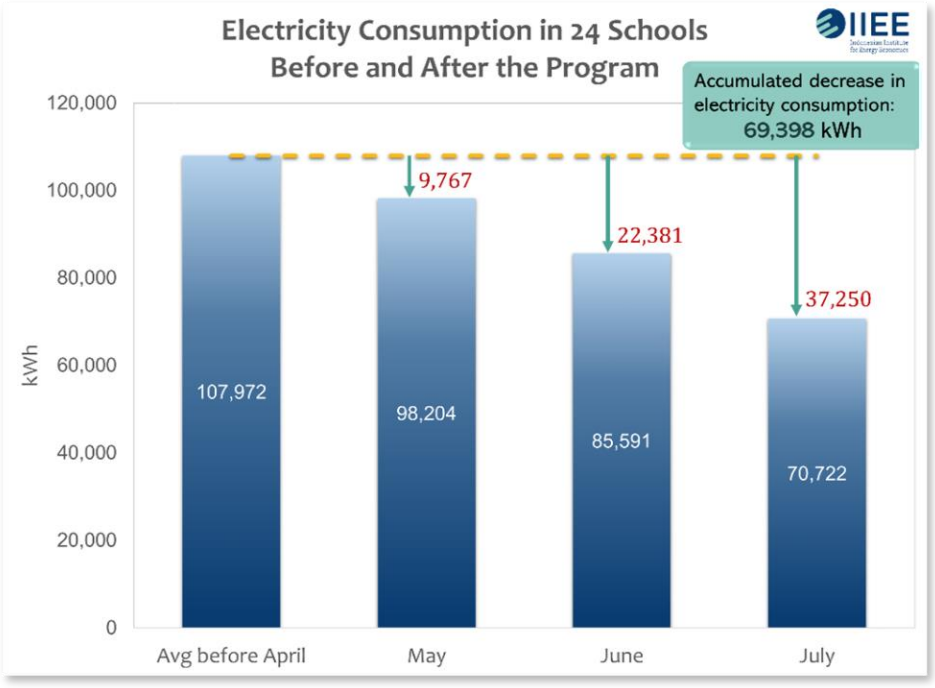


Figure 33 – Total School Electricity Consumption Before and After Program (in kWh)

The school with the highest electricity consumption between all participating schools was SMK Negeri 5 Surabaya, with an average usage of 29,227.7 kWh per month before program implementation. In their presentation, this school implied that their highest consuming area was the CNC (Computer Numerical Control) machining laboratory. Throughout the program, SMK

Negeri 5 Surabaya had succeeded in reducing their electricity consumption to 19,623.8 kWh and it was the highest electricity consumption reduction among all participating schools.

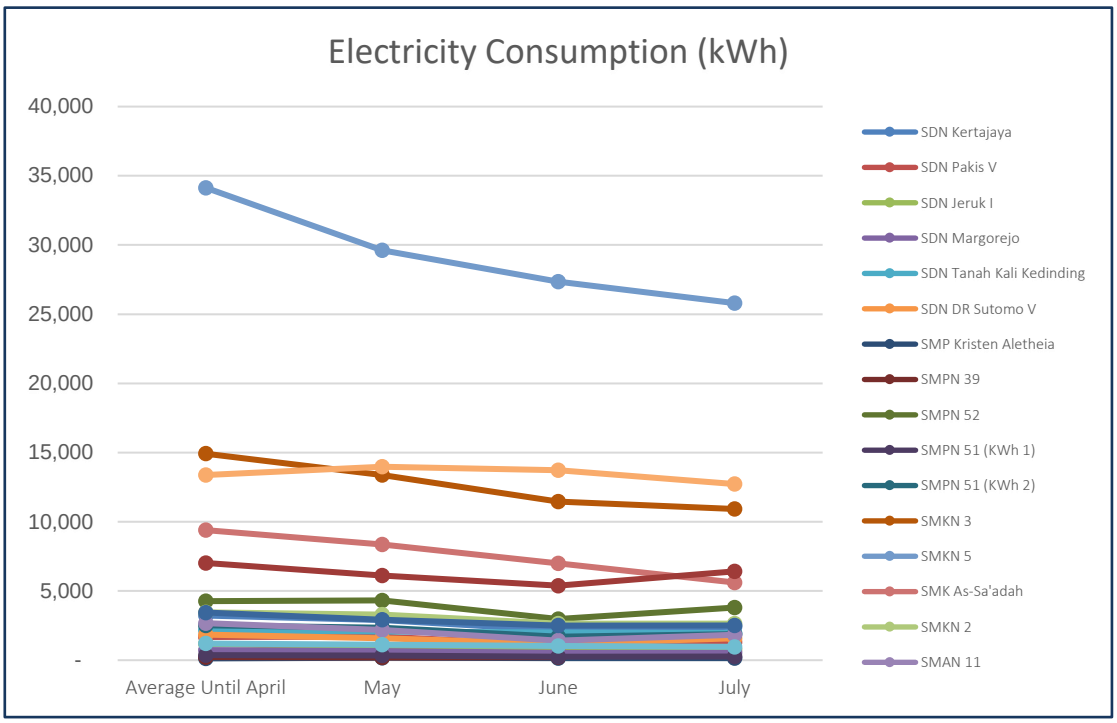


Figure 34 – Electricity Consumption per School

Total Avoided CO_2 Emission

The reduction in electricity consumption had an impact on reducing CO_2 emissions. CO_2 emissions produced by 24 schools in April (baseline) were 93.9 tons of CO_2. The decrease in electricity consumption was proportional to the decrease of CO_2 emissions. In May, CO_2 emissions decreased by 8.5 tons compared to April, as well as in June, CO_2 emissions decreased compared to April as much as 19.5 tons CO_2. The highest reduction in CO_2 emissions occurred in July, which fell to 32.4 tons of CO_2. Thus, cumulatively this project had avoided CO_2 emissions of 60.4 tons to the environment during the 3 months of the program. The emission factor used to calculate CO_2 emissions resulting from electricity consumption was the emission factor of JAMALI generation (Jawa, Madura, Bali), which was equal to 0.00087 tons CO_2/kWh.

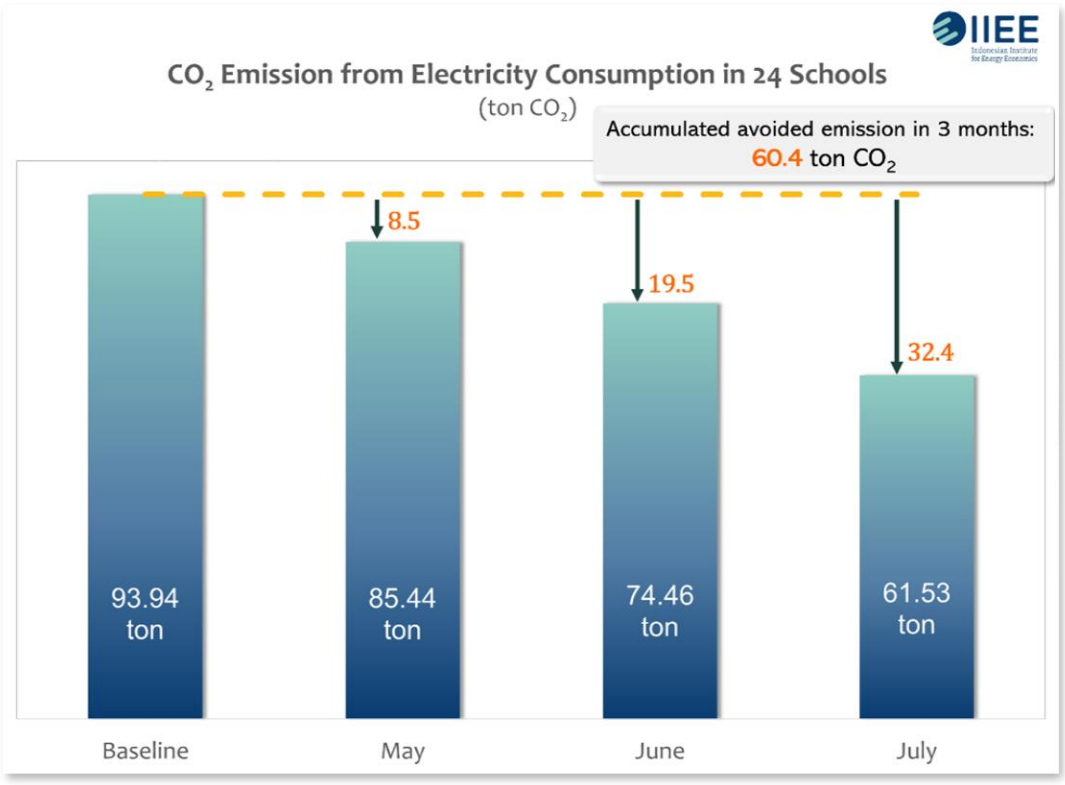


Figure 35 – Avoided CO_2 Emissions from Electricity Consumption Reduction

Program Engagements in Number

This program had selected 120 Energy Saving Ambassadors from 24 schools in Surabaya and Gresik. During the program, the Energy Saving Ambassadors carried out various campaign activities to raise awareness of all parties regarding energy efficiency and energy conservation. They had succeeded in creating a snowball effect by directly involving 20,295 people to participate in energy-saving behavior, as well as indirectly engaging 93,803 people.

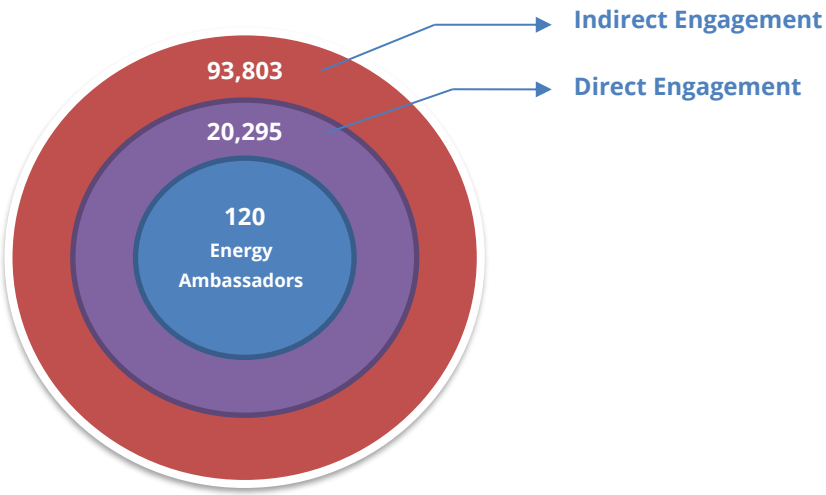


Figure 36 – Program Engagements

Campaign activities carried out by the Energy Saving Ambassadors, targeting the closest people. The Energy Saving Ambassadors managed to involve 20,295 people in direct campaign activities, consisting of 18,632 school friends (92%), 605 teachers (3%), 396 family member (2%), and 662 neighbors (3%) around their homes and schools.

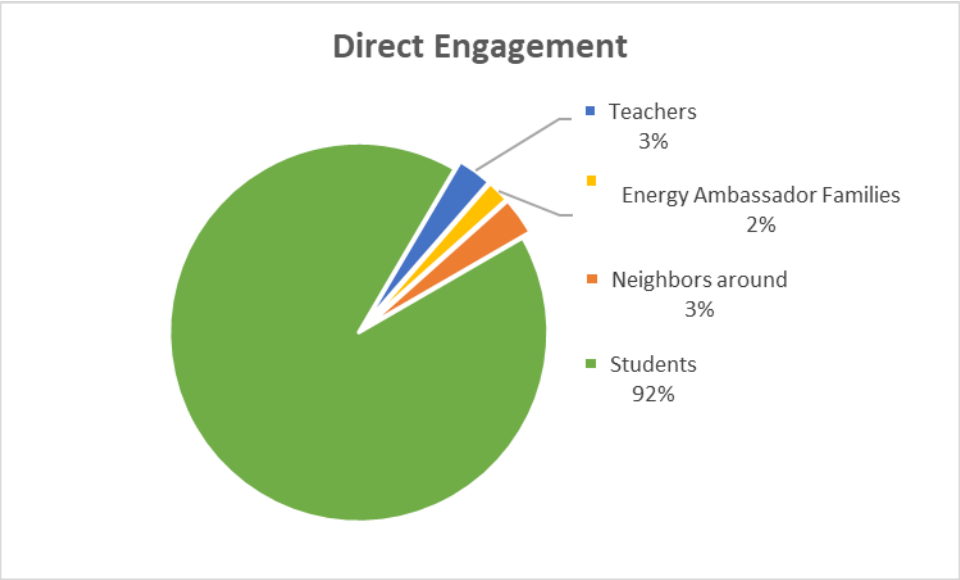


Figure 37 – Program Direct Engagement

Campaign activities for other students were carried out in various ways, ranging from open campaigns in the field, campaigns to classes, campaigns at the time of new students' admission, campaigns through poster media, competitions (energy-saving mural competition, poster competition, energy-saving competition between classes), energy-saving patrols, and so on.

4. PUBLICATION AND COMMUNICATION

This publication and communication plan had been added to the activity towards the initial proposal. This was considering the input and request from ETP-UNOPS hoping that this program could be recognized and widely known to the public. The publication and communication plan are shown in the following figure.

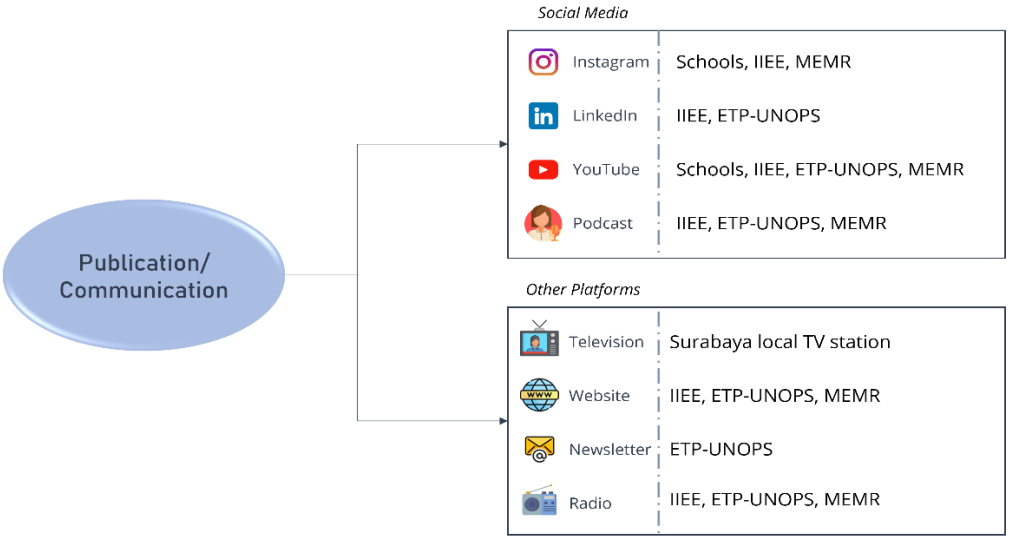


Figure 38 – Publication and Communication Strategy Plan

From this publication and communication strategy plan, there were only 2 activities that cannot be done, namely podcasts and radio broadcasts. This activity could not be carried out because the closing program schedule was delayed from what was planned and exceeded the time in the IIEE contract with ETP-UNOPS.

In addition, there was one publication that is not in the plan, but included in a fairly representative newsletter, namely the NAWALA newsletter created by Bimasena Club, a Mining and Energy Society club founded by Prof. Dr. Subroto in 1997. IIEE also engaged communication media team from the Ministry of Energy and Mineral Resources (MEMR) to cover all activities and publish the news through their official website.

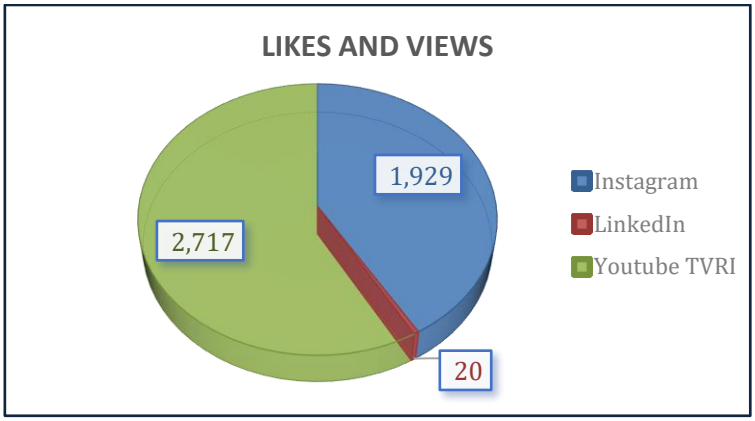


Figure 39 – Total Likes and Views from Social Media Portal

For some articles published on Instagram, YouTube, and LinkedIn, it can be seen that the program was liked quite a lot. As per this report was generated, the total likes and views can be seen in the previous Figure 39. The broadcast of this program through the official Instagram of the Ministry of Energy and Mineral Resources which had posted 3 articles had a total of 1,754 likes, the official Instagram of the Directorate General of EBTKE had a total of 77 likes, and the official Instagram of IIEE had a total of 98 likes. Other than these social media portals, the program had been covered as well through several newsletters such as the NAWALA Bimasena and E-News ETP-UNOPS. In addition, the participating schools also had their own Instagram and TikTok account that spread quite a lot of news about the program. The Table 2 below shows the list of program coverage tracing link on various media portals.

Table 2 – List of Program Coverage

Media Portals	Owner	Links
Instagram	Ministry of Energy and Mineral Resources	• https://www.instagram.com/reel/Cg3olwfJ8LE/?igshid=MDJmNzVkMjY= • https://www.instagram.com/p/CgrY7WDvQeH/ • https://www.instagram.com/p/CgdbsDtvO9I/
	Directorate General of New Renewable Energy and Energy Conservation	• https://www.instagram.com/p/CjjZrPfA499/
	Indonesian Institute for Energy Economics	• https://www.instagram.com/dutahematenergi.iiee/
LinkedIn	Indonesian Institute for Energy Economics	• https://www.linkedin.com/feed/update/urn:li:activity:6983011333831090176
	Southeast Asia Energy Transition Partnership	• https://www.linkedin.com/posts/southeast-asia-energy-transition-partnership_energy-saving-ambassador-young-generation-activity-6960847553915498496-jIfh?utm_source=share&utm_medium=member_desktop
YouTube	TVRI Surabaya	• https://youtu.be/p8_Si4tWDIo?t=11218 • https://youtu.be/NF-Mf1LoujI?t=6055 • https://youtu.be/rCY38kRMHpg?t=7832
Television	TVRI Surabaya	• https://youtu.be/p8_Si4tWDIo • https://youtu.be/NF-Mf1LoujI • https://youtu.be/rCY38kRMHpg
Website	Ministry of Energy and Mineral Resources	• https://www.esdm.go.id/id/media-center/arsip-berita/duta-hemat-energi-kelompok-kecil-berkontribusi-tinggi • https://www.esdm.go.id/id/media-center/arsip-berita/ciptakan-budaya-efisiensi-dan-konservasi-energi-di-sektor-pendidikan-24-sekolah-jalani-program-hemat-energi • https://www.esdm.go.id/id/media-center/arsip-berita/duta-hemat-energi-terus-tularkan-virus-kebaikan
	Directorate General of New Renewable Energy and Energy Conservation	• https://ebtke.esdm.go.id/post/2022/10/05/3286/aksi.duta.hemat.energi.dukung.penurunan.emisi
	Indonesian Institute for Energy Economics	• https://iiee.or.id/2022/10/03/iiee-etp-dhe-project-closing/

Media Portals	Owner	Links
Newsletter	Southeast Asia Energy Transition Partnership	• https://mailchi.mp/70f13f7eb1de/etp-newsletter-april-may-2022
	Bimasena / Nawala	• https://api.vold.io/documents/5b4c2376b9524915b44142c4/nawala/494ae5a3-b2c4-40c6-85ed-77ed182856ff.pdf
Other	• https://m.antaranews.com/amp/berita/3018777/duta-hemat-energi-ajak-masyarakat-bijak-gunakan-energi-dan-air • https://edukasi.okezone.com/amp/2022/07/27/624/2637296/24-sekolah-ikuti-kompetisi-hemat-energi-untuk-ciptakan-budaya-efisiensi • https://wartaekonomi.co.id/read432095/iiee-bentuk-duta-hemat-energi-ajak-masyarakat-bijak-gunakan-air-dan-listrik • https://m.medcom.id/amp/VNxwMJDK-kementerian-esdm-24-sekolah-ikuti-kompetisi-hemat-energi • https://m.antaranews.com/amp/berita/3021325/ciptakan-budaya-efisiensi-24-sekolah-ikuti-kompetisi-hemat-energi • https://koran-jakarta.com/kurikulum-merdeka-dan-kurikulum-2013-berbeda-filosofi?page=all • https://www.rctiplus.com/amp/news/detail/ekonomi/2708396/iiee-bentuk-duta-hemat-energi-ajak-masyarakat-bijak-gunakan-air-dan-listrik • https://id.berita.yahoo.com/kementerian-esdm-sebut-ada-24-021131352.html • https://voi.id/amp/194834/tumbuhkan-budaya-efisiensi-sejak-dini-24-sekolah-jenjang-sd-hingga-sma-ikuti-kompetisi-hemat-energi • https://www.24hour.id/duta-hemat-energi-ajak-masyarakat-bijak-gunakan-energi-dan-air/ • https://indonesiakini.go.id/berita/8716393/duta-hemat-energi-terus-tularkan-virus-kebaikan • https://www.suarakarya.id/ekonomi/amp/pr-2603976245/keren-pelajar-smp-jadi-duta-hemat-energi-salah-satu-programnya-memerangi-vampire-listrik?page=3 • https://www.validnews.id/ekonomi/24-sekolah-jalani-program-hemat-energi-dari-kementerian-esdm • https://www.niaga.asia/kementerian-esdm-mulai-program-hemat-energi-di-sektor-pendidikan/ • https://www.floreseditorial.com/ekbis/amp/pr-3973988041/ciptakan-budaya-efisiensi-24-sekolah-ikuti-kompetisi-hemat-energi • https://infopublik.id/kategori/nasional-ekonomi-bisnis/652999/bangun-kultur-efisiensi-energi-24-sekolah-ikuti-kompetisi?video= • https://www.portonews.com/2022/laporan-utama/duta-hemat-energi/amp/?utm_source=rss&utm_medium=rss&utm_campaign=duta-hemat-energi • https://beritabaru.news/duta-hemat-energi-ajak-masyarakat-bijak-gunakan-energi-dan-air-133265.html • https://headtopics.com/id/kementerian-esdm-sebut-ada-24-sekolah-ikuti-kompetisi-hemat-energi-28463672 • https://m.bizlaw.id/read/61428/Duta-Hemat-Energi-Kelompok-Kecil-Berkontribusi-Tinggi	

5. PROGRAM ANALYSIS

Stakeholder and Community Considerations

The stakeholder engagement of this project has been designed under following flow, depicted by the figure below.

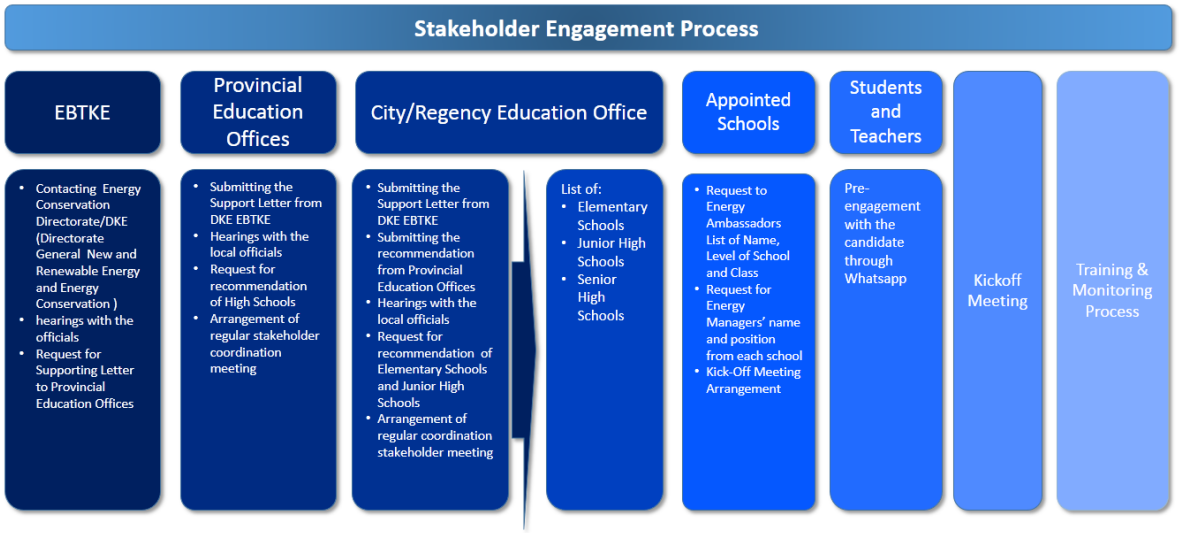


Figure 40 – Stakeholders Engagement Process

The Energy Efficiency and Energy Transition Program was a mandatory program for the current administration to support climate change mitigation efforts in accordance with the 2015 Paris Agreement commitments. As a result, in this program, engagement and recognition from the central government, particularly ministries or institutions authorized to implement the policy, were the most important factors in ensuring the program's long-term success. The Directorate of Energy Conservation of the Directorate General of New and Renewable Energy and Energy Conservation was the part of the ministry that most closely correlated in the context of the program's main key stakeholders.

Attendance and Enthusiasm of Participants

The following figures show the attendance during Monev #1, Monev #2, and Monev #3 both for the Energy Saving Ambassadors and Energy Managers. On average, there were an increase in attendance which related to the enthusiasm and motivation from the participants to carry out their EE programs. This progress can also be seen from their presentations & documentations.

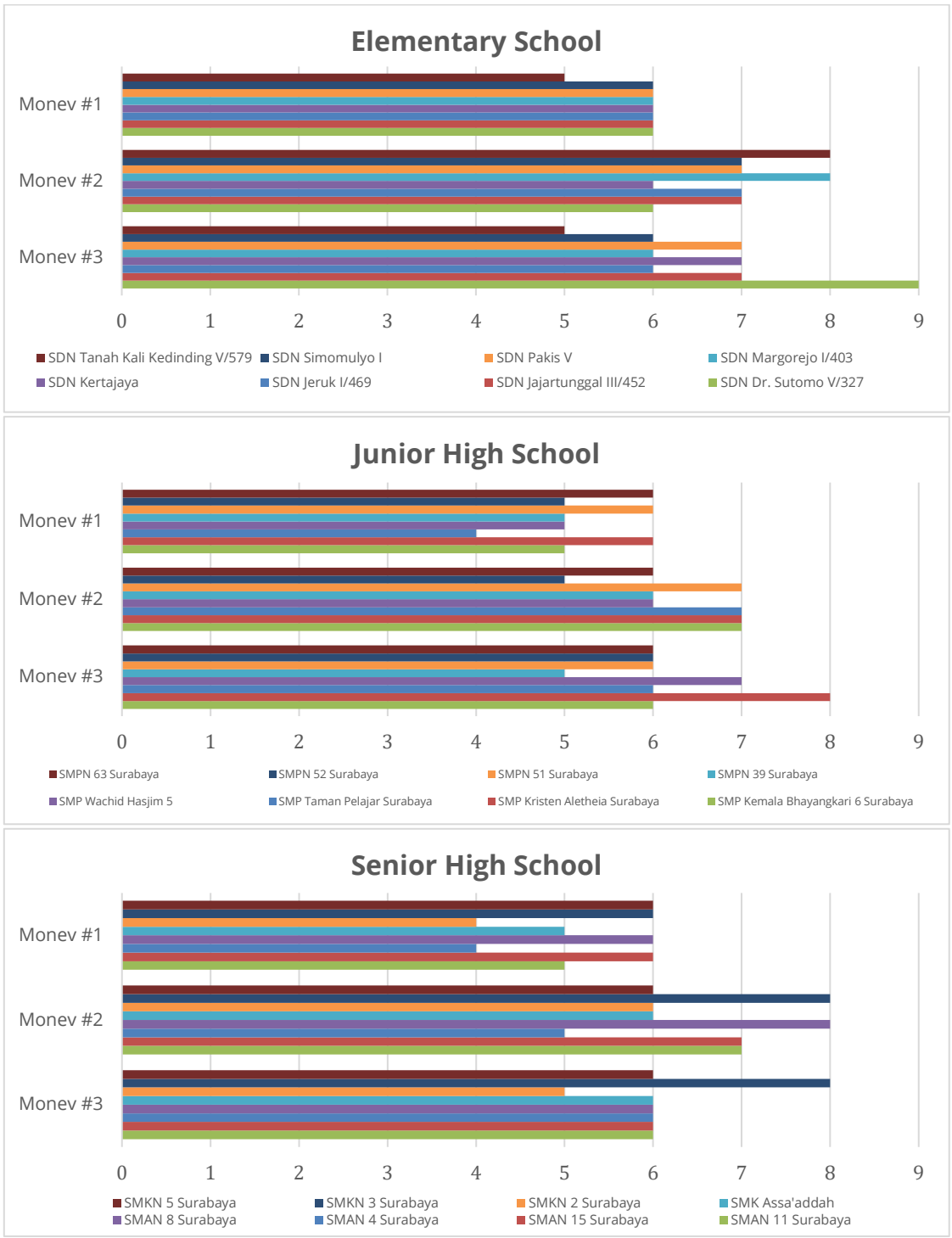


Figure 41 – Participants Attendance on Monitoring and Evaluation Phase

Gender Assessment

To assess gender participation and achievement, the model used in this section was by assessing the involvement of male and female teachers and students in all activities, from training, monitoring and evaluation, judging to program closing, in terms of attendance on each activity.

The total participation throughout the program is shown in the following figure. Respectively, there were 609 female and 335 male participants attended during all activities.

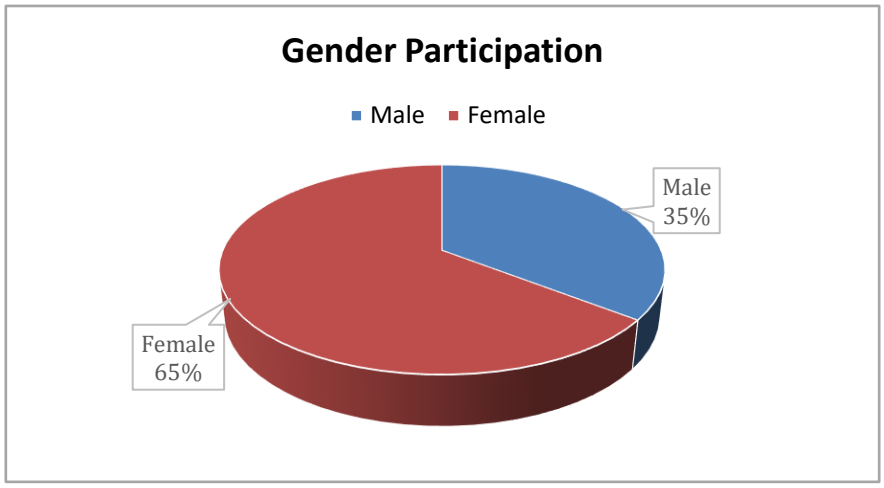


Figure 42 – Gender Participation Throughout the Program

The Figure 43 below shows the presence of Energy Managers/Teachers and Energy Saving Ambassadors/Students during training phase. The presence and activities of participants showed that the role of women was more prominent. The total participants in the training for the Energy Managers consisted of 20 female and 13 male participants. While for the total participants during the trainings for the Energy Saving Ambassadors, in accumulation there were 77 female and 29 male participants attended for the elementary school, 69 female and 33 male participants for the junior high school, and 56 female and 48 male participants for the senior high school.

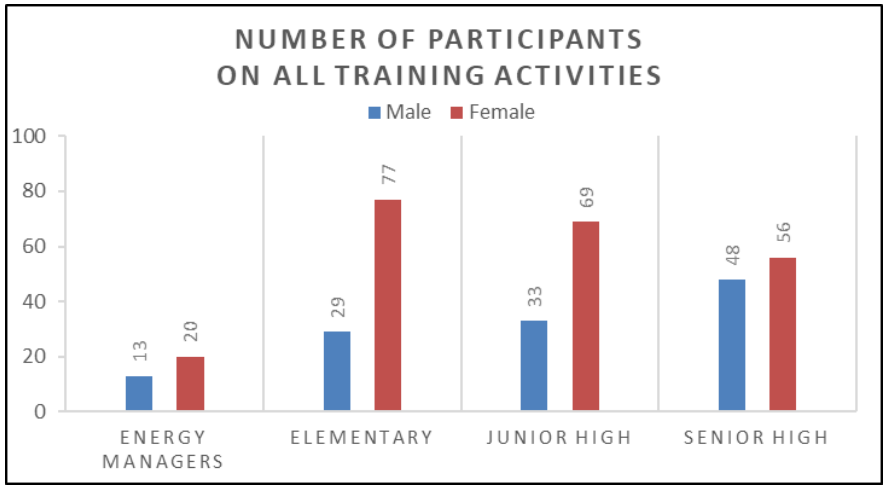


Figure 43 – Total Participations during All Trainings

The following figure shows the participants profile during all Monev activities. In general, female participants were also very prominent during this phase.

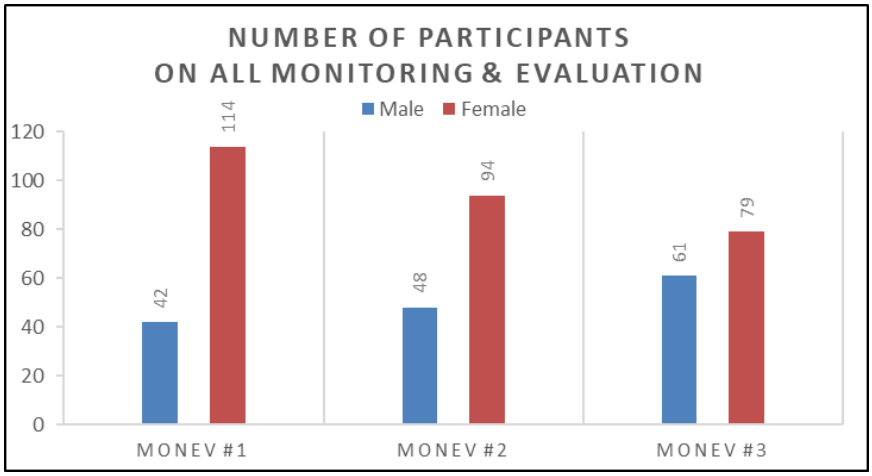


Figure 44 – Total Participations during Monev Activities

During the competition judging day, there were 34 female and 12 male participants for the elementary school, 32 female and 17 male participants for the junior high school, 28 female and 20 male participants for the senior high school. While for the judges and facilitators composition consisted of 6 female and 12 males.

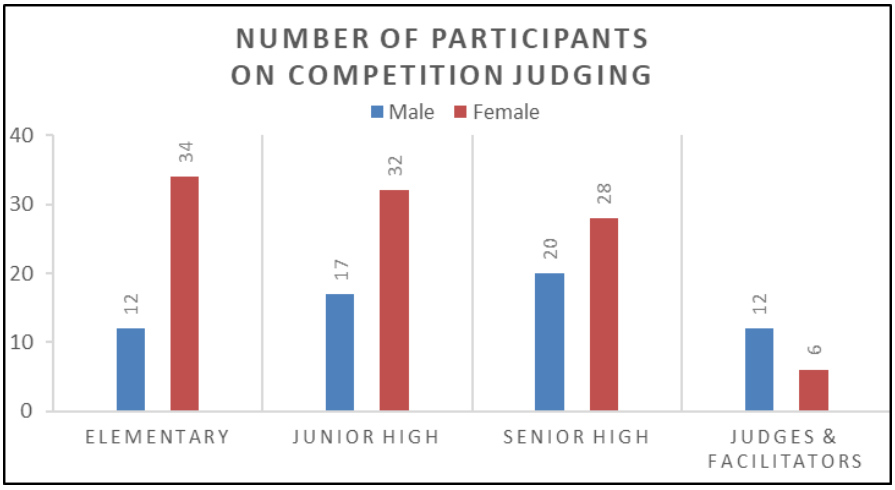


Figure 45 – Total Participations on Competition Judging Day

Social and Environmental Assessment

SOCIAL ASSESSMENT

There are two groups of community that were directly targeted for impact in this project:

School

School community was benefiting from the raised awareness on the importance of energy-saving behavior contributing towards global energy transition efforts. Selected teachers, acting as Energy Managers of respective school, had been performing as the person in charge in each school. They played important role in providing support, initiative, monitoring, and evaluation of the capacity building (training sessions) for students and the implementation of energy saving action plan. Teacher's role and the official support from the school's principal was the groundwork to successful energy saving action plan and campaign in each school. Diversity of school's profile also had an influence on the program's success in each school. Here, since the training sessions were conducted online, diversity of IT infrastructure and literacy indirectly affected the delivery of capacity building and the completion of assignments given to the participants.

Household

Each of the Energy Saving Ambassadors' household was also the target of impact in this project. For this group, the Energy Saving Ambassadors had been taking the role as the person in charge to practice and promote the energy-saving behavior in each of their household and even to their extended families and neighborhood.

ENVIRONMENTAL ASSESSMENT

This project had succeeded in contributing to the environment through the reduction/avoided of potential CO_2 emissions. Throughout the program duration, the Energy Managers as well as the Energy Saving Ambassadors had been assigned document their daily and monthly electricity consumption at school and at their homes. From the documentation of electricity consumption, it was calculated the progress in electricity saving of all participants. This accumulation of electricity saving was then calculated further to obtain the total avoided CO_2 emission. This process had been started since the training phase and keep progressing until the Monev, and Competition Judging Day. Details of this calculation process will be presented on Section 3 of this report.

6. LESSONS AND TAKEAWAYS

This section contains main several lessons learned during the program's preparation and implementation, which can be a useful contribution for the replication of the program in other schools or other regions. Those several lessons learned of this program, including:

School Selection Criteria

The school selection was made under the authority of the Provincial and District Education, based on the requested criteria, which was to select the unpopular schools. As this program/training had been completed, it was finally concluded that the criteria should be made clearer and in detail based on prior analysis upon the required uniformity of initial condition of participants. This was to ensure the level of uniformity initial condition (pre-program implementation) for all participating schools hence minimizing the disparity between participating schools. For example, the different initial knowledge between schools that have been participating in Adiwiyata program (i.e., environmentally friendly school program) and compared to the schools that had not, will be the difference of level of knowledge and awareness on environment/energy related issues, schools' infrastructure and support, etc.

All participants also should be the schools that have never been joining similar program with Adiwiyata program. This was to provide opportunities towards other schools to get similar benefits with those who had been enjoying it earlier regarding energy-saving behavior, as well as the energy efficiency and energy conservation topics. This program also was intended to have a wider exposure to the beneficiaries (e.g., students and teachers) regarding energy-saving behavior, as well as the energy efficiency and energy conservation topics.

On top the abovementioned reasons was the typical fact in which schools that were currently participating or had been participating in many other similar programs, had the tendency to be less focused in implementing the energy ambassador program. Therefore, implementing the Energy Ambassador Program to schools that have not been exposed to the program would be more beneficial.

Online Platform

As previously designed, all the training activities and the first M&E of this program had been carried out through online meetings to comply with the health protocol during Covid-19 pandemic. One of the most common challenges by conducting the online training was the focus disruption and lack of adequate connection between the trainer/facilitators and participants. Challenges can be minimized by having trainers/facilitators who have adequate experiences. Nevertheless, although the team had been experienced with online training, the challenges continue to happen in the following ways:

- Energy Saving Ambassadors were less focused during the online activities
- The sense of ownership towards this program by the Energy Saving Ambassadors was not optimal
- Difficulty to join online due to signal problems

Learning upon the situation, in order to enhance the learning process and ensure the optimization of material comprehension, carrying out the training through face-to-face interaction was the most preferable and advantageous technique. Nevertheless, in the case where online meetings were inevitable, series of creative sessions and more interactive discussions are required to increase the attractiveness of the material, the interest and focus of the participants.

Support from the schools and Energy Managers

The Energy Saving Ambassadors program is intended not only to produce a generation that understands the importance of energy-saving behavior in supporting climate change adaptation efforts, but also to provide support for one of the government's energy-related programs, namely the energy transition. However, the beneficiaries of this program are not only the students who are the primary target of education in this program, but also accompanying teachers, particularly energy managers, and the school as a whole. Thus, in order for the educational process to run smoothly, the support of all parties, particularly the energy manager, is critical in implementing the Energy Saving Ambassadors program. These types of support include:

1. Administrative support

Types of administrative support are among others issuance of a decree (*Surat Keputusan* – SK) on the appointment of the teachers and students as the Energy Managers and Energy Saving Ambassadors, The decree will be useful for the appointed students and teachers to do the necessary activities (e.g., data collection, energy saving campaigns, behavioral changes) without worrying the specific prior approval from schools, for instance, the activities outside school hours i.e. disseminate information to neighbors or family relations, or having the access to sensitive financial information such as monthly electricity bills, requesting assistance from one of the school staffs in having to check the kWh meter, etc.

Obtaining the financial support was also one of the benefits of having the decree, as the program can be done without necessary expenditure to accomplish the assignments. Nevertheless, the financial support from schools in terms of increasing the material attractiveness of campaign activities seems to be helpful for students to disseminate the information more successfully, especially when the target of audience was especially when the number of target audiences is quite large or not among schools, for example a campaign carried out in a traditional market by one of the participant groups.

2. Motivational support

Motivational support from the schools as will also stimulate and increase students and even teachers' motivation to achieve the program's goals. This will also encourage all school components to be actively involved in the energy-saving programs.

When full support emerges from the school leadership, energy managers will also be more motivated and have an impact on improving performance for both the energy managers and the students they mentor. This support will also foster pride for both students and teachers as energy managers so as to stimulate better self-confidence, especially in campaigning for an energy-efficient lifestyle to the relations around them.

In addition to the main lessons learned during the implementation process, below are several unforeseen challenges that were frequently encountered during the program implementation. These conditions are presented in tabular form alongside the takeaways from these conditions. in the Table 3 below.

Table 3 – The Unforeseen Challenges and Takeaways

No	Unforeseen Challenges	Takeaways
I	**Training for teachers and students**	
1	There were technical problems during the pre-test and post-test, unable to enter the online test platform (Quizizz)	Many Energy Ambassadors were unable to take the test, so there was difficulty in analyzing the increasing of their knowledge
2	Not all participants had a good internet network	Late entry into the Zoom Meetings room, and some participants were unable to attend the full training
3	Different levels of material understanding between participants	The progress of energy saving activities varies between Energy Ambassadors
4	Participants/Energy Ambassadors did not turn on the camera when attending the online training through Zoom Meetings platform	There was a possibility that the participants did not present at the training, so they did not know and did not understand what was conveyed during the training
II	**Data collection tasks**	
1	Some Energy Ambassadors and Energy Managers had not been able to upload their assignments to the designated Google Drive	The facilitator could not check the work progress whether the task had been done correctly or not
2	There was an error in reading the numbers on the kWh-meter by the Energy Ambassadors	Data on electricity usage per day became illogical, so the monitoring data on electricity usage required further assessment
3	Inconsistency in recording kWh-meter (recording was not done at the same time interval)	The use of electricity at a certain time interval could not be known. For example, per day or per 2 days
4	There were still some Energy Ambassadors who had not identified the use of electricity at home and school	Unable to know the habit of using electricity, hence the energy savings could not be properly measured
III	**Making activity plans**	
1	Unable to identify the problems based on electricity consumption data at home and school	There was no connection between data and problem identification, so the activities were not in accordance with the problems
2	The activity plans made by the Energy Ambassadors had not yet detailed	Activities were not right on target, not in accordance with the problems identification

7. PROGRAM SUSTAINABILITY

As implied through the narratives, achievements, and data presented in previous points of this report, the implementation of the "Energy Efficiency and Energy Conservation Awareness Raising in the Education Sector, Including An Energy Saving Competition in East Java Province" went smoothly and successfully. This program also received appreciation from stakeholders and related institutions.

This can be seen from several achievements and support:

- Support from participating schools, both from the Principals, Energy Managers, other teachers and also from the Energy Saving Ambassadors and other students, as well as support from the environment at Energy Saving Ambassadors' house
- There is a change in behavior to save energy from program participants, both Energy Managers/Teachers and Energy Saving Ambassadors/students
- There is a decrease in electricity consumption, both in schools and homes of program participants
- The reduction in CO_2 emissions is quite good, due to the decrease in electricity consumption both in schools and homes of the participants.

The impact that this program has been generated, in which 120 Energy Saving Ambassadors from 24 schools in Surabaya and Gresik, through various campaign activities to raise awareness of all parties regarding energy efficiency and energy conservation, had successfully creating a snowball effect by directly engaging 20,295 people to participate in energy-saving behavior, as well as indirectly engaging 93,803 more people.

Means of campaigning has been put in place with suffice range of variety for instance, campaigns in the field, campaigns to classes, campaigns at the time of new students' admission, campaigns through poster media, competitions (energy-saving mural competition, poster competition, energy-saving competition between classes), energy-saving patrols, and so on. These results were obtained from the involvement of only 24 schools, that consist of 8 elementary schools, 8 junior high schools and 8 high schools.

In East Java Province only there are around 19,044 Elementary Schools, 4,981 Junior High Schools, 1,523 Senior High Schools and 2,166 Vocational Schools. There will be hundreds of times more to get the similar impact from similar program or Energy Saving Ambassadors program once replicated. The accumulated avoided CO_2 emission in 3 months was 60.4-ton CO_2 alone. If the potential for avoided CO_2 emissions is replicated through the implementation of the same program in all schools in East Java, then at least the total avoided CO_2 emissions which is equal to 69,285 tons of CO_2 can be achieved through the household sector.

To realize this in a broader framework, however, strong support from various parties, particularly the government, at both the national and regional levels is required. Such assistance is required not only for technical assistance, but also in terms of fund and morale. Government support will encourage implementing units in the government respective authorization area to work together

to support the energy efficiency and conservation program as part of a strategic effort to support Indonesia's energy transition in a sustainable manner, particularly in East Java Province.

Departing from this thought, adaptation, and mitigation actions to the existing conditions of program implementation should be considered so that it can focus on the type of support, whether from the government or from other stakeholders. The table below describes some interesting ideas and conclusions encountered during the program that can be used as a starting point in determining the program's follow-up strategy or the next program replication.

Table 4 – Program SWOT Matrix

Strength	Weakness
• Well experienced of facilitator and program executor • The material is well prepared • Good initial motivate student and teacher participants • Organization of systematic program implementation • A proven teaching method • Interaction with offline participants • Quality teaching materials • Adequate periodic Monev to ensure student assignment compliances	• Some lack of Initial Motivation of student and teacher • Online model learning system • Lack of good coordination and communication between teachers and students • The speed of understanding students or teachers of learning material • Initial knowledge of science • Strategy to maintain interest through online learning
Opportunity	**Threat**

• Number of schools in East Java Province
  ○ Elementary: 19,044
  ○ Junior High: 4,865
  ○ Senior High: 1,523
  ○ Vocational: 2,166
• There is no specific curriculum regarding energy saving with specific targets for reducing emissions
• Develop post-event monitoring and evaluation to determine the sustainability of the impact of education on the beneficiary
• Developing a learning method monitoring and evaluation system
• Develop supporting regulations at the central and regional levels for the development of energy-saving education in schools
• Developing SOP to conduct EEC at schools and homes that can be verified by the Energy Manager to ensure the sustainability and quality of EEC implementation
	• The potential for old behavior to emerge if motivation is not maintained
	• Inadequate school support
	• Family support is not optimal
	• Lack of concern for the environment
	• Lack of fund to support necessary expenditure

Following the above several points mentioned, also from the observations in the implementation of the program as well as existing data, it can be concluded that this program is very strategic to be replicated. On the aspects of weakness and threat, there are several points that need to be improved while the aspects of strength and opportunity can be continuously applied and developed.

As for the ideas to replicate Energy Saving Ambassadors program, in the absence of time availability and other resources to reach out large numbers of potential beneficiaries there is a necessity to establish adequate curriculum specifically designed according to the level of education of the students. This approach will expedite the transformation of students' level of knowledge in implementing energy saving behaviors, hence allowing them to participate actively in energy transition programs.

Supports as has been elaborated in the above table are needed which covers the needs of support of policies, funding, and program execution. Some of the proposed supports needed may include (but are not limited to):

From the Government

- To include EEC Education as one of the Strategic Working Program Plan of the Ministry of Energy and Mineral Resources.
- To allow schools participating in the PSBE program for the energy efficient buildings category.
- To promote collaboration with the Ministry of Education and culture so that schools will be able to participate actively in EEC program.
- To integrate the EEC program/education material as one of the school curriculums to facilitate the dissemination of EEC knowledge and expansion of its implementation

From the Donors

- In terms of funding for program replication in other cities/provinces in Indonesia, hence enabling Indonesia, especially from the household sectors, achieve the target for more CO_2 reduction targets, through involving more schools in similar programs (Energy Saving Ambassadors program).

From the Program Executor (Indonesian Institute for Energy Economics)

- The design improved online program or otherwise program should be carried out in full offline format.
- Need additional program time to be able to calculate the decrease more and more accurately
- Need to separate the Energy Saving Ambassadors for home and school, so it will focus more on reducing electricity consumption and CO_2 emission
- Need to enhance and improve the monitoring and evaluation tools and verification for pre-post event

8. FINANCIAL REPORTING

The financial report of this program is available in a separate document.

9. CLOSING

The "Energy Efficiency and Energy Conservation Awareness Raising in the Education Sector, Including An Energy Saving Competition in East Java Province" has been completed this year. Showing promising results, this could only be attained by the support from all stakeholders involved in this program. Appreciation to the Ministry of Energy and Mineral Resources, especially to the Directorate General of New Renewable Energy and Energy Conservation, as well as to the Education Office of East Java Province and Surabaya City for their support and cooperation in the implementation of this program. Special acknowledgment also to the Energy Transition Partnership (ETP) UNOPS as the donor and partnership in accomplishing this program. Finally, to all the beneficiaries of this program, i.e., school principals, teachers, and students, for their accomplishment in implementing and campaigning these values and knowledge as part of our collaborative efforts to the EEC issues.

Annex 1: Result-Based Monitoring Framework

ENERGY TRANSITION PARTNERSHIP accenture

ETP Results Based Monitoring Framework

Project: **Energy Efficiency and Energy Conservation Awareness Raising in the Education Sector**

Impact Level: Increased deployment of renewable energy and energy efficiency in Southeast Asia						
Long-Term Outcome: Increased adoption of energy efficiency and energy conservation practices						
Intermediate Strategic Outcomes	**Project Indicator**	**Baseline**	**Target**	**Actual/Accomplishment**	**Data source**	**Means of Verification**
Strategic Outcome 4. Knowledge and Awareness Building						
Short-Term Outcome 4.1 Stakeholders (relevant Government entities, public sector companies, Financial institutions, Private entities, Academia, and Consumers) involved in the RE/EE value chain, are knowledgeable and better informed to advance the energy transition agenda	Increasing awareness and capacity about energy efficiency and conservation of students and teachers in the selected schools in East Java	Not applicable	1. Number of elementary schools: 8 2. Number of junior high schools: 8 3. Number of senior high schools: 8	1. Number of elementary schools: 8 2. Number of junior high schools: 8 3. Number of senior high schools: 8	1. Project reports 2. Videos and photographs 3. training material - presentations or documents shared	1. Number of schools participating in the programme
		Not applicable	1. Number of student participants: 120 2. Number of teacher participants: 24	1. Number of student participants: 119 2. Number of teacher participants: 26	1. Summary of training sessions 2. Home assignments for students and teachers to assess their comprehension on the materials 3. Evaluation sheet, used in competition evaluation and assistance meeting with the school teams 4. Competition judgment sheet, used by the judges to mark the participants based on the competition criteria	1. Number of training sessions held 2. Number of attendees: breakdown by teachers, students, age, and gender 3. Feedback provided by attendees 4. Number of energy-saving competitions held

		Not applicable	50% of the participants obtained an increase in the post-test compared to the pre-test	1. Teachers' post-test result: 86% obtained a higher score compared to pre-test 2. Elementary students' result: 38% obtained a higher score compared to pre-test 3. Junior high students' result: 60% obtained a higher score compared to pre-test 4. Senior high students' result: 75% obtained a higher score compared to pre-test Overall, 62% participants obtained a higher score compared to the pre-test	Project reports	Result of participants pre-test and post-test
		Not applicable	3 training modules for different school levels: elementary, junior, and senior high	The training modules have been disseminated to all participating schools	1. Training modules	1. Number and type of training modules disseminated
		Not applicable	All schools passed 50/100 marks in competition	1. Average marks for Elementary schools: 85/100 with the lowest mark: 68/100 2. Average marks for Junior High schools: 72/100 with the lowest mark: 52/100 3. Average marks for Senior High schools: 81/100 with the lowest mark: 73/100 Overall, all participating schools have passed 50/100 marks based on competition judge scoring sheet recapitulation	1. Competition judge score 2. Competition documents	Competition criteria: 1. School commitment 2. Program at school 3. Program at home and non-school environment 4. Creativity
Unintended outcomes	Energy efficiency and conservation practice at schools	Not applicable	Amount of saving on schools' energy bills/energy consumption	The total accumulated decrease in electricity consumption during the program (3 months) is 69,398 kWh	1. Competition documents 2. Project report	Amount of saving on monthly schools' electricity consumption
	Behavioural changes on energy efficiency and conservation impact to the environment	Not applicable	Amount of avoided GHG emissions	The accumulated avoided emissions during the program (3 months) equals to 60.4 ton CO_2	1. Competition documents 2. Project report	Total avoided CO_2 emissions calculated from electricity consumption
	Increasing awareness and capacity about energy efficiency and conservation of wider communities	Not applicable	Number of wider communities engaged	1. Total direct engagement has reached 20,295 people 2. Total indirect engagement has reached 93,803 people	1. Competition documents 2. Project report	1. Number of students' and teachers' neighbours engaged 2. Number of students from other schools engaged 3. Number of government officials involved

Annex 2: Project Timeline

Months:	March					April				May				June					July				August					Sept			
Weeks:	1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	5	1	2	3	4
1. Increasing awareness and capacity about energy efficiency and conservation for students and teachers																															
1.1 Meeting with stakeholders (Directorate of Energy Conservation, Ministry of Energy and Mineral Resources (MEMR); Provincial Education Office)																															
1.2 Develop work plan and training modules on energy efficiency and conservation																															
1.3 Socialization to participating schools																															
1.4 Program launching																															
1.5 Awareness-raising training on EEC for teachers (Energy Managers) and students (Energy Saving Ambassadors)																															
2. Encouraging changes in the behavior of students, teachers and schools from not caring to being concerned about energy savings																															
2.1 Training on energy saving behavioral changes for teachers (Energy Managers) and students (Energy Saving Ambassadors)																															
3. Designing bottom-up energy saving policies in schools and implementing them in energy efficiency programs and activities																															
3.1 Develop Energy Saving Competition plan																															
3.2 Energy Saving Competition																															
Monitoring & mentoring:																															
1st session - online																															
2nd session - offline																															
3rd session - offline																															
Competition day																															
3.3 Program closing																															

Remarks:
Completed

Annex 3: Attendance List

Energy Ambassador (Elementary School) Competition Judging Day
Attendance Recapitulation

No	Name	L/P	Position	School Name	Attendance
1	Achmad Zahir Ibrahim	L	Siswa / Duta Energi	SDN Dr. Sutomo V/327	1
2	Fa'izah Putri Zahirah Wiguna	P	Siswa / Duta Energi	SDN Dr. Sutomo V/327	1
3	Fairuz Zahirah Rizki Putri	P	Siswa / Duta Energi	SDN Dr. Sutomo V/327	1
4	Khalisa Marwah Althafunnisa	P	Siswa / Duta Energi	SDN Dr. Sutomo V/327	1
5	Nadhilah Shabrina Ekansyah	P	Siswa / Duta Energi	SDN Dr. Sutomo V/327	1
6	Aqilla Balgis Faheema Izza	P	Siswa / Duta Energi	SDN Jajartunggal III/452	1
7	Aulia Ramadani	P	Siswa / Duta Energi	SDN Jajartunggal III/452	1
8	Dava Almer Dzaki Bachtiar	L	Siswa / Duta Energi	SDN Jajartunggal III/452	1
9	RR. Almira Nur Aqiila Salsabilla	P	Siswa / Duta Energi	SDN Jajartunggal III/452	1
10	Tsany A'mal Aldita	L	Siswa / Duta Energi	SDN Jajartunggal III/452	1
11	Arshafa Athaa Ramadhani	P	Siswa / Duta Energi	SDN Jeruk I/469	1
12	Auffa Ayu Cantika Dewi	P	Siswa / Duta Energi	SDN Jeruk I/469	1
13	Bintang Alviano Putra Arifin	L	Siswa / Duta Energi	SDN Jeruk I/469	1
14	Mareta Lintang Mutiara	P	Siswa / Duta Energi	SDN Jeruk I/469	1
15	Muhammad Raditya Ghanny	L	Siswa / Duta Energi	SDN Jeruk I/469	1
16	Akilah Frhezia Cahaya Putri	P	Siswa / Duta Energi	SDN Kertajaya	1
17	Belva Elyshia Prastiyo	P	Siswa / Duta Energi	SDN Kertajaya	1
18	Dyandra Respati Rozano P.	P	Siswa / Duta Energi	SDN Kertajaya	0
19	Fansa Diandra Rivania	P	Siswa / Duta Energi	SDN Kertajaya	1
20	Satria Agma Revansa	L	Siswa / Duta Energi	SDN Kertajaya	1
21	Achmad Dzaky Yasirlana	L	Siswa / Duta Energi	SDN Margorejo I/403	1
22	Alya Khansa Sabrina	P	Siswa / Duta Energi	SDN Margorejo I/403	1
23	Anggita Wibi Masayu	P	Siswa / Duta Energi	SDN Margorejo I/403	1
24	Muhammad Rizky Alaika Sulistyo	L	Siswa / Duta Energi	SDN Margorejo I/403	1
25	Soraya Azzahra Wisanggeni	P	Siswa / Duta Energi	SDN Margorejo I/403	1
26	Azhiva Auxera Trinabila	P	Siswa / Duta Energi	SDN Pakis V	1
27	Eirfan Aldi Pratama	L	Siswa / Duta Energi	SDN Pakis V	1
28	Elmira Ramadhani Zulkarnain Putri	P	Siswa / Duta Energi	SDN Pakis V	1
29	Fajar Maulana Ilham	L	Siswa / Duta Energi	SDN Pakis V	1
30	Yasmine Keanu Azarine	P	Siswa / Duta Energi	SDN Pakis V	1
31	Arunaya Sakyabiya	P	Siswa / Duta Energi	SDN Simomulyo I	1
32	Fachry Albar Halim	L	Siswa / Duta Energi	SDN Simomulyo I	1
33	Fatin Zaidah	P	Siswa / Duta Energi	SDN Simomulyo I	1
34	Malika Ardellia Marvin	P	Siswa / Duta Energi	SDN Simomulyo I	1
35	Valencia Safa Sabrina Kharin	P	Siswa / Duta Energi	SDN Simomulyo I	1
36	Aura Ridha Charissa	P	Siswa / Duta Energi	SDN Tanah Kali Kedinding V/579	1
37	Dahayu Ajeng Kamaratih	P	Siswa / Duta Energi	SDN Tanah Kali Kedinding V/579	1
38	Nayla Nafisa Nufi	P	Siswa / Duta Energi	SDN Tanah Kali Kedinding V/579	1
39	Shinta Anastasya Putri	P	Siswa / Duta Energi	SDN Tanah Kali Kedinding V/579	1
40	TRI ASTUTI, S.Pd	P	Guru Pendamping / Manajer Energi	SDN Dr. Sutomo V/327	1
41	Manzilatun, S.Pd	P	Guru Pendamping	SDN Dr. Sutomo V/327	0
42	Singgih		Guru Pendamping	SDN Dr. Sutomo V/327	0
43	Suma'yah		Guru Pendamping	SDN Dr. Sutomo V/327	0
44	Tantry Herveina Susan,S.PD	P	Guru Pendamping	SDN Dr. Sutomo V/327	0
45	Yetty Kur		Guru Pendamping	SDN Dr. Sutomo V/327	0
46	Naysa Kyna Ardian	P	Siswa	SDN Dr. Sutomo V/327	0
47	ANISA ROCHMAH S.Pd	P	Guru Pendamping / Manajer Energi	SDN Jajartunggal III/452	1
48	Asri Sukariyani, S.Pd.	P	Kepala Sekolah	SDN Jajartunggal III/452	0
49	RINDI WIDAYATI, S.Pd.,Gr	P	Guru Pendamping / Manajer Energi	SDN Jeruk I/469	1
50	Rumadi, S.Pd.	L	Kepala Sekolah	SDN Jeruk I/469	0
51	Nanang Fauzi	L	Guru Pendamping / Manajer Energi	SDN Kertajaya	1
52	Sutrisno, S.Pd.	L	Kepala Sekolah	SDN Kertajaya	0
53	SRI UTAMI SPd	P	Guru Pendamping / Manajer Energi	SDN Margorejo I/403	1
54	Harmiyati	P	Guru Pendamping	SDN Margorejo I/403	0
55	Izzatul Diniyah	P	Guru Pendamping	SDN Margorejo I/403	0
56	LIS NUR EKOWATI,S.Pd, M.Si	P	Guru Pendamping / Manajer Energi	SDN Pakis V	1
57	IRAWAN MUHANIK, M.Pd	P	Kepala Sekolah	SDN Pakis V	0
58	UTHUT RINI YUNITA,S.Pd	P	Guru Pendamping / Manajer Energi	SDN Simomulyo I	1
59	Bagas Hadi			SDN Simomulyo I	0
60	Sri Gati Ati,S.Pd	P	Guru Pendamping / Manajer Energi	SDN Tanah Kali Kedinding V/579	1
61	Purnomo, S.Pd.	L	Kepala Sekolah	SDN Tanah Kali Kedinding V/579	0
62	Ani Widiastuti	P	Guru Pendamping	SDN Tanah Kali Kedinding V/579	0
63	Winarto, S.Pd.	L	Guru Pendamping	SDN Tanah Kali Kedinding V/579	0

Energy Ambassador (Junior High School) Competition Judging Day
Attendance Recapitulation

No	Name	L/P	Position	School Name	Attendance
1	Alicya Firi Istiana	P	Siswa / Duta Energi	SMP Kemala Bhayangkari 6	1
2	Denis Riskayanti	P	Siswa / Duta Energi	SMP Kemala Bhayangkari 6	1
3	Gabrielle Yoshika Heavenly Efrata	P	Siswa / Duta Energi	SMP Kemala Bhayangkari 6	1
4	Nurul Qomariyah	P	Siswa / Duta Energi	SMP Kemala Bhayangkari 6	1
5	Richardo Pison Tulle	L	Siswa / Duta Energi	SMP Kemala Bhayangkari 6	1
6	Daniel Utomo	L	Siswa / Duta Energi	SMP Kristen Aletheia Surabaya	1
7	Elia	L	Siswa / Duta Energi	SMP Kristen Aletheia Surabaya	1
8	Excel Christian Chandra	L	Siswa / Duta Energi	SMP Kristen Aletheia Surabaya	1
9	Jesslyn Marsha Siswanto	P	Siswa / Duta Energi	SMP Kristen Aletheia Surabaya	1
10	Valensia Amelda	P	Siswa / Duta Energi	SMP Kristen Aletheia Surabaya	1
11	Adelia Anggraini	P	Siswa / Duta Energi	SMP Taman Pelajar Surabaya	1
12	Antony Sancha Natasya	P	Siswa / Duta Energi	SMP Taman Pelajar Surabaya	1
13	Elen Nindia	P	Siswa / Duta Energi	SMP Taman Pelajar Surabaya	1
14	Hurin Hafizha	P	Siswa / Duta Energi	SMP Taman Pelajar Surabaya	1
15	Putri Linda Siswanto	P	Siswa / Duta Energi	SMP Taman Pelajar Surabaya	1
16	Aditiya Risky Maulana	L	Siswa / Duta Energi	SMP Wachid Hasjim 5	1
17	Ayudwiningsih	P	Siswa / Duta Energi	SMP Wachid Hasjim 5	1
18	Fajar Nur Rahmat	L	Siswa / Duta Energi	SMP Wachid Hasjim 5	0
19	Luna Amanda Putri Irawan	P	Siswa / Duta Energi	SMP Wachid Hasjim 5	1
20	Muhammad Arif Abdullah	L	Siswa / Duta Energi	SMP Wachid Hasjim 5	1
21	Annabelle Aura	P	Siswa / Duta Energi	SMPN 39 Surabaya	0
22	Athallah Yoga Prathama	L	Siswa / Duta Energi	SMPN 39 Surabaya	1
23	Avrille Paskalina Risdiyanto	P	Siswa / Duta Energi	SMPN 39 Surabaya	1
24	Cut Zidny Zukhrufa Zulfikar	P	Siswa / Duta Energi	SMPN 39 Surabaya	1
25	Faruq Callan Mirjahaan	L	Siswa / Duta Energi	SMPN 39 Surabaya	1
26	Achmad Ravi Pratama	L	Siswa / Duta Energi	SMPN 51 Surabaya	1
27	Ahmad Burhanudin	L	Siswa / Duta Energi	SMPN 51 Surabaya	1
28	Alila Zivalni	P	Siswa / Duta Energi	SMPN 51 Surabaya	1
29	Anezka Nayla Zahra	P	Siswa / Duta Energi	SMPN 51 Surabaya	1
30	Anjeanette Queena Nurillah	P	Siswa / Duta Energi	SMPN 51 Surabaya	1
31	Alicia Christy Santoso	P	Siswa / Duta Energi	SMPN 52 Surabaya	1
32	Candy Novelianti	P	Siswa / Duta Energi	SMPN 52 Surabaya	1
33	Destia Nur Amanda H.	P	Siswa / Duta Energi	SMPN 52 Surabaya	1
34	Rosellin Virsha Nathaniela Rijadi	P	Siswa / Duta Energi	SMPN 52 Surabaya	1
35	Veronica Angelina Nato	P	Siswa / Duta Energi	SMPN 52 Surabaya	1
36	Agrifhina Putri Arlysia	P	Siswa / Duta Energi	SMPN 63 Surabaya	1
37	Brieanne Aliyyah Talitha Blythe	P	Siswa / Duta Energi	SMPN 63 Surabaya	1
38	Galang Albi Wirano	L	Siswa / Duta Energi	SMPN 63 Surabaya	1
39	Helmi Yaqdhan Efendy Putra	L	Siswa / Duta Energi	SMPN 63 Surabaya	1
40	Vira Violina Ramdhani	P	Siswa / Duta Energi	SMPN 63 Surabaya	1
41	NUR FAJRIYATIN	P	Guru Pendamping / Manajer Energi	SMP Kemala Bhayangkari 6 Surabay	1
42	Syahrul, S.Pd.	L	Kepala Sekolah	SMP Kemala Bhayangkari 6 Surabay	1
43	Novianti Kusumawardani, S.Pd.	P	Guru Pendamping / Manajer Energi	SMP Kristen Aletheia Surabaya	1
44	Sinar Jonan, S.Pd.	L	Guru Pendamping / Manajer Energi	SMP Kristen Aletheia Surabaya	1
45	Diach Andhayani, Ir	P	Kepala Sekolah	SMP Kristen Aletheia Surabaya	0
46	Moses Rumantya Kenneth Buana	L	Siswa	SMP Kristen Aletheia Surabaya	0
47	Mohamad Imron	L	Guru Pendamping / Manajer Energi	SMP Taman Pelajar Surabaya	1
48	Reno Aristia Putra	L	Guru Pendamping / Manajer Energi	SMP Taman Pelajar Surabaya	1
49	Slamet Wahyono	L	Guru Pendamping / Manajer Energi	SMP Wachid Hasjim 5	1
50	Nining Sirotim, S.Ag., M.Pd.		Kepala Sekolah	SMP Wachid Hasjim 5	0
51	Dzulia Sari Destia N	P	Siswa	SMP Wachid Hasjim 5	0
52	Prasetyarini Mustikaratri	P	Guru Pendamping / Manajer Energi	SMPN 39 Surabaya	1
53	Meike Wulandari	P	Guru Pendamping / Manajer Energi	SMPN 51 Surabaya	1
54	Sulastri, S.Pd., M.Si.	P	Kepala Sekolah	SMPN 51 Surabaya	0
55	Diana Lestari	P	Guru Pendamping / Manajer Energi	SMPN 52 Surabaya	1
56	Restu Cahyaning Riadhini	P	Siswa	SMPN 52 Surabaya	0
57	Wahyu Aprilyanti	P	Guru Pendamping / Manajer Energi	SMPN 63 Surabaya	1

Energy Ambassador (Senior High School) Competition Judging Day
Attendance Recapitulation

No	Name	L/P	Position	School Name	Attendance
1	Ahmad Fadhil Damarmanah Goesti P	L	Siswa / Duta Energi	SMAN 11 Surabaya	1
2	Aulia Sabrina Maulida	P	Siswa / Duta Energi	SMAN 11 Surabaya	1
3	Karisma Ardalita Septifarizah	P	Siswa / Duta Energi	SMAN 11 Surabaya	1
4	Rahmah Rihadhatul 'Aisy	P	Siswa / Duta Energi	SMAN 11 Surabaya	1
5	Selila Florian Nurul Ilmah	P	Siswa / Duta Energi	SMAN 11 Surabaya	1
6	Alvina Alya Salsabila	P	Siswa / Duta Energi	SMAN 15 Surabaya	1
7	Aulia Firzat Nur Azizah	P	Siswa / Duta Energi	SMAN 15 Surabaya	1
8	Fripasya Sepda Etdifa Jiddan	L	Siswa / Duta Energi	SMAN 15 Surabaya	1
9	Mitra Partogi	L	Siswa / Duta Energi	SMAN 15 Surabaya	1
10	Safira Puspita Ramadhani	P	Siswa / Duta Energi	SMAN 15 Surabaya	1
11	Aurelliano Jovan Meydianto	L	Siswa / Duta Energi	SMAN 4 Surabaya	1
12	Erwin Tri Prasetya	L	Siswa / Duta Energi	SMAN 4 Surabaya	1
13	Istianah Hajarullah	P	Siswa / Duta Energi	SMAN 4 Surabaya	1
14	Rizka Annisa Vira Amalia	P	Siswa / Duta Energi	SMAN 4 Surabaya	1
15	Zakianissa Azalia Kurniawan	P	Siswa / Duta Energi	SMAN 4 Surabaya	1
16	Akhadiya Mar'atus Solikha	P	Siswa / Duta Energi	SMAN 8 Surabaya	1
17	Alisya Nayla Fitriyah	P	Siswa / Duta Energi	SMAN 8 Surabaya	1
18	Oryza Hafshah Syafira	P	Siswa / Duta Energi	SMAN 8 Surabaya	1
19	Raya Aury Winata	P	Siswa / Duta Energi	SMAN 8 Surabaya	1
20	Safa Athallah	P	Siswa / Duta Energi	SMAN 8 Surabaya	1
21	Ahmad Nur Habib Al Luthfi	L	Siswa / Duta Energi	SMK Assa'addah	1
22	Diyah Ayu Ramadhani	P	Siswa / Duta Energi	SMK Assa'addah	1
23	Jihan Al Balqis	L	Siswa / Duta Energi	SMK Assa'addah	1
24	Muh. Fatkhur Rifa	P	Siswa / Duta Energi	SMK Assa'addah	1
25	Nur Ain	P	Siswa / Duta Energi	SMK Assa'addah	1
26	Bayu Trisna Aji	L	Siswa / Duta Energi	SMKN 2 Surabaya	1
27	Berlian Ananda A	P	Siswa / Duta Energi	SMKN 2 Surabaya	1
28	Jessica Puspita Sari	P	Siswa / Duta Energi	SMKN 2 Surabaya	1
29	Khalfi Alam Nuran	L	Siswa / Duta Energi	SMKN 2 Surabaya	1
30	Sadewo	L	Siswa / Duta Energi	SMKN 2 Surabaya	1
31	Ahmad Bintang Lazuardi	L	Siswa / Duta Energi	SMKN 3 Surabaya	1
32	Ardi Ramadhani	L	Siswa / Duta Energi	SMKN 3 Surabaya	1
33	Candra Stefanus Manurung	L	Siswa / Duta Energi	SMKN 3 Surabaya	1
34	Fandu Andhika Pratama	L	Siswa / Duta Energi	SMKN 3 Surabaya	1
35	Kirana Puspita	P	Siswa / Duta Energi	SMKN 3 Surabaya	1
36	Ghillang Pratama Trie Wijaya	L	Siswa / Duta Energi	SMKN 5 Surabaya	1
37	Joevan Hidayah Pratama Putra	L	Siswa / Duta Energi	SMKN 5 Surabaya	1
38	Muhammad Naufal Fajar	L	Siswa / Duta Energi	SMKN 5 Surabaya	1
39	Muhammad Reyhan Arifin	L	Siswa / Duta Energi	SMKN 5 Surabaya	1
40	Siti Mustiana	P	Siswa / Duta Energi	SMKN 5 Surabaya	1
41	Nasrul Ajib	L	Guru Pendamping / Manajer Energi	SMAN 11 Surabaya	1
42	R. A. Djunaidi	L	Kepala Sekolah	SMAN 11 Surabaya	0
43	Fadhillah Nastiti Yuliani	P	Siswa	SMAN 11 Surabaya	0
44	Ellyst R Siburian, M.Pd	P	Guru Pendamping / Manajer Energi	SMAN 15 Surabaya	1
45	Roslina Hidayati, M.Pd.		Guru Pendamping	SMAN 15 Surabaya	0
46	Zaenal Arifin		Guru Pendamping	SMAN 15 Surabaya	0
47	Dra. Soelastri Kohar, M.Pd.	P	Guru Pendamping / Manajer Energi	SMAN 4 Surabaya	1
48	Ari Mujiati, S.Pd.	P	Guru Pendamping / Manajer Energi	SMAN 8 Surabaya	1
49	Ali Usman Nawawi, S.Pd.	L	Guru Pendamping	SMAN 8 Surabaya	0
50	Guntur W	L	Guru Pendamping	SMAN 8 Surabaya	0
51	Zahrotul Arofah	P	Guru Pendamping / Manajer Energi	SMK Assa'addah	1
52	Moch. Jarwanto	L	Guru Pendamping / Manajer Energi	SMKN 2 Surabaya	1
53	Ersyavira Nanda Ichwana	P	Siswa	SMKN 2 Surabaya	0
54	Muhammad Ilham Febrianto	L	Siswa	SMKN 2 Surabaya	0
55	Diana Putri Pratiwi S, S.Pd.	P	Guru Pendamping / Manajer Energi	SMKN 3 Surabaya	1
56	Yoyok Tri Haryoko	L	Kepala Sekolah	SMKN 3 Surabaya	0
57	Ir. Tanto W	L	Guru Pendamping	SMKN 3 Surabaya	0
58	M. Sukiyono	L	Guru Pendamping	SMKN 3 Surabaya	0
59	Nanik Sukmawati	P	Guru Pendamping / Manajer Energi	SMKN 5 Surabaya	1

Annex 4: Recapitulation of Competition Judging Sheet

RECAPITULATION RESULT FROM JUDGES ASSESSMENT SHEET
(Elementary School)

No.	Criteria	Max Score	Score							
			SDN Dr. Sutomo V/327	SDN Jajartunggal III/452	SDN Jeruk I/469	SDN Kertajaya	SDN Margorejo I/403	SDN Pakis V	SDN Simomulyo I	SDN Tanah Kali Kedinding V/579
I	School Commitment	20	19.075	19.1	18.175	18.225	18.35	16.425	16.525	14.625
II	Program at School	30	27.3	28.5	27.1125	26.175	25.65	24.675	21.825	19.4625
III	Program at Home and Non-School Environment	30	27	26.3	26.75	24.25	27.25	22.35	21.95	19.05
IV	Creativity	20	18.9	18.5	17.53333333	16.26666667	17.43333333	16.16666667	21.95	14.56666667
Total Score		100	92.28	92.40	89.57	84.92	88.68	79.62	82.25	67.70

RECAPITULATION RESULT FROM JUDGES ASSESSMENT SHEET
(Junior High School)

No.	Criteria	Max Score	Score							
			SMP Kemala Bhayangkari 6	SMP Kristen Aletheia Surabaya	SMP Taman Pelajar Surabaya	SMP Wachid Hasjim 5	SMPN 39 Surabaya	SMPN 51 Surabaya	SMPN 52 Surabaya	SMPN 63 Surabaya
I	School Commitment	20	12.33	18.00	17.55	12.00	18.18	18.08	13.60	10.13
II	Program at School	30	19.61	26.63	24.30	16.31	24.90	26.74	19.16	16.95
III	Program at Home and Non-School Environment	30	19.75	26.10	21.25	18.75	23.85	20.55	17.75	15.80
IV	Creativity	20	14.90	18.73	16.87	12.33	17.00	17.57	11.13	9.30
Total Score		100	66.59	89.46	79.97	59.40	83.93	82.93	61.65	52.18

RECAPITULATION RESULT FROM JUDGES ASSESSMENT SHEET
(Senior High School)

No.	Criteria	Max Score	Score							
			SMAN 4 Surabaya	SMAN 8 Surabaya	SMAN 11 Surabaya	SMAN 15 Surabaya	SMK Assa'adah	SMKN 2 Surabaya	SMKN 3 Surabaya	SMKN 5 Surabaya
I	School Commitment	20	14.38	17.68	17.78	19.83	19.25	16.13	16.50	14.25
II	Program at School	30	24.75	25.54	25.76	28.09	27.75	22.88	25.95	21.23
III	Program at Home and Non-School Environment	30	21.88	21.40	23.90	27.55	27.25	20.25	22.00	22.80
IV	Creativity	20	16.41	13.85	15.85	17.98	17.50	13.50	15.63	15.88
Total Score		100	77.41	78.46	83.29	93.44	91.75	72.75	80.08	74.15

This page is intentionally left blank