“Enriching life through engineering”
## Introduction

### Key Areas of Expertise

| Solutions for urban environments - transportation, water, sewerage |
| Asset management of structures - preservation and predictive maintenance |
| Hazardous environments (keeping people safe) - earthquakes, tsunami, mudslides |
| Hydraulic engineering - rivers, coasts, dams |

### Access to capital
- (clients in government and aid agencies)

### Active in Asia
- (10 offices)

### Long history
- (starting as a research institute for the reconstruction of Japan)
CTI is the first consulting engineering company to have been established in Japan, back in 1945.
CTI has sales of $362m and has the top share of sales to the government among consulting engineering companies in Japan.

Awards from the Ministry of Land, Infrastructure, Transport and Tourism have averaged 81 in the last five years*. This ranks CTI top among consulting engineering companies and creates a virtuous circle for future projects.

151 technical papers were released from CTI in 2015*. It is top among consulting engineering companies in Japan.

Engineers account for more than 75% of all employees. 1,698 out of 2,250 of all staff are engineers.

The total number of certificated professional engineers is 1,169 in 2016*. It is top among consulting engineering companies in Japan.

*Parent company basis
116 JPY = 1 USD
“Enriching life through engineering”

CTI Engineering Co., Ltd. is Japan’s first consulting engineering company and has been growing strongly with a high level of technology and expertise since the establishment of Civil Engineering Research Institute, an incorporated foundation founded in 1945. We have been working closely with the government as a technical partner to build the nation, and have been also actively contributing to academia. For this, we are proud to be recognized as a leading company in the consulting engineering industry.

Today, Japanese society is reaching a major turning point. As a comprehensive consulting engineering company, we have an important role to play in addressing various needs and challenges of society, such as building national resilience, implementing countermeasures for aging infrastructures and revitalizing regional communities. In 2015, the CTI Group’s long-term vision called “CLAVIS 2025” was formulated for continuous development into the future. Since then, in order to realize this corporate vision, we have been actively implementing measures such as modifying organizational structures and reforming systems.

President & Chief Executive Officer
Kazuo Murata

(Vice president of The Japan Civil Engineering Consultants Association)
Moving forward towards a better future

In the past and in the future. As a pioneering consulting engineering company, CTI Group will continue capturing the needs of the current society of constant change and building the socio-economic foundation of our society.

Corporate History from 1945

August 1945 Established “Civil Engineering Research Laboratory: Kensetsu Gijyutsu Kenkyuujo”, as the first consulting engineering company in Japan.


December 1964 Registered as “Consulting Engineering Company” under the Ministry of Construction.

June 1994 Registered as an over-the-counter company with the Japan Securities Dealers Association.

October 1996 Listed on the Second Section of the Tokyo Stock Exchange.

June 1999 Listed on the First Section of the Tokyo Stock Exchange.

April 2002 Established the Research Center for Sustainable Communities.

April 2013 Celebrated the 50th anniversary of the establishment of CTI Engineering Co., Ltd.

May 2015 Formulated the CTI Group long-term vision [CLAVIS 2025].
**Business Philosophy**

In order to realise our business philosophy of “contributing to a progressive, safe, pleasant and prosperous living environment through our globally-recognized professional expertise and technical capabilities”, we have created the CTI Engineering Group Code of Corporate Conduct. Under sound corporate management, the Code shows all officers and employees how to take concrete and effective actions with a thoughtful mind.

**Code of Corporate Conduct**
- Improvement of Customer Satisfaction
- Improvement of Technical Competence and Quality
- Compliance with Ethics, Law and Regulations
- Information Disclosure
- Improvement of Employee Satisfaction
- Environmental Considerations
- Social Contributions
- International Contribution
Areas of Service

CTI has expertise in many areas with its highly qualified engineering staff and experience in most forms of infrastructure projects ranging from urban development to safeguarding the environment. We plan, design, supervise construction and maintain projects. CTI contributes to industrial development so people can live in safety and comfort.
Core Technologies

- River, Coastal and Marine
- Land erosion control, Water System
- River Structure, Dam, Hydraulic Test
- Highway, Transportation, Tunnel, Bridge
- Asset Management
- Urban Planning, Water Supply and Sewerage
- Geology
- Environment, Environmental System
- Information Technology
- Construction Management
- Social System
- Research Centre for Sustainable Communities

CTI also has a wealth of experience and technology in inspection and quantifying the amount of deterioration in physical assets and predictive maintenance.
**Infrastructure projects**

*Dam construction by Construction Management (CM) scheme, Isawa Dam, Iwate, completion in 2013.*

*Tunnel inspection works, Yamanashi.*

*Bridge maintenance & replacement project, Choshi Bridge, Chiba, completion in 1962, replacement in 2013.*
Key Figures

- Number of Employees: 1,500 (parent company) and 2,250 (group)
- Annual Turnover in 2016*: 362.4 million USD (42.03 billion JPY)
- Annual Net Profit in 2016*: 12.5 million USD (1.45 billion JPY)

*Consolidated, 116 JPY = 1 USD
Orders by sector
(2016, million USD)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Amount (USD)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water &amp; Land Sector</td>
<td>$131.9</td>
<td>36%</td>
</tr>
<tr>
<td>Transport &amp; Urban Sector</td>
<td>$113.8</td>
<td>31%</td>
</tr>
<tr>
<td>Environmental &amp; Social Sector</td>
<td>$90.5</td>
<td>25%</td>
</tr>
<tr>
<td>Overseas</td>
<td>$29.3</td>
<td>8%</td>
</tr>
<tr>
<td>Rivers and water resources</td>
<td>$94.0</td>
<td></td>
</tr>
<tr>
<td>Geo-environment</td>
<td>$27.6</td>
<td></td>
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<tr>
<td>Environment</td>
<td>$28.4</td>
<td></td>
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<tr>
<td>Information, disaster mitigation</td>
<td>$25.0</td>
<td></td>
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<tr>
<td>Urban planning</td>
<td>$42.2</td>
<td></td>
</tr>
<tr>
<td>Roads &amp; transportation</td>
<td>$71.6</td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>$9.5</td>
<td></td>
</tr>
<tr>
<td>Land erosion control</td>
<td>$12.9</td>
<td></td>
</tr>
<tr>
<td>Sewerage &amp; wastewater</td>
<td>$6.9</td>
<td></td>
</tr>
<tr>
<td>Dams</td>
<td>$18.1</td>
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<tr>
<td>Environment Management</td>
<td>$27.6</td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>$25.0</td>
<td></td>
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</table>

116 JPY = 1 USD
Our Clients

CTI projects are funded by central government and regional agencies. We have maintained our share of the projects in the last five years. We envision growing outside Japan and in the private sector in the future to broaden the opportunities.

*Foreign govt. and Private sector, JICA (Japan International Cooperation Agency), ADB (Asian Development Bank), etc

116 JPY = 1 USD
Corporate Structure

Parent company: CTI Engineering Co., Ltd.

Parent company:

CTI Engineering Co., Ltd.

Corporate Planning Department

Management Department

Business Development Department

Engineering Department

International Business Division

Kyushu Office

Chubu Office

Tohoku Office

Osaka Main Office

Tokyo Main Office

General Affairs

River & Water Resources

Road & Transportation Engineering

Environment

Geo-Environment

Management Engineering

Disaster Mitigation Section

Infrastructure Management

Global Environment Project

Sales & Marketing

Water Management & Research

Transportation Systems

Environment

Geo-Environment

Management Engineering

Disaster Mitigation Section

Infrastructure Management

Global Environment Project

Engineering Operations & Management

Sewerage & Wastewater

Structural Engineering

Urban Planning

Information Technology

Hydraulics Laboratory

Waterworks Engineering

Urban Planning

Information Technology

Sabo Engineering

Dam

Global Environment Project
CTI Group

- CTI Engineering Co., Ltd. (CTIE)
- CTI Engineering International Co., Ltd. (CTII)
- Japan Urban Engineering Co., Ltd.
- Chi-ken Sogo Consultants Co., Ltd.
- Wuhan CTI-CRSRI Engineering & Environment Co., Ltd.
- CTI AURA Co., Ltd.
- Shin Doboku Kaihatsu Co., Ltd.
- CTI Wing Co., Ltd.
- CTI Ground Planning Co., Ltd.
- CTI Frontier Co., Ltd.
- CTI Myanmar Co., Ltd.

- Consolidated
In order to accelerate our contribution to society, CTI established CTI Group’s “Long Term Vision CLAVIS 2025” targeting 2025, and “Medium Term Management Plan” targeting 2018.

**CTI Group’s “Long Term Vision CLAVIS 2025”**

**Multi Infrastructure Company**
Providing broader services to meet all infrastructural needs ranging from development to maintenance

**Global Company**
Expanding service to Asia and all over the world as the leading consulting engineering company in Japan

**Active Company**
Ensuring growth by making use of CTI’s human and technical resources

Turnover target
- 2018: Total 47 billion JPY, Overseas 5 billion JPY
- 2025: Total 60 billion JPY, Overseas 10 billion JPY

105 JPY = 1 USD
Thank you very much

http://www.ctie.co.jp/english
Appendix

- Registration of Qualifications
- Research Centre for Sustainable Communities
- Areas of Service
## Registration of Qualifications

### Certificated Professional Engineer, Japan

<table>
<thead>
<tr>
<th>Technical Disciplines</th>
<th>Engineering</th>
<th>Comprehensive Technical Management</th>
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<tbody>
<tr>
<td>Electrical &amp; Electronics Engineering</td>
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<tr>
<td>Civil Engineering</td>
<td>733</td>
<td>255</td>
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<tr>
<td>Water Supply &amp; Sewerage</td>
<td>27</td>
<td>7</td>
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<tr>
<td>Environmental Engineering</td>
<td>9</td>
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<td>Agriculture</td>
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<tr>
<td>Forest</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Fisheries</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Industrial Engineering</td>
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<td>0</td>
</tr>
<tr>
<td>Information Engineering</td>
<td>14</td>
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<tr>
<td>Applied Science</td>
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<td>16</td>
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<tr>
<td>Environment</td>
<td>30</td>
<td>4</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>875</strong></td>
<td><strong>294</strong></td>
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### Other Registrations

<table>
<thead>
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<th>Registration</th>
<th>No. of persons</th>
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</thead>
<tbody>
<tr>
<td>Doctoral Degree Holders</td>
<td>68</td>
</tr>
<tr>
<td>APEC Engineer</td>
<td>64</td>
</tr>
<tr>
<td>EMF International Professional Engineer</td>
<td>17</td>
</tr>
<tr>
<td>Civil Engineer approved by Japan Society of Civil Engineers (special senior, senior, class1, class2)</td>
<td>16/71/33/27</td>
</tr>
<tr>
<td>Registered Quality Assurance Engineer for Public Works</td>
<td>11</td>
</tr>
<tr>
<td>Registered Architect (class 1, class 2)</td>
<td>13/1</td>
</tr>
<tr>
<td>Value Engineering Leader (Leader, Specialist)</td>
<td>201/11</td>
</tr>
<tr>
<td>Registered Surveyor</td>
<td>62</td>
</tr>
<tr>
<td>Registered Construction Managing Engineer (class 1)</td>
<td>127</td>
</tr>
<tr>
<td>Authorized Concrete Diagnosis Engineer</td>
<td>32</td>
</tr>
<tr>
<td>Authorized Concrete Engineer</td>
<td>14</td>
</tr>
<tr>
<td>CALS/EC Expert</td>
<td>3</td>
</tr>
<tr>
<td>Environmental Measurer</td>
<td>10</td>
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</tbody>
</table>
Research Centre for Sustainable Communities

Research Centre for Sustainable Communities (the Centre) conducts various research and advocates political reform under the mission of creating richer life.

Research and Development

The Center conducts wide-ranged research and development activities including the basic researches to strengthen the engineer’s capacity and integrated technical researches in which various sector is fused.

Dissemination of Information to Society

The Center has been holding seminars open to the public to share and disseminate the information about the researches. The research outputs have been published.

Books published by the Centre

Activities for local communities and society

The Centre has been supporting the activities of local community and society to contribute the revitalization and development of community.

Operation of river cruising
Areas of Service
River and Coast Management

As a comprehensive consulting engineering company which has great strengths in relation to rivers and coasts, we offer technical expertise in preparing proposals for river and coast management including preparation of disaster prevention countermeasures against flood/tsunami/storm surge and countermeasures to properly conserve water environments. We also provide a wide variety of professional consulting services for investigation/analysis/experiment of rivers and coasts, planning/design/operation & maintenance (O&M) works of river structures, and implementation of seismic measures for all types of river structures.

- Proposal of comprehensive countermeasures for disaster prevention and disaster mitigation in rivers and coasts
- Project planning/experiment/design/O&M plan of rivers and coasts
- Proposal of conservation and remediation of the water environment and hydrologic cycle
- Restoration/creation of waterfront areas by restoring and maintaining river environments
- Performing evaluations of soundness/aging of existing structures, and formulation of plans to extend the life of river and coastal structures

Flood-assumed area map
Land erosion control

We provide a series of professional services to prevent landslide disasters including studies on prevention and restoration measures, and planning/experiment/design of land erosion disaster prevention works.

✓ Designation of warning areas for landslide disaster, formulation of land erosion disaster prevention master plans, and planning/design of land erosion disaster prevention facility layouts.

✓ Design of countermeasures to extend the service life of land erosion disaster prevention facilities and aging structures.

✓ Study on a basin monitoring and warning system for large-scale landslide disasters.

✓ Study on the arrangement and configuration of land erosion disaster prevention facilities by utilizing the results of hydraulic experiments.

Slit land erosion disaster prevention dam

Land erosion disaster prevention hydraulic experiment facility utilized at an educational support program
Dams

We offer comprehensive services in all aspects of dam management including the planning and design of new dams, formulation of effective plans for utilizing existing dams, and preparation of countermeasures to mitigate the environmental impacts caused by dam construction.

✓ Evaluation of facility soundness based on the latest technologies (e.g. seismic capacity).

✓ Inspection/evaluation of facilities and their functions, and proposal of a plan to extend the life of structures.

✓ Proposal of both structural measures such as improvement/expansion of dam facilities (e.g. water discharge facilities and power generation facilities) and non-structural measures such as upgrading the operation plan for water release for improving the functions of dams.

✓ Proposal of an environmental conservation plan for a dam site including sediment and water quality management plans and fish passage.

Dam planning and design
Water Supply and Sewerage Management

We aim to reduce the cost of water supply and sewerage management by providing professional services that encompass the design of pipes, drains and related facilities, evaluation of the seismic capacity of related structures, design of aseismic reinforcement works, detection of structural degradation, and formulation of a plan to extend the life of structures.

✓ Proposal of cost reduction measures aiming to lower the project cost of facility upgrading and O&M cost by consolidating or reorganizing water supply and sewerage facilities as well as widening the service coverage area.

✓ Proposal of comprehensive countermeasures against inundation by utilizing the results of hydraulic physical models.

✓ Improvement and enhancement of the water environment by reducing the amount of pollution, effectively utilizing water resources, and purifying contaminated water.

✓ Proposal of economical and appropriate maintenance works for continuous, long-term sewage service.

✓ Proposal of effective utilization of sewerage as a resource and energy source.

Algae purification facility at Kokyo Gaien
Harbors and Oceans

We contribute to the development of port and marine infrastructures as well as the formulation of disaster prevention countermeasures against natural disasters such as earthquake and tsunami.

- Proposal of improvement plans for port and marine facilities, and preparation of maintenance management plans to extend the life of structures.
- Verification of the seismic performance of structures, study on rational seismic reinforcement methods, and evaluation of the resistance and performance of port facilities against a large-scale disaster by utilizing the results of tsunami simulation analysis, and proposal of response measures.

Post-earthquake water level distribution map
Agriculture, Forestry and Fisheries

We assist the development of various measures and plans for agricultural water utilization facilities (irrigation and drainage facilities) and fishing facilities, including formulation of disaster prevention measures, implementation of environmental assessments, and preparation of O&M plans.

- Proposal of countermeasures for disaster prevention and recovery in fishing port facilities as well as mountainous and intermountain areas.
- Planning and design of key facilities such as agricultural water utilization facilities, forest roads and fishing port facilities.
- Evaluation of aging facilities (e.g. reservoirs) and preparation of seismic measures.
- New initiatives for hydroponics at a plant factory.

Design of an improved breakwater structure at a fishing port
Roads

We provide professional services that cover all elements of the evaluation, planning and design of road infrastructure projects based on the current social needs and road traffic conditions, and are committed to constructing safe and reliable roads and implementing O&M activities for a long service life.

- Proposal of rational road plans by considering the analysis results of traffic volume surveys, estimation of traffic volume, and quantitative evaluation of the effectiveness of maintenance.
- Implementation of a safe and comfortable traveling environment for all types of road user such as cars, pedestrians and bicycles through planning/design/construction plans for structures (e.g. earthworks, bridges and tunnels).
- Support for effective road maintenance works through implementation of management plans/inspection works/preparation of design for repairing road tunnels and embankment slopes.

The Tokiwagawa Bridge (under construction)

Tunnel inspection work
Transportation

We aim to formulate safe and reliable traffic plans and transportation management plans that include the development of an information delivery system for managing road traffic and a relief supply distribution system at the time of disaster.

✓ Preparation of traffic facility plans and traffic management plans by considering the traffic impact on all type of user such as cargo vehicles, cars, bicycles, and roadside residents.

✓ Creation of traffic management plans that enhance the smooth and safe movement of people, materials and information.

✓ Improvement of the road environment through implementing countermeasures to mitigate the impact on the natural and living environments and proper operation and maintenance (O&M) activities.

✓ Analysis of traffic accidents and congestion by utilizing big data analysis, and preparation of traffic plans and disaster prevention plans based on the results of analyzing traffic flows during a disaster.

High-level interchange of a highway
Bridges

We prepare proposals on the optimal bridge type based on convenience for users, safety against natural disasters such as earthquake and typhoon, harmony with nature and the landscape, and cost reduction. We also prepare plans to extend the life of a bridge and O&M activities for the bridge.

- Proposal of rational bridge plans and design by utilizing the latest technologies.
- Performance of inspection/investigation/repair works/reinforcement design in order to extend the service life of bridges and prepare maintenance management plans.
- Preparation of technical proposals on structures under special conditions by utilizing unique technologies and the latest findings.

*The Choshi-Ohashi Bridge*

*Inspection work of bridge clearance*
We possess the vast expertise required for urban management, and address the needs and challenges of society that include a low birth rate, aging population, regional revitalization, and post-quake reconstruction, in order to assist the development of safe and pleasant communities.

- Proposal of town development plans linked with the implementation of “Compact City” development, including planning and design of urban facilities (e.g. parks, amenity facilities around train stations) considering the urban landscape.
- Planning/design of high-quality public facilities (e.g. government buildings and schools).

*Development of a park and related facilities*  
*Design of an entrance hall of a public facility*
PFI and PPP

We offer extensive experience and knowledge on the PFI and PPP businesses to propose the development of public facilities in order to provide higher level, economically competitive public services.

✓ Proposal of public facility/land utilization projects to effectively utilize government buildings, educational/cultural facilities, and public housing.
✓ Provision of higher quality services in public works and reduction of the public burden.

Railways

We expand our technical expertise to provide professional services for railway projects, including planning of the three-dimensional design of railway systems in regional cities and preparation of railroad crossing improvement works which are promoted by the Ministry of Land, Infrastructure and Transport.

✓ Preparation of technical proposals for the three-dimensional design of railway systems to contribute to smoother transportation in urban areas and to resolve the splitting of communities, evaluation of project effectiveness, review of early detection of project effectiveness when the construction is carried out in several stages, and proposal of station layouts.
✓ Proposal of the three-dimensional design of existing traffic systems (e.g. trams)
Information Technology and Disaster Prevention

Through planning and design of telecommunication facilities, we achieve the high-level utilization of disaster prevention infrastructures and social infrastructures. In addition, we continue to formulate countermeasures against large-scale disasters by considering structural and non-structural measures such as conducting risk analysis and preparing a wide-area disaster prevention action plan.

✓ Planning/evaluation/design of telecommunication facilities and information systems that enhance the high-level utilization of infrastructures (e.g. a road tunnel telecommunications facility, a control and processing facility for dam management, telemeter/warning facilities, and river information facilities).

✓ Design of comprehensive disaster prevention information systems that enhance the information-sharing activities among various organizations and cover a much wider area to gather information during an emergency.

✓ Analysis of earthquake risks, study on flood timeline, and formulation of disaster prevention plans assuming a large-scale and wide-area disaster based on a plan for promotion of the development of a tsunami-resilient community.

Comprehensive risk map considering the difficulty of activities during a disaster (Tokyo)
Environmental Management and Energy

In order to promote infrastructure development and improvement with minimal impact on the natural environment and living environment, we propose solutions to a wide range of environmental issues by utilizing advanced technologies. Also, we provide professional consultation services and support to commercialize the utilization of various renewable energies, and support for the recovery from a disaster as well as the revitalization of communities.

✓ Resolving a wide range of issues in environmental management by conducting investigation and analysis of the natural environment and living environment and preparation of an environmental impact assessment.

✓ Proposal of research and planning for conservation of the natural environment by developing and implementing advanced technology.

✓ Support for the implementation and commercialization of renewable energy taking into consideration feasibility and self-sufficiency after a disaster, proposal of smart community plans for further industrial development and revitalization of a community.

Solar power facility by utilizing an idle land
Geology and Geotechnical Properties

We provide technical suggestions on appropriate geological conditions necessary for the construction of civil engineering structures, and propose approaches to reduce geological risks at each stage of civil engineering projects that cover planning, design, construction and O&M activities.

- Suggestion of planning and design conditions for formulating effective disaster prevention and mitigation measures by properly understanding the characteristics of geology and geotechnical properties.
- Proposal of countermeasures to mitigate the risks caused by the modification of geology and groundwater.

Field survey at the location of a deep-seated landslide

Enlightening activities of importance of geology in the outdoor education of primary school
Project Management

We provide appropriate technologies and human resources in a timely manner for the efficient and effective implementation of public businesses.

✓ Provision of technical assistance for contractee by CM*.
✓ Analysis of the methods used as the cost estimate standards of public works, and investigation/analysis of materials, unit prices, and miscellaneous expenses.
✓ Assistance for the development of institutional design including the procedure of contractor selection for public works.

* CM (Construction Management) is a method in which a construction manager (CMR) manages a project in a neutral way as a contractee’s assistant and agent.
**Waste Management**

We provide comprehensive professional technical services based on extensive experience with waste and soil contamination management, including investigation/analysis of existing conditions, study on countermeasures, and conducting post-event environmental impact monitoring.

- ✓ Provision of technical support on waste intermediate treatment and recycling projects in order to create a recycling-oriented society.
- ✓ Support for projects related to final disposal sites which have little impact on the environment.
- ✓ Preparation of countermeasures for illegal waste dumping, and study/planning/design of pollution purification.

**Shinkoyama final disposal site**  
*(photo credit: Mie Prefecture Environmental Conservation Agency)*

**A waste recycling center**