

Dow Thailand Group

2017 Sustainability Report



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Dow Thailand Group



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Message from President



2017 is another great year for Dow Thailand.
We achieved good performance in various areas
including business, corporate citizenship, and EH&S.

Regarding business and investment, we had inaugurated the Center for Advanced Analytical Technology, the latest center of Dow with state-of-the-art technology, at the Asia Industrial Estate, Rayong Province. With this center, we are able to better respond to our customers' needs and develop innovative solutions to enhance safety and efficiency of our operation. In addition, this center will enable us to develop new generation of Thai scientists by equipped them with advanced technology and international research skill in order to support Thai industry's transformation to 'Thailand 4.0' and prepare them for the digital era.

For Environment, Health and Safety (EH&S), we also achieved our first year of having 'zero waste to landfill', a significant milestone for Dow Thailand to become the sustainability leader.

For good Corporate Citizenship, we have continued developing youth, supporting science education and the environmental conservation programs by engaging and partnering with all stakeholders including private sector, the Government sector, and the civil society including general public in our operation areas to implement all corporate citizenship programs aiming to create sustainable society and country's prosperity.

Those great milestones have been achieved because we receive great supports from our employees, customers, business partners, and our communities. I'd like to take this opportunity to sincerely thank all of you who have contributed to Dow Thailand for the past year.

Thank you.

Chatchai Luanpolcharoenchai

*President
Dow Thailand Group*

Dow Thailand Group

Consisting of Companies of Dow Chemical Thailand and the SCG-Dow Group, Dow Thailand Group is the largest manufacturing base of Dow Chemical in Asia-Pacific region and a leading petrochemical company in Thailand. We are a premier materials science solution provider with focus on three growth markets – packaging, infrastructure and consumer care. The group is committed to developing science-driven innovations and strives to form effective collaboration and networks to bring about sustainability for its business as well as society.

Mission

TO PASSIONATELY CREATE
INNOVATION FOR OUR STAKEHOLDERS
AT THE INTERSECTION OF CHEMISTRY,
BIOLOGY, AND PHYSICS

Vision

MAXIMIZE LONG-TERM VALUE PER
SHARE BY BEING THE MOST VALUABLE
AND RESPECTED SCIENCE COMPANY
IN THE WORLD

Value

INTEGRITY,
RESPECT FOR PEOPLE,
PROTECTING OUR PLANET

Code of Business Conduct

The Diamond Standard, Living Our Values Every Day puts a framework around these Values that is multifaceted and clear, setting expectations and guiding our behavior. Our intent, of course, is to enable ethical, lawful decision-making and to create an environment of respect, but that's not all. We believe it is also our responsibility as a corporate citizen to extend these Values well beyond our Company walls. The Diamond Standard applies to all employees, our subsidiaries, and group companies of Dow Chemical, including joint ventures that adopt this code of conduct.

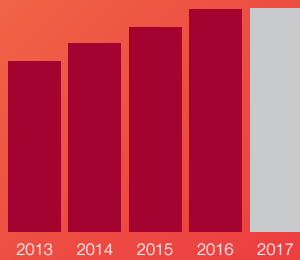
See our
Diamond Standard



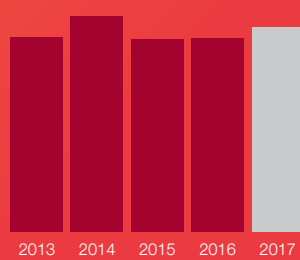
2017 Company's Highlights

Business Performance

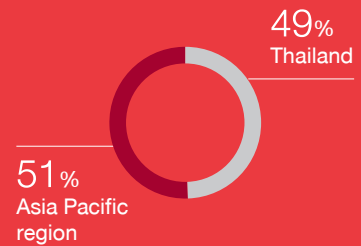
Total Production
2,133,435 tons



Net Sales
117,971 million baht



49% of our products were sold in Thailand and 51% were exported to Asia Pacific region.



Human Resources

Number of Employees: 969



Corporate Citizenship

635
volunteers
or 66% of total
employees

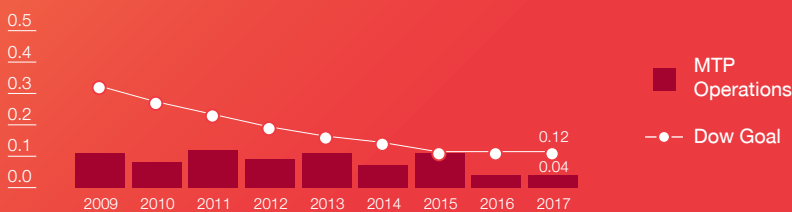
4,592
man hours

109,210
direct
beneficiaries

Responsible Operations

Dow Thailand Group Operations Personal Safety Rate (per 200,000 hours)

(The annual recordable personal safety rate per 200,000 working hours was at 0.04, which was the first quartile of safety performance among Dow Large Site).



Waste Management

We achieved zero waste to landfill.

Promoting Thailand 4.0

Innovation and technology has been a core driver for Dow business for more than 120 years. This approach is in line with Thailand's 4.0 policy, which aims to drive Thailand economy with innovation. In 2017, Dow Thailand Group had been promoting Thailand's 4.0 policy with its several programs includes developing Thai students and workforce, adopting robots in our plants and improving SMEs' operational efficiencies as described below:



Center for Advanced Analytical Technology

In 2017, Dow opened the Center for Advanced Analytical Technology at Asia Industrial Estate in Rayong province marking its first center in Asia Pacific and the latest center of Dow. The center is equipped with world-class measurement science and a highly qualified team of scientists and analysts. The total investment of construction and technology is estimated at 340 million baht or 10 million US dollars.

This latest world-class analytical technology center delivers new technology and manufacturing process development as well as product improvement to ensure production reliability, efficiency, and customer satisfaction. While supporting the growth for Dow in Asia Pacific, the center also contributes to Thailand 4.0 by enhancing R&D technologies, transferring advanced science technologies to Thai workforce, and building the new R&D generation.

We are now partnering with the Department of Chemistry, Faculty of Science, Chulalongkorn University to initiate Dow Internship program which will offer Master's degree and Ph.D.

students a practical learning and on the job training at Dow Thailand's Center for Advanced Analytical Technology in Asia Industrial Estate. This program will enhance students' opportunity in learning world-class R&D technology and utilizing high-end analytical equipment to solve critical manufacturing problems so that they become a well-equipped workforce in the chemical industry.

Vocational Chemical Engineering Practice College Project (V-ChEPC)

A collaboration between Petroleum Institute of Thailand and the Petrochemical Club of the Federation of Thai Industries (FTI) in which technical students are taught through the "Learn How to Learn" and "Learning by Doing" concepts in a 2-year curriculum. Since 2008, Dow Thailand Group has donated 9 million baht to the project. At present, more than 40 students were interned at our plants and 16 of which are employed as our employees.

This project is to equip chemistry engineering students with necessary knowledge and practices that required by petrochemical industry. This program accelerates students' potential to support the emergence of the Eastern Economic Corridor and drive the country towards Thailand 4.0.

Map Ta Phut Robotic Starter Kit Project

In 2017, Dow Thailand Group began the plan to use robots in the operation. The project was developed under a global agreement with several suppliers around the globe to provide the most suitable and advanced technologies to support Dow Business by promoting operation safety and value creation. Specifically in safety, which is Dow's first priority, the project aims to reduce life interface with confined space entry / elevated work / submarine work and some retrievable operation.

Five types of robots have been used as a starter, and more will be applied in the coming years. The five types of robots include; Surficial Inspection Robots, Surficial Operation Robots, Aerial Inspection Robots, Submersible Inspection Robots and Design & Modification Robot.

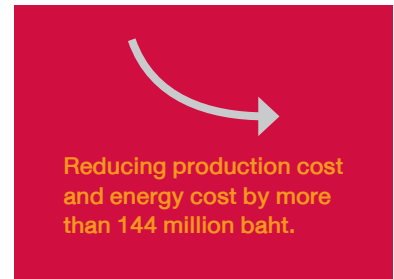
In addition, this project aims to be a flagship to motivate and influence our employees to create innovation and new technologies. This is in line with 4.0 strategy to cultivate innovative thinking of our people.



Achievements of the Dow Chemical for Sustainable Industry Project



Enabling the 40 participating entrepreneurs to increase production efficiency by 30%.

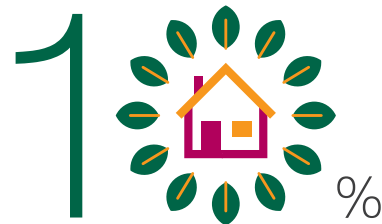


Reducing production cost and energy cost by more than 144 million baht.

Dow Chemical for Sustainable Industry

A collaboration project between Dow Thailand Group, Thailand Environment Institute Foundation, Ministry of Industry, Department of Industrial Promotion, Department of Industrial work, Thai Industrial standards Institute and Thai-US Creative Partnership to help small and medium manufacturers in Thailand improve operational efficiencies, e.g. energy saving, environment conservation, safety, well-being of employees and communities through a Lean Management for Environment which will increase their competitiveness in global market in a sustainable way.

Minimize more than 10% of environmental and pollution impact in the surrounding communities.



Reducing of greenhouse gas emission 1.5 million kgCO₂e/year which equivalent to planting 150,000 trees.

Increasing quality of life of 16,400 employees and 922,000 people living in the surrounding areas of the companies and manufacturers.



Responsible Operations

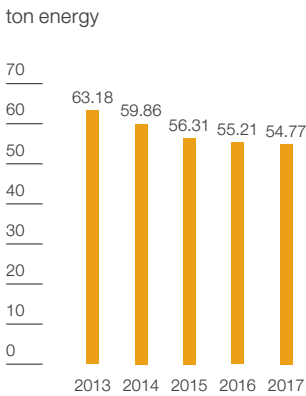


At Dow, protecting people and the environment will be a part of everything we do and every decision we make. Each employee has a responsibility in ensuring that our products and operations meet applicable government or Dow standards, whichever is more stringent. Our goal is to eliminate all injuries, prevent adverse environmental and health impacts, reduce wastes and emissions, and promote resource conservation at every stage of the life cycle of our products. We will report on our progress and be responsive to the public.

In 2017, we continued to implement the most effective technology and operating discipline best practices that ensure the efficient operation of our 14 manufacturing plants. Our energy intensity (the ratio of a ton energy used per ton of production), water intensity (the ratio of a cubic meter of water used per metric ton of production) and wastewater intensity (the ratio of a cubic meter of wastewater generated per metric ton of production) are all lower than previous years. 2017 was the first year we achieved our goal of zero landfill and we successfully increased recycling waste to 62% from 44% in 2016. In terms of health and safety performance, we continued to keep our incident rate as low as last year which was the first quartile of safety performance among Dow Large Site. Details are shown below.

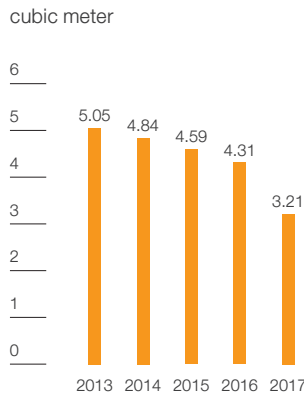
Energy Consumption

(a ton energy used per ton of production)



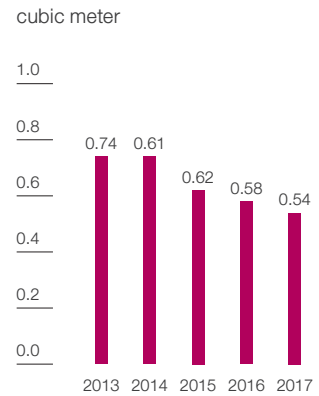
Water Intensity

(a cubic meter of water used per metric ton of production)



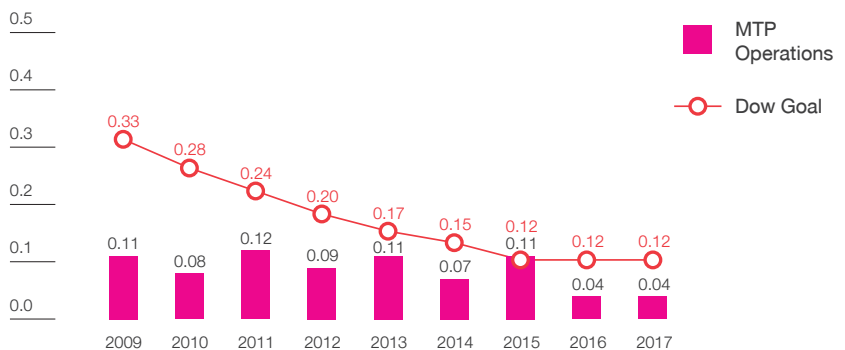
Wastewater Intensity

(a cubic meter of wastewater generated per metric ton of production)

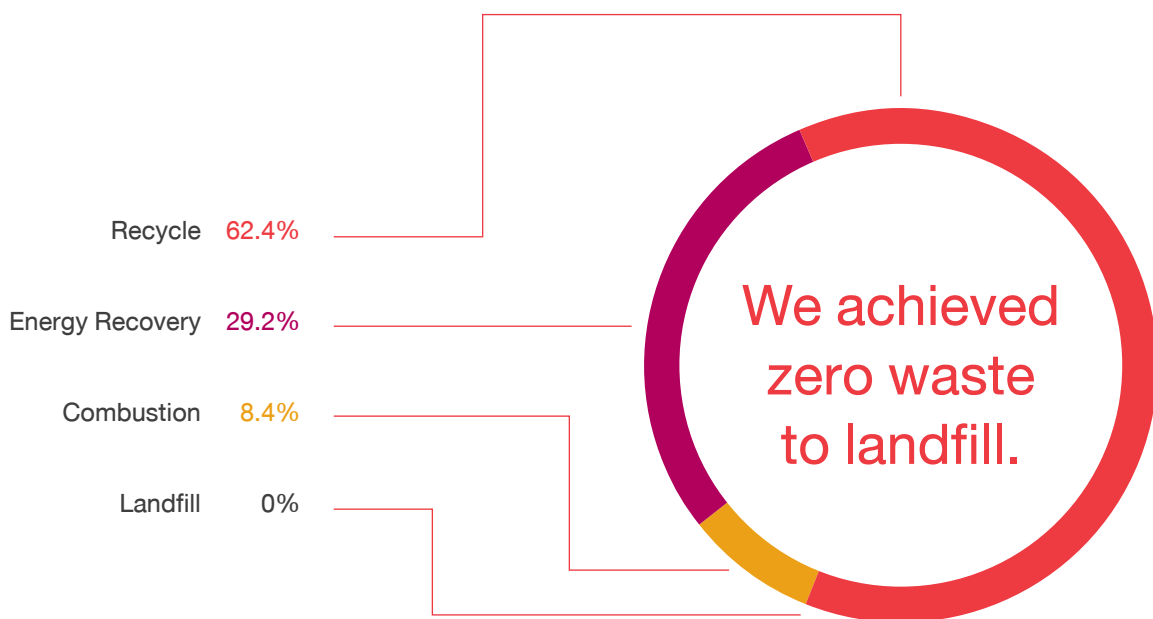


Dow Thailand Group Operations Personal Safety Rate

(per 200,000 hours)



Waste Management



Great Place to Work



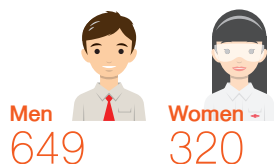
At Dow, we believe in diversity and inclusion. We believe that differences among more than 50,000 employees worldwide and the energy generated from their collaboration will allow Dow to resolve problems and bring new solutions to the world.

The same belief applies to Dow Thailand Group. Throughout 50 years, our staff have been our most important resource and have driven our growth. We emphasize the importance of people and teamwork. We are committed to taking care of and enhancing the capacity of our staff and creating a sense of family in the workplace. This helps us prosper in a sustainable way.

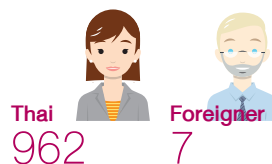
Total Number of Employees



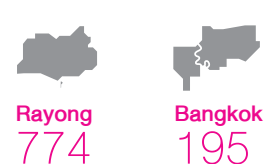
Number of Men VS Women Employees



Number of Thai VS Foreigner Employees



Number of Employees Working in Rayong VS Bangkok



HR Activities in 2017

Career Advisor Program

This program helps employees find the right job. Participants have an opportunity to have a one-on-one talk with the chosen advisors to learn and listen to their viewpoints, including suggestions for career planning, which can be incorporated into their professional and personal development plans. The 15 advisors include directors, leaders, and specialists from all departments.

Min2Max Activity

To ease complexity of work processes and work stress, the “Minimal to Maximize” or “Min2Max” Program was initiated to encourage employees to think of new and

simpler ways to work and reduce stress at work. More than 70 ideas were generated and developed for real work process improvement.

Manage Stress and Build Resiliency

The activity is designed to help employees gain insights into what makes them feel stressed and demotivated, and what inspires and motivates them to overcome stress and strengthen resiliency.

Appreciation Activity

The activity was initiated for employees to express appreciation to one another face to face, and to maintain a good working environment.



Employee Success Development

At Dow, we have the learning and development center offering diverse services ranging from online classroom learning to official and unofficial consulting services, workshop classroom and a strong network of enthusiastic employees. These allow our employees to grow along the career path specifically designed with their career advancement, strengths and personal interest in mind. CEO International Exchange Program is one of the programs at Dow to give employees an opportunity to experience cross-cultural working environment in order to enhance capability for career success.

“This program is designed to push people out of their comfort zone. Adaptation is very important in terms of knowledge and culture integration.”



Songpol Pringprayong,
Production Leader for Acrylic Emulsion Plant and Poly-Acrylic Acid Plant, participated in the CEOIX in 2015.

He spent 10 months in Sao Paulo, Brazil, working in the agricultural business in a corn production plant. Moving from chemical engineer to agronomist where he had nearly zero knowledge was challenging for him.



“I need to accelerate learning so that I can contribute. Also, blending into a new culture is challenging as I am exposed to a totally different group of people.”

These two experiences are what Songpol found most valuable which he later applied when he took a new role as production leader in the new plant.

“Acrylic Emulsion Plant and Poly-Acrylic Acid technology is very new to me. Not only do I get to work with new people, the business culture is unique as it is market-driven business. It is a big change but the adaptive skills I built at the time in CEOIX, eased my transition.”

What Waranya finds most beneficial from the CEOIX program is an enhancement in her leadership skills, especially in a diverse workplace development, and the encouragement to embrace change.

“I learnt how to develop myself to acquire a set of competencies to contribute to cross-cultural assignments. American people always take initiative or innovate to make things better at the right time and build a coalition to come up with great ideas or strategies. I’ve continued to develop my skill sets of creativity and initiative by widening my perspective to learn things from different angles and accepting new ideas. This experience abroad will shape my skills required for career advancement in the future.”

Waranya Charoensuk,
Operations Leader for Specialty Elastomers Plant, participated in the CEOIX assignment as EH&S Delivery Leader for Hydrocarbon Business in Freeport, Texas, USA from July to December 2017.



Corporate Citizenship



Throughout our 50 years of business in Thailand, Dow Thailand Group has strived to put into action the company's commitment to advancing human progress by working to create sustainable communities. Our strategy focuses on three strategic commitments: workforce solutions, community solutions and business solutions. Through these commitments we look to address local challenges associated with education, workforce development, well-being and poor health.

In alignment with the company's 2025 Sustainability Goals, our approach promotes relevant, long-term change by applying integrated solutions and cross-sector collaborations at the intersection of sustainability, innovation and citizenship.

See our 2025 Sustainability Goals



In 2017, we expanded our corporate citizenship projects to impact more people in broader areas, intensified existing projects to create greater impact while strengthening collaboration with government and non-governmental organizations in helping lead the transition for sustainable society as detailed below.



2017 Highlight Corporate Citizenship Projects

Building the Workforce of Tomorrow

Dow is committed to nurturing the workforce of the next generation by enhancing the skills and expertise of teachers, inspiring a new generation of students to study science, technology, engineering and mathematics (STEM), offering opportunities and developing the capabilities of students from their early childhood to become the country's competent workforce for the future.

- Dow-EF Development for Successful Youth & Rayong Happiness** – A program to develop Executive Functions (EF), a set of cognitive processes located in the prefrontal cortex of our brains which control thoughts, decision-making, emotion, expression and action. EF development is one of the mechanisms for building a strong community while preventing social problems. In 2017, we conducted more than 100 EF promotional activities.

Developed

240 community volunteers to promote EF development in 2017

The number of participants in EF activity doubled from the previous year

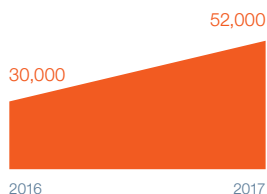
2,575		more than	5,000
2016		2017	

2. Dow Chemistry Classroom – A program to promote science teaching and learning through small-scale chemistry laboratory techniques. The techniques are considered highly efficient and safe, using 2,000 times less chemical compared to traditional chemistry laboratory experiments.

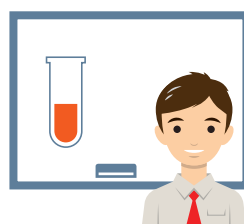
More than
7,000
set of small-scale kits
were distributed.



73%
increase in the number
of students who
experienced first-hand
chemistry laboratory
experiments using
small-scale technique.



860 teachers
from 443 schools
nationwide were trained
to apply the technique.



The 2nd Dow-CST Award competition was organized with the aim of encouraging science teachers and students to work together and think creatively to apply small-scale chemistry laboratory techniques to developing solutions to today's issues and challenges. 47 projects from 29 schools nationwide were submitted for the award.

3. Vocational Chemical Engineering Practice College (V-ChEPC) – A collaboration between the Petroleum Institute of Thailand, the Petrochemical Club of The Federation of Thai Industries and Petrochemical companies aims to prepare potential students for the petrochemical industry by promoting the project-based learning through learning-by-doing concept under the supervision of experts and skilled employees in leading petrochemical companies.

Total **9** million baht support
for the project since 2008

More than 40 interns trained,
16 of whom became employees

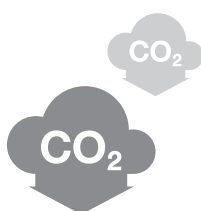


Innovating for Global Solutions

1. Dow Chemical for Sustainable Industry – A collaboration with Thailand Environment Institute Foundation, Ministry of Industry, Department of Industrial Promotion, Department of Industrial Work, Thai Industrial Standards Institute, and Thai-US Creative Partnership aims to help small and medium sized manufacturers in key industries in Thailand improve safety and environmental standards as well as increase productivity and profitability while enhancing competitiveness in regional and global markets in a sustainable way through the Lean Management for Environment tool.

All figures below are based on combined results from 40 participating manufactures from 2012 to 2017.

1,500,000
kilograms of
carbondioxide reduction



144 million baht
reduction in production
& energy cost



More than **5,000**
personnel trained in
Lean Management for
Environment.



922,000
direct and indirect
beneficiaries between
2012 - 2017*



* Department of Industrial Work (the number includes direct beneficiaries, employees, and indirect beneficiaries, and communities around the 40 participating manufacturers)

2. Community Partnership Association (CPA) – Thailand’s first collaboration among industrial companies in Map Ta Phut area since 2010. Dow is one of the five co-founder companies who have committed to develop and enhance a green industrial business while developing a sustainable environmental management network with the ultimate goal of turning Rayong province into an Eco Industrial Town.

With the support from CPA, 3 plants received the Eco Factory award, an award from The Industrial Environmental Institute and The Federation of Thai Industries given to plants that display a strong commitment to responsible operations for sustainable development.

ECO INDUSTRIAL TOWN

17 visits of the mobile clinic to Map Ta Phut and Ban Chang communities

27 scholarships awarded to nursing students for 7 consecutive years.

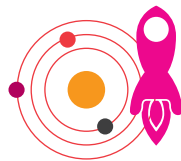
38 scholarships awarded to undergraduate students of Rayong province for 7 consecutive years.

Other Corporate Citizenship Projects

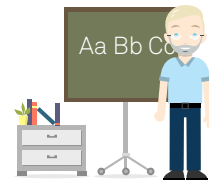
STEM & Education



Official sponsor of **the 49th International Chemistry Olympiad (IChO)** and organized “The Future of Chemistry: Career and Opportunity” for students participating in the competition.



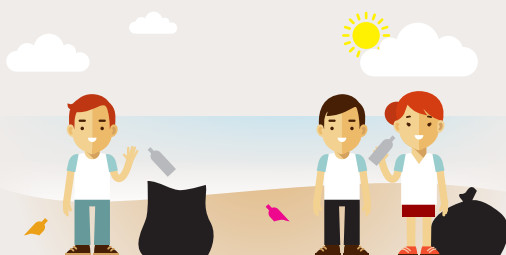
Collaborated with the National Science Museum to organize **the 4th Science Caravan** in Rayong focusing on space education. More than 15,000 people joined the event.



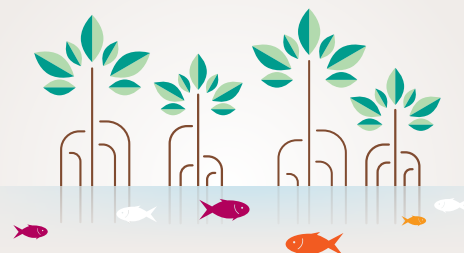
Organized **the 7th - 9th Classes of English Training** for more than 320 kids in Rayong to enhance English skill.

Environment

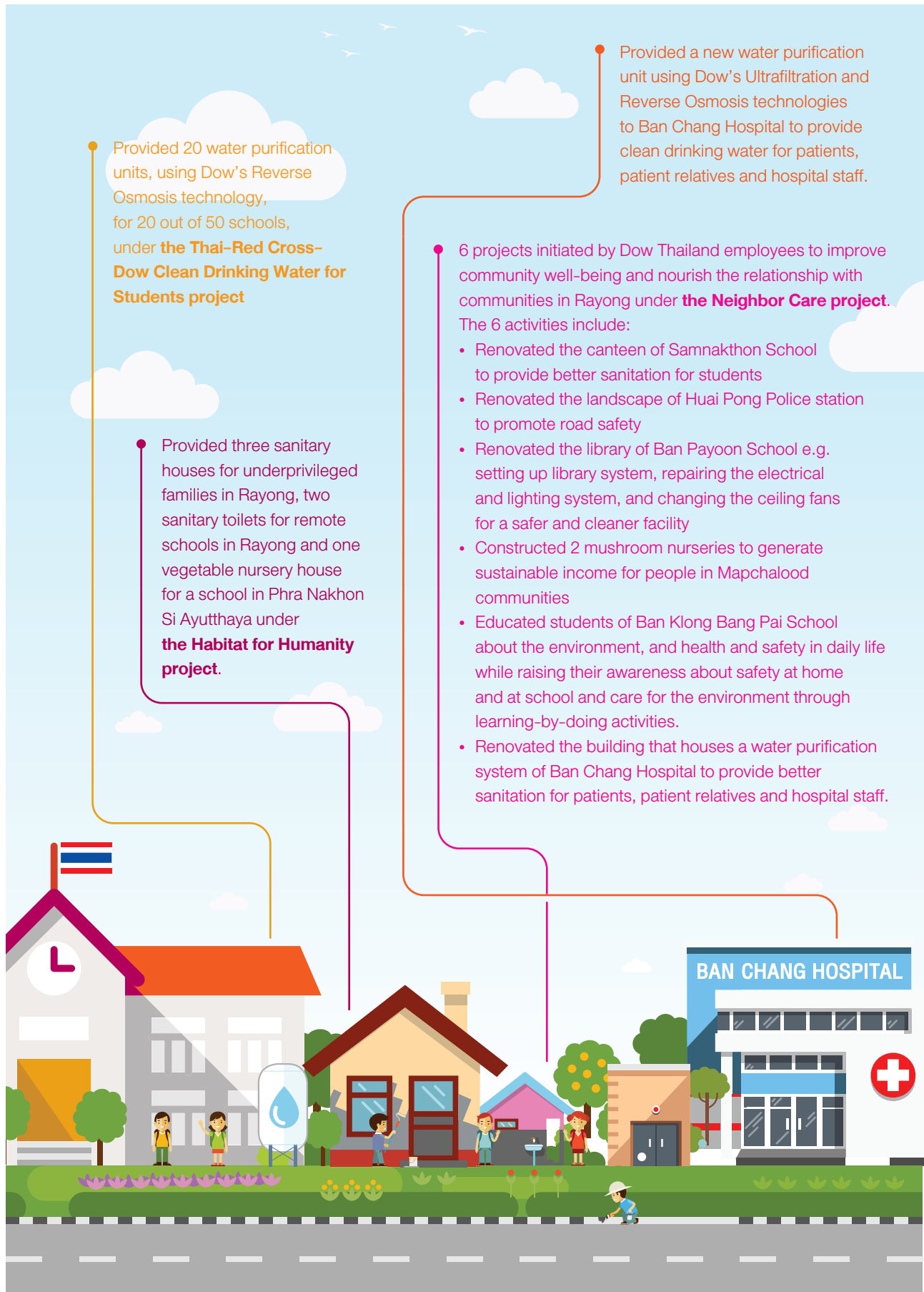
Collaborated with local authorities and manufacturers to collect a total of 6.6 tons of debris along 12.6 km. on **the 15th International Coastal Clean-up (ICC)**



Collaborated with the Pak Nam Prasae Sub District Municipality, communities and tripartite committee to conserve Rayong’s coastal line by planting 999 mangrove trees and released 999 fish at Pak Nam Prasae mangrove forest under **the 9th mangrove planting project**



Community Well-being



Awards and Recognitions

1. 2017 Good Governance Awards for Environmental and Safety Excellence

Industrial Estate Authority of Thailand (I-EA-T)



Gold Star Award



Green Star Award

All 14 Dow Thailand's plants are awarded Gold Star Awards and Green Star Awards.

2. Eco Factory Award

The Industrial Environmental Institute, The Federation of Thai Industries



All 14 Dow Thailand's plants are qualified for Eco Factory Award.



3. Green Industry Level 4 Award

Ministry of Industry

- Polyol & Formulated Polyol Plant
- Propylene Glycol Plant
- Polyethylene Plant
- Polystyrene Plant
- Ethylbenzene and Styrene Monomer Plant
- Styrene-Butadiene Latex Plant
- Specialty Elastomers Plant
- Propylene Oxide Plant

4. Carbon Footprint Certificate

Thailand Greenhouse Gas Management Organization (TGO)

- Product: PRIMAL AC 261 (Carbide Chemical (Thailand) Co., Ltd.)
- PRIMALTM E-357 Emulsion (Rohm and Haas Chemical (Thailand) Co., Ltd.)



5. AMCHAM CSR Excellence Recognition Award at Gold Level (7 consecutive years)

The American Chamber of Commerce

6. Excellence in Promoting Thailand 4.0 Award

The American Chamber of Commerce



Dow Thailand Group

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Dow Thailand



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