JAPAN CONSERVATION ENGINEERS

Company Profile 2019
Japan Conservation Engineers is a consulting firm that specializes in disaster prevention and mitigation for the conservation of land and the environment.
“Earth, Water and Vegetation”

Our lives and the society we live in are supported by earth, water and vegetation. However, in recent years, environmental destruction caused by global warming and turbulent development is progressing on a global scale. Based on the concept of conservation of earth, water and vegetation, we aim to contribute to disaster prevention and mitigation to safeguard the land from various natural disasters. As part of these efforts, we have been developing a nationwide network of experienced and skilled technicians to provide closely coordinated services in the three technical fields of consulting, construction and supervision, and research and development.

Consulting Services

The vast knowledge we have accumulated through our many years of experience in restoration after natural disasters and design and construction of various countermeasures for disaster prevention makes us uniquely qualified to conduct consulting services that accurately respond to social needs.

Construction and Supervision

With the use of our superior technology, we implement construction and supervision of construction of various countermeasure works for sediment-related disasters such as landslides, slope failure, and rock fall. Based on the “Basic Plan for Extending Service Life of Infrastructure”, we also provide technologies that contribute to the improvement of social infrastructures, such as inspections and upgrade plans for prevention of aging and extension of service life.

Research and Development

Along with further improvement of the knowledge and technologies we have accumulated in the course of our work related to national and global environmental conservation, we will continue research and development of new technologies expected to be required in the future.
As a general consulting firm, we have been working for the conservation of the global environment utilizing technologies in the fields of “Earth, Water and Vegetation”. The result has been an extensive accumulation of know-how and experience as we marked our 50th anniversary on May 2, 2016. We are very grateful for the support and cooperation you have given us over the years.

Japan is extremely prone to sediment-related disasters caused by numerous volcanic eruptions and large earthquakes. In addition, disasters caused by torrential rain resulting from climate change have also been increasing in recent years.

Strong earthquakes and tsunamis that caused severe damage include the Iwate–Miyagi Nairiku Earthquake in 2008, the Great East Japan Earthquake and Tsunami in 2011, and the 2016 Kumamoto Earthquakes.


Furthermore, some of the volcanic eruptions Japan has experienced recently include Ontakesan in 2014, Kuchinoerabushima Island in 2015, Owakudani hot springs in Hakone, Sakurajima, Mt. Aso, and Mt. Shirane.

These are but some of the numerous disasters that have hit Japan in recent years, and their frequency and strength are only expected to increase in the future.

Since the establishment of our firm, we have been developing technologies focused on the formation of social infrastructures resilient to disasters. For that purpose, we conduct field surveys and monitoring of disaster areas, formulate reconstruction plans based on the results of laboratory tests and analyses, and design optimal countermeasures. We are also endeavoring to improve existing technologies and develop new technologies in each technical field.

Faced with the aging of a portion of existing infrastructures, it is necessary to strengthen the functions of infrastructures instead of simply extending their lifecycle. We provide technologies that contribute to improvement of social infrastructures, such as inspection and maintenance plans to delay aging and prolong service life. Moreover, in order to prevent sediment transport, we are taking on the challenge of revegetation in sterile soil conditions such as highly acidic soils, highly basic soils, steep bedrock, and extremely arid land with our technologies, with the additional benefit of contributing to global environmental conservation by reducing CO2 emissions.

We plan to further strengthen our support for disaster prevention education both overseas and in domestic regions, continuing our activities to make social contributions with technology.

This brochure presents an outline of our technical services, and we would be pleased if you were able to utilize our technical services in the various fields of your administration or business. We pledge our commitment to continue developing various technical services to contribute to creating a safe and secure society.

Therefore, we sincerely hope to receive your continued support in the future.
Name: JAPAN CONSERVATION ENGINEERS & CO., LTD.
Established: May 2, 1966
Capital: 100,000,000 JPY
Number of Employees: 395 (as of October 1, 2018)

Company History
1966 Founded as Japan Conservation Engineers (Kaga Bldg., Shinbashi, Minato-ku, Tokyo)
1980 Divided into 2 branch offices (Tokyo Branch and Osaka Branch)
1986 Aoba Bldg. for Head Office completed (Toranomon, Minato-ku, Tokyo)
1987 Revisited to 4 divisions (East Japan Division, Tokyo Division, West Japan Division, Osaka Division)
1998 Urawa Aoba Bldg. completed (Kitaurawa, Urawa-ku, Saitama City)
2005 Spin-off of Hokkaido Conservation Engineers
Revised to 5 branch offices (Tohoku Branch, Kanto Branch, Kansai Branch, West Japan Branch, Kyushu Branch)
2016 Celebrated 50th anniversary
4 branch offices, 20 regional offices, 4 sales offices, and 14 business offices are established nationwide

Organization
<table>
<thead>
<tr>
<th>Year Completed</th>
<th>Title of Project</th>
<th>Country</th>
<th>Client</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-going</td>
<td>SDGs Business Verification Survey with the Private Sector for Agricultural Land Improvement Technology Using High Concentrated Fulvic Acid in Paraguay</td>
<td>paraguay</td>
<td>JICA</td>
<td>SDGs-BVS</td>
</tr>
<tr>
<td>On-going</td>
<td>Enhancing disaster resilience on droughts in Sindh Province</td>
<td>Pakistan</td>
<td>CWS</td>
<td>T/T</td>
</tr>
<tr>
<td>2018</td>
<td>Estimation of Infrastructure Demand for DRR project in Asia</td>
<td>Asia &amp; advanced nations</td>
<td>JICA-RI</td>
<td>Survey</td>
</tr>
<tr>
<td>On-going</td>
<td>Natural Disaster Management in Forest Areas in Uttarakhand</td>
<td>India</td>
<td>JICA</td>
<td>T/T</td>
</tr>
<tr>
<td>On-going</td>
<td>Capacity Development Project on Highways in Mountainous Regions</td>
<td>India</td>
<td>JICA</td>
<td>T/T</td>
</tr>
<tr>
<td>On-going</td>
<td>Community Disaster Risk Reduction Capacity Building Project in Nangahar, Laghman Province</td>
<td>Afghanistan</td>
<td>CWS</td>
<td>T/T</td>
</tr>
<tr>
<td>2016</td>
<td>Follow-up Survey on GIS Information System and Hazard Mapping Plan</td>
<td>Guatemala</td>
<td>JICA</td>
<td>Survey</td>
</tr>
<tr>
<td>On-going</td>
<td>Landslide Disaster Protection Project of National Road Network</td>
<td>Sri Lanka</td>
<td>Sri Lanka</td>
<td>T/T(Loan)</td>
</tr>
<tr>
<td>2015</td>
<td>Design &amp; Supervision of Rectification Work for the Collapsed Cut Slope on Southern Expressway</td>
<td>Sri Lanka</td>
<td>NBRO</td>
<td>T/T</td>
</tr>
<tr>
<td>On-going</td>
<td>Community Initiatives for Disaster Risk Reduction Project</td>
<td>Nepal</td>
<td>ShaplaNeer*</td>
<td>T/T</td>
</tr>
<tr>
<td>2015</td>
<td>Development of Landslide Risk Assessment Technology along Transport Arteries in Vietnam</td>
<td>Vietnam</td>
<td>JICA</td>
<td>T/T</td>
</tr>
<tr>
<td>2015</td>
<td>Capacity Developing Project for Countermeasure Works for Landslide in Ethiopia</td>
<td>Ethiopia</td>
<td>JICA</td>
<td>T/T</td>
</tr>
<tr>
<td>2014</td>
<td>Project for Landslide Management</td>
<td>Mauritius</td>
<td>JICA</td>
<td>T/T</td>
</tr>
<tr>
<td>2012</td>
<td>Data Collection Survey for Road Protection Against Natural Disaster (Landslide Disaster)</td>
<td>Sri Lanka</td>
<td>JICA</td>
<td>F/S</td>
</tr>
<tr>
<td>2011</td>
<td>Project for Developing Countermeasures Against Landslides in the Abay River Gorge</td>
<td>Ethiopia</td>
<td>JICA</td>
<td>M/P</td>
</tr>
<tr>
<td>2008</td>
<td>Installation Works for Landslide Automatic Observing System</td>
<td>China</td>
<td>CGIET</td>
<td>T/T</td>
</tr>
<tr>
<td>2006</td>
<td>Pakistan Transport Plan Study in the Islamic Republic of Pakistan</td>
<td>Pakistan</td>
<td>JLS</td>
<td>F/S</td>
</tr>
<tr>
<td>2003</td>
<td>Disaster Mitigation Support Program Project</td>
<td>Nepal</td>
<td>JICA</td>
<td>JICA</td>
</tr>
</tbody>
</table>

ShaplaNeer*=Citizens’ Committee in Japan for Overseas Support
Abbreviations:
CWS: Church World Service
JICA: Japan International Cooperation Agency
JICA-RI: JICA Research Institute
JST: Japan Science and Technology Agency
CGIET: Institute of Exploration Technology of Chinese Academy of Geological Sciences
NBRO: National Building Research Organization
JLS: Japan Landslide Society
T/T: Technical transfer
M/P: Master plan study
F/S: Feasibility study
SDGs-BVS: SDGs Business Verification Survey with the Private Sector
Domestic Operation Performance Data

Consulting and Design

Survey

Construction Works

Number of accepted orders

Landslide  Slope prevention countermeasure  Erosion control/ Afforestation  Greening/ Environment  Road  Soil property/ Soft Ground  Seacoast  Others

Number of accepted orders

Landslide  Slope prevention countermeasure  Erosion control/ Afforestation  Road  Soil property/ Soft Ground  Others

Number of accepted orders

Landslide  Slope prevention countermeasure  Greening/ Environment  Others

Number of accepted orders

Landslide  Slope prevention countermeasure  Greening/ Environment  Others
Land Conservation

We propose the optimum investigations and designs to meet our clients’ needs with a view to conserving the land of our nation in the face of climate change brought on by global warming and natural disasters.

Slope Disaster Management

Japan has been hit by numerous sediment-related disasters caused by volcanic eruptions and large earthquakes. In addition, in recent years disasters caused by torrential rains brought on by climate change have been increasing. In order to protect human life and infrastructure from sediment-related disasters such as slope failure, debris flow, and landslides, it is important to predict their occurrence and take necessary countermeasures.

Based on the extensive experience we have accumulated through our consulting services, we provide appropriate investigation and design for countermeasures against sediment-related disasters.

Restoration work in Akatani Area

In Japan, forests account for about 70% of the country’s land and serve many vital functions such as biodiversity preservation, sediment-related disaster prevention, water source protection, and rest and recreation. In order to preserve the multifaceted function of these forests, it is necessary to protect mountain slopes from erosion and restore forests damaged by development and other causes.

We have been engaged in investigation and design for countermeasures to protect mountain slopes from landslides, slope failure, debris flow, etc.

Furthermore, it is necessary to properly implement forest management such as planting, cultivation, logging, pest and insect damage control, and forest fire prevention in order to maintain and restore forests. Forest roads are indispensable for these activities. We have formulated and proposed a comprehensive plan concerning the investigation and design of forest roads and road structures as well as maintenance plans.

The Great East Japan Earthquake caused tremendous damage to the coastal disaster prevention forest. In rebuilding such tsunami-affected areas, we have formulated a grand design for restoration of coastal disaster prevention forests that takes into consideration their damage reduction effect against tsunami in addition to disaster prevention functions such as sand and wind damage fortification.

Forest Conservation and Afforestation

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In order to conserve river environments, it is necessary to comprehensively manage them by preventing the occurrence of floods and maintaining the normal function of running water.

Erosion control is aimed at ensuring regional safety from sediment-related disasters such as debris flow, landslides and slope failure, restoring devastated mountainous areas with vegetation, and creating a safe and livable area.

As coasts are exposed to many dangers such as tsunami caused by large earthquakes and storm surge and waves due to typhoons, it is important to devise the proper use of the coast through maintaining and preserving the coastal environment as well as protecting it from damage due to sea level fluctuation and ground subsidence.

We provide comprehensive technical services from planning to investigation and design for preserving rivers and coasts and preventing sediment-related disasters.

Japan is subject to frequent natural disasters such as typhoons, torrential rains and heavy snowfalls, as well as earthquakes and tsunami. In large-scale disasters, no one is more familiar with the actual conditions of the community than local residents, and their disaster risk reduction activities are essential. In recent years, the important role played by the local community in times of disaster, also referred to as mutual help, has been widely recognized, and disaster risk reduction activities at the regional level are being promoted.

At the same time, however, local communities face many problems due to changes in the population structure, decline of the regional economy, and dilution of local connections. It is therefore necessary to identify these issues and consider what a local community should be as well as the ideal features of community-based disaster risk reduction activities.

We prepare various methods for local communities to practice disaster risk reduction activities such as hazard maps, communication methods, and evacuation methods, as well as provide support suited to each community.
We are working on harmony between civilized society and natural environment, and conserving forest environment, soil environment and water environment in order to conserve a rich natural environment that is blessed with “Earth, Water and Vegetation”. What we can do is to communicate with nature.

Environmental Conservation

Based on the concept of “earth, water and vegetation”, we engage in environmental conservation with “global environmental conservation” as our ultimate goal. For each of the various themes this encompasses, such as maintaining biodiversity, measures against soil contamination, preventing water pollution, and recovery of devastated vegetation, we have taken on the challenge of finding solutions that promote harmony between an ideal natural environment and social demands.

Especially with regard to groundwater and soil, we propose optimal countermeasures through elucidation of the mechanisms for such as things as depletion of groundwater resources by excessive pumping and contamination of groundwater and soil by naturally occurring heavy metals and illegally dumped waste, thereby contributing to a reduction in risks to the natural and social environment.

Geospherical Environment

Japan is constantly exposed to the risk of natural disasters such as landslides, floods, tsunami, and earthquakes caused by typhoons, torrential rain, large earthquakes, volcanic eruptions and other phenomena. Therefore, accurate information concerning the ground is indispensable in order to respond to such natural disasters and build a society resilient to disasters.

To prepare prevention plans and design countermeasure structures for various disasters, we conduct investigations to obtain detailed information about the ground such as topography, geology, and groundwater. Based on the results, the most effective plans and designs for disaster prevention and reduction measures are formulated.

Monitoring of the greening of slopes
Development of Fujimin, a High-Concentrated Fulvic Acid

We have developed and patented a new technology for the mass production method for concentrated fulvic acid stemming from forest resources which have been hardly ever utilized.

The product, "Fujimin®" made through this patented technology can be utilized as a plant biostimulant (plant grows promoter or soil improver). The effectiveness of the product has been recognized for utilizing in various ways such as reduction of drooping of rice plants on farmland, improvement of crop growth, greening of the grass at parks or elementary schools, desalinization of tsunami-affected areas, and so on.

**Awarded the Minister of Agriculture, Forestry, and Fisheries Prize at the 28th Global Environment Awards**

With regard to the development of Fujimin, we were even awarded the Ministry of Agriculture, Forestry and Fisheries Prize at the 28th Global Environment Award, one of the most prestigious awards in Japan, in 2019. The Global Environment Awards is a commendation system handled by Fujisankei Communications Group, one of the largest media conglomerates in Japan, with a support from Japanese governments, and it honors the development of new technologies and products that contribute to the prevention of global warming and the realization of the sound material-cycle society as well as the further improvement of conservation awareness for the global environment.

**Developments in Overseas Expansion through JICA projects**

Our project proposal for applying agricultural land environment improvement using Fujimin for Paraguay has been adopted by Japan International Cooperation Agency (JICA) for the framework of the SDGs Business Verification Survey with the Private Sector. We will challenge to improve the farmland where crop production is difficult, increase the yield of farm products, and correct poverty disparities by means of making farmers’ income increase.

With Fujimin, we further plan to expand our efforts on the soil improvement of the farmland where soil depletion occurs due to monocropping or salt accumulation that accounts for one-fifth of the world irrigated land.
Based on our more than 50 years’ experiences in the field of disaster risk reduction, we dispatch our skilled engineers for investigation, design and construction management on landslides, road slope failure countermeasures, coastal conservation, etc. to overseas countries to support reconstruction of disaster-stricken areas.

**Japan International Cooperation Agency (JICA)**

JICA is a governmental agency that implements official development assistance (ODA) for the government of Japan. The world faces rising economic damage by the natural disasters that have been increasing in frequency and severity. In developing countries in particular, natural disasters hinder sustainable development and exacerbate poverty. In order to reduce disaster risks, JICA emphasizes proactive and comprehensive support to such countries at the preventative stage. Through our participation in technical cooperation projects conducted by JICA in developing countries, we strive to make social contributions beyond borders.

**Japan Bosai Platform (JBP)**

JBP is an association of Japanese private companies with leading bosai (disaster risk reduction) solutions and is founded on strong support from and collaboration with the Japanese government, academia and the private sector. The goal of JBP is to make society disaster resilient and sustainable by sharing Japanese bosai solutions with the world and JBP specifically helps countries around the world to invest before disasters to save lives and strengthen their economies. We are an executive member of JBP, and work on the formation of comprehensive disaster risk reduction projects through collaboration among member companies.
Non-governmental Organizations (NGOs)

NGOs are non-profit organizations independent of governments and international governmental organizations and aim to improve people’s lives, transcending national borders and ethnic or religious barriers. NGO’s activities in the field of international cooperation can be broadly divided into four areas: development, environment, human rights, and peace. We are currently collaborating with international NGOs working in Nepal, Afghanistan, Pakistan and Vietnam to contribute to capacity development on community-based disaster risk reduction. We believe that collaboration between an international NGO and a consulting firm might become a very strong approach for tackling disaster risk reduction related issues in developing countries as the NGO has a good grasp of the situation of local community while the consulting firm has expertise on disaster risk reduction.

UNDRR ARISE Network Japan

UNDRR ARISE Network Japan stands for United Nations Office for Disaster Risk Reduction Private Sector Alliance for Disaster Resilient Societies. The overall goal of ARISE is to create risk-resilient societies by energizing the private sector in collaboration with the public sector and other stakeholders to deliver on the targets of the Sendai Frameworks. Japanese members of ARISE are moving forward as “ARISE Network Japan” with implementation of the Sendai Framework for Disaster Risk Reduction, the global blueprint for reducing disaster losses adopted at a UN conference in Japan. As a network company, we are engaged in activities to achieve indicators specified in the Sendai Frameworks by 2030.
Construction and Supervision

We design and construct various countermeasures for prevention of sediment-related disasters occurring on natural slopes, as well as providing technologies related to inspecting existing countermeasure facilities and preventing aging.

Construction

We have ample experience with countermeasures against the various types of sediment-related disasters that often occur in Japan. By designing and constructing countermeasure works to prevent landslides, slope failure, debris flow, rock fall, etc. based on this experience, we contribute to disaster prevention and recovery.

Construction of Landslide Prevention Measures

Landslide prevention measures are broadly classified into two types of works: control works and restraint works. Control works are intended to remove or mitigate natural factors such as topography, geology, and groundwater that could lead to the occurrence of a landslide. On the other hand, restraint works aim to stabilize a slope through the construction of structural elements.

We have an extensive track record with anchor works, which are representative of restraint works, and are also developing new anchoring technologies such as SSL anchor works. Drainage well works are the most common kind of control works, and we have experience in the construction of about 800 of these. Moreover, we are developing construction techniques to match various natural conditions.

Drained water from a drainage tunnel
Outlet of drain pipes in a drainage well
Based on our experience with frequent large-scale disasters, we have promoted infrastructure development in Japan necessary for adapting to severe topographical and weather conditions. In the process, advancements have been made in the safety and convenience of infrastructure functions and in construction technology with the development and introduction of new technologies. However, a portion of existing infrastructures have aged, and in order to secure the safety and security of citizens in response to various large-scale disasters expected to occur in the future, it is necessary to strengthen the functions of infrastructures instead of simply extending their lifecycles.

We possess superior technologies for inspection, investigation and diagnosis of infrastructures, particularly road structures, erosion control structures, river structures and landslide prevention installations, and propose a system enabling consistency from accurate diagnosis to selection of optimal maintenance methods which will also reduce lifecycle costs.

Countermeasures Against Aging Infrastructure

In Japan, with its steep terrain, complex geological features, and vulnerability to typhoons and earthquakes, slope disaster prevention technology to prevent phenomena that occur on natural slopes, cut earth, and embankments such as rock fall and slope collapse is extremely important.

Applying the extensive knowledge and techniques we have accumulated through our consulting work in slope disaster prevention works to construction and supervision, we carry out safe and sustainable countermeasure works for disaster recovery and slope disaster prevention.

In order to contribute to global environmental conservation by reducing CO2 emissions, we are also taking on the challenge of revegetation in sterile soil conditions such as highly acidic soils, highly basic soils, steep bedrock and extremely arid land under the theme of “restoration to a natural state”.

Construction of Slope Disaster Prevention Measures
Research and Development

To safeguard the land from climate change brought on by global warming and natural disasters and to protect the global environment through revegetation, we endeavor to improve existing technologies and develop new technologies in each technical field.

► Development of Afforestation Technology

In order to revegetate areas such as devastated forests, comprehensive consideration of local conditions such as weather conditions, soil, and geology must be taken. It is also important to select plant species suitable for regional characteristics and to secure planting material.

We have developed a variety of afforestation technologies such as the “Tough Green Method” and the plant growth promoter “Fujimin”. Made from fulvic acid, Fujimin has the effect of promoting stabilization of pH conditions and aggregation of soil as well as helping mineral absorption. Fujimin has been registered on the Organic JAS Material List.

► Development of Geospatial Information Technology

In recent years, achievements have been made to improve productivity and ensure quality in the overall construction production process through the use of computerized construction, or “i-Construction”. This method utilizes information and communications technology (ICT) to realize highly efficient and accurate construction by exchanging electronic information obtained from each individual process.

Three-dimensional surveying by unmanned aerial vehicles (UAV) that are capable of high-precision and speedy surveying of broad areas of construction sites is considered extremely effective for i-Construction. We deploy UAV nationwide to take aerial photographs in times of disaster, quickly creating orthoimages and various representation diagrams for assessing disaster conditions and considering countermeasures.

In addition, we are promoting the development of geospatial information technology in a wide range of fields such as infrastructure maintenance and forest conservation.
Development of 3D Simulation Technology

In recent years, countermeasures against disasters have shifted to policies that emphasize “mitigation of disaster” to minimize damage. In order to realize these policies, a disaster management plan that supports evacuation and relief in the event of a disaster is necessary. Simulation technology for predicting phenomena and damage of disasters is extremely effective in formulating disaster prevention plans.

3D simulation technology is already used in the design of disaster prevention facilities, and we are also developing 3D simulation techniques to create flood risk maps, earthquake damage maps and hazard maps for sediment-related disasters, etc.

Improvement of Radioactivity Concentration Measurement Methods

A large amount of radioactive substances were released due to the nuclear accident after the 2011 Great East Japan Earthquake and tsunami. Consequently, the Japanese government enacted special measures, the purpose of which was to promptly reduce the impact of environmental pollution on human health and living environment. To achieve this, monitoring and measurement of environmental pollution has been implemented by the national government, local governments, and relevant nuclear power plant operators.

We have been working on environmental radiation monitoring in forests where similar studies have not been conducted since the nuclear accident occurred. We continue to conduct research and development so that our survey methods will be suitable for future nationwide standards.

Laboratory Testing of Soil and Rocks

Our laboratory for testing of soil and rocks contains various testing equipment conforming to Japan Industrial Standards (JIS) and Japanese Geotechnical Society Standards (JGS), and tests are conducted on various physical properties of soil and rocks.

In the case of sediment-related disasters in particular, accurately assessing the physical properties of the soil and rocks composing the slope and the landslide slip surface are extremely important for analyzing the stability of the ground. Therefore, we are conducting research and development on testing equipment, testing methods and analysis of test results, with an eye on 3D simulation applications as well.
CSR (Corporate Social Responsibility) Activities

Environmental Conservation

We have a history of handling various technologies related to “Earth, Water and Vegetation”. Based on our vast experience in damage restoration after earthquakes and heavy rain, we are acting in the following two experimental fields to support maintaining and restoring forests.

“Forest of Hope”
(Miyagi Prefecture and Fukushima Prefecture)

We are working on the revitalization of coastal disaster prevention forests damaged by the tsunami of the Great East Japan Earthquake. As a company engaged in reconstruction for the future, we will carry out long-term cultivation and maintenance until planted seedlings are fully grown.

NIJIMATSU PROJECT

We have created original products using our artificial humification technology to treat pine needle waste generated through Nijino Matsubara regeneration and conservation activities. A portion of the proceeds from the sale of our products goes to support these activities.

Disaster risk reduction and Environmental Education

When you work side by side with nature, you may be surprised by the various natural phenomena that occur. We conduct disaster prevention and environmental education to learn about disasters and the environment surrounding us while at the same time appreciating the power and charm of nature.

Dopas (Earth Pastels)

By reusing raw materials such as clay and soil collected during geotechnical investigation of landslides, we have developed pastels for drawing pictures to utilize during our disaster prevention and environmental education activities.

Evacuation Activity Game (EVAG)

“EVAG” is an educational tool for disaster prevention that focuses on evacuation behavior. Participants can experience various problems that may be encountered during an evacuation and helps them notice the importance and necessity of helping each other.
**SDGs (Sustainable Development Goals)**

**Actions on SDGs**

At the United Nations Summit in September 2015, “the 2030 Agenda for Sustainable Development” was adopted, including Sustainable Development Goals (SDGs). In the agenda, “Sustainable Development Goals (SDGs)” consisting of 17 Sustainable Development Goals and 169 targets as action plan is shown, and all countries and all stakeholders are acting in collaborative partnership in order to achieve the goal it is.

We are pursuing the development of sustainable society by minimizing the damage from natural disasters and contributing to social development. Of the eight priority areas listed in SDGs implementation Guiding Principles in Japan, mainly contributes to four priority areas, 12 goals.

**Area (1)**

“Creating Growth Markets, Revitalization of Rural Areas, and Promoting Technology and Innovation”

[GOAL-2, 8, 9, 11]

**Area (2)**

“Sustainable and Resilient Land Use, Promoting Quality Infrastructure”

[GOAL-1, 2, 5, 6, 9, 11]

**Area (3)**


[GOAL-7, 12, 13]

**Area (4)**

“Conservation of Environment, including Biodiversity, Forests and Oceans”

[GOAL-2, 3, 14, 15]

In these four priority areas, we are implementing business based on the technology of environmental conservation, infrastructure for disaster risk reduction and community disaster risk reduction both in Japan and overseas.