Nippon Koei Offices Worldwide

San Salvador

LIMA PANAMA

Asuncion

LAC DO BRASIL

Sao Paulo
Company Overview

Nippon Koei is Japan’s No.1 International Engineering Consultants.

Our project managers and engineers provide strong engineering solutions for our clients by planning, designing and supervising construction of infrastructure projects in the fields of energy, transportation, resources, urban and public sector development.

Nearly 70 years, Nippon Koei has worked on over 5000 multi-disciplinary infrastructure projects in 145 countries all over the world.

Nippon Koei is the oldest independent consulting firm in Japan. We have been providing consulting services for economic development projects since 1946. We have a sound financial base with a total paid-in capital of over $70 million.

Nippon Koei is listed on the First Section of the Tokyo Stock Exchange.

Note: Office Addresses on the last page of this brochure.
Core Competencies of Nippon Koei

Nippon Koei is a diversified consulting firm providing engineering solutions across a wide spectrum of disciplines:

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<td>- Sewerage &amp; Urban Drainage</td>
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<td>- Forests &amp; Natural Resources Sustainable Management</td>
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<td>- Urban Development</td>
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<td>- Architectural Consulting</td>
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<td>- Industrial Growth</td>
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<td>o Industrial Parks &amp; SEZ</td>
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<td>o PPP Project Planning</td>
<td>25</td>
</tr>
<tr>
<td>o Tourism Industry Development</td>
<td>25</td>
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<td>o Industrialization &amp; SME Development Support</td>
<td>25</td>
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<th>PUBLIC SECTOR DEVELOPMENT</th>
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<td>- Education Development</td>
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</table>

Nippon Koei Provides the Full Range of Project Management Services

We provide our clients with the highest quality engineering consulting services in all disciplines to take projects through all life-cycle stages from investigation to design, implementation and even operation.

Depending on project financial and contractual arrangement, we conduct all or a combination of the services shown here.

**PROJECT MANAGEMENT SERVICES**

**Preliminary Stage**
- Project Formulation
- Preliminary Investigation
- Project Evaluation / Due Diligence
- Financial Arrangement: ODA, PPP, Private funding, etc.
- Contractual Arrangement: DB, EPC, Turnkey, DBO, etc.

**Planning Stage**
- Site & Environmental Survey
- Master Planning
- Feasibility Study

**Design Stage**
- Basic Design
- Detailed Design

**Tender Stage**
- Tender Document Preparation
- Tender Assistance

**Operation & Maintenance Stage**
- Facility/Plant Operation and Management
- Maintenance
- Technical Advisory Service

**Project Implementation Stage**
- Project Management
- Construction Supervision
Our R&D Center, located on a 67,600 sq. meter site in Tsukuba Science City, integrates all Nippon Koei engineering research activities into one multi-disciplinary unit. Center specialists directly participate in projects, working closely with the Client’s personnel at local laboratories and in the field for the development of most appropriate solutions and the transfer of technology to the Client personnel. The objective of the center is to constantly seek new engineering solutions and to make the good better, the fast faster, and the cost lower.

Nippon Koei Commitment to Quality
We maintain the highest possible standards of professional expertise in valuation, design, procurement, construction supervision and project management.

Even in the earliest phases of planning and project design, our recommended solutions are technically sound and economically feasible. When it comes to implementation, we constantly strive to deliver cost-effective designs and provide on-time commissioning. We place the client first and apply a strong teamwork approach in providing managerial support to all projects entrusted to us.

Nippon Koei Staff Professional Qualifications

<table>
<thead>
<tr>
<th>Registered Professional Engineers</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Engineering</td>
<td>655</td>
</tr>
<tr>
<td>Applied Science</td>
<td>85</td>
</tr>
<tr>
<td>Water Supply &amp; Sewerage</td>
<td>59</td>
</tr>
<tr>
<td>Agriculture</td>
<td>53</td>
</tr>
<tr>
<td>Electrics &amp; Electronics</td>
<td>31</td>
</tr>
<tr>
<td>Environment</td>
<td>35</td>
</tr>
<tr>
<td>Information Technologies</td>
<td>15</td>
</tr>
<tr>
<td>Forestry</td>
<td>11</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>9</td>
</tr>
<tr>
<td>Environmental Engineering</td>
<td>8</td>
</tr>
<tr>
<td>Industrial Engineering</td>
<td>3</td>
</tr>
<tr>
<td>Fisheries</td>
<td>3</td>
</tr>
<tr>
<td>Aerospace Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Comprehensive Technical Management</td>
<td>311</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1,279</strong></td>
</tr>
</tbody>
</table>

Note: The latest data is available on our website

Nippon Koei Research & Development Center
Nippon Koei has its own R&D state-of-the-art facility delivering high quality engineered solutions and appropriate countermeasures for the specific site conditions of our Clients by researching and developing new technology.

Our R&D Center, located on a 67,600 sq. meter site in Tsukuba Science City, integrates all Nippon Koei engineering research activities into one multi-disciplinary unit. Center specialists directly participate in projects, working closely with the Client’s personnel at local laboratories and in the field for the development of most appropriate solutions and the transfer of technology to the Client personnel. The objective of the center is to constantly seek new engineering solutions and to make the good better, the fast faster, and the cost lower.
Nippon Koei is highly experienced in delivering hydropower dams and facilities. We have worked on more than 100 hydropower dams in 25 countries and have supervised construction of at least 60 of them with total 20,000 MW installed capacity.

Our strong experience in all project stages allows us to evaluate alternative types of dams for actual site conditions and propose the most optimum one, and then efficiently revise the design. Our experience also allows us to adjust powerhouse requirements for civil, hydro-mechanical, and electro-mechanical technologies from design stage to construction stage. Among Japanese engineering companies in hydropower development, we have by far the largest global track record.

Our design knowledge and construction experience covers all kinds of hydropower stations and multipurpose dams.

Nippon Koei has in-house the many kinds of specialists required for all project stages. We also have the sophisticated tools and technologies at the Nippon Koei R&D Center to execute design works; these include facilities for hydraulic model testing which is required for dam design, seismic performance evaluation using smeared crack model, crack evaluation using extended fictitious crack model, and 3-D analysis of underground structures such as pressure tunnel, underground cavern of powerhouse, etc.

We also provide high quality engineering services to formulate rehabilitation plans based on the determination of cause of damage, and to formulate expansion plans to suit changes in the surrounding area.

### Selected Overseas Project Experience showing Installed Capacity Range

<table>
<thead>
<tr>
<th>Installed Capacity</th>
<th>Country</th>
<th>Name of Hydropower Project (HPP)</th>
<th>Type of Dam</th>
<th>Dam Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 7,100 MW</td>
<td>Pakistan</td>
<td>Bunji HPP (under design)</td>
<td>RCC Gravity</td>
<td>200 m</td>
</tr>
<tr>
<td>2 4,320 MW</td>
<td>Pakistan</td>
<td>Dasu HPP (under design)</td>
<td>RCC Gravity</td>
<td>242 m</td>
</tr>
<tr>
<td>3 2,400 MW</td>
<td>Vietnam</td>
<td>Son La HPP</td>
<td>RCC Gravity</td>
<td>138 m</td>
</tr>
<tr>
<td>4 2,000 MW</td>
<td>Iran</td>
<td>Masjed-Soleyman HPP</td>
<td>Rockfill</td>
<td>100 m</td>
</tr>
<tr>
<td>5 1,200 MW</td>
<td>China</td>
<td>Tianshengjiao No.1 HPP</td>
<td>CFRD</td>
<td>175 m</td>
</tr>
<tr>
<td>6 603 MW</td>
<td>Indonesia</td>
<td>Asahan No.2 HPP</td>
<td>Gravity &amp; Arch</td>
<td>82 m &amp; 122 m</td>
</tr>
<tr>
<td>7 600 MW</td>
<td>South Korea</td>
<td>Muju Pumped Storage PP</td>
<td>Rockfill</td>
<td>-</td>
</tr>
<tr>
<td>8 400 MW</td>
<td>South Korea</td>
<td>Chungju Multipurpose Dam</td>
<td>CVC Gravity</td>
<td>97 m</td>
</tr>
<tr>
<td>9 160 MW</td>
<td>Vietnam</td>
<td>Da Nhím HPP</td>
<td>Earthfill Dam</td>
<td>38 m</td>
</tr>
<tr>
<td>10 155 MW</td>
<td>Lao PDR</td>
<td>Nam Ngum No.1 HPP</td>
<td>CVC Gravity</td>
<td>75 m</td>
</tr>
<tr>
<td>11 95 MW</td>
<td>Nepal</td>
<td>Kulekhani No.1 &amp; No.2 HPP</td>
<td>Rockfill</td>
<td>114 m</td>
</tr>
<tr>
<td>12 60 MW</td>
<td>Kenya</td>
<td>Sondu-Miriu HPP</td>
<td>CVC Gravity</td>
<td>18 m</td>
</tr>
<tr>
<td>13 20 MW</td>
<td>China</td>
<td>Guanyinge Multipurpose Dam</td>
<td>RCD Gravity</td>
<td>82 m</td>
</tr>
</tbody>
</table>

We have also worked on more than 100 hydropower plants in 25 countries and have supervised construction of at least 60 of them with total 20,000 MW installed capacity.
We can deliver a power transmission network that provides reliable and stable power supply that supports people’s lives as well as the economic growth of a country. This consists of overhead transmission lines, underground & marine cable lines, grid substations, and distribution lines that connect electric power generating stations and load consumption. Our experience in all project stages allows us to evaluate alternative transmission line routes and substation sites considering actual geographical and environmental conditions, propose the most suitable one, and then efficiently revise the design.

We offer extensive engineering services for power transmission network development based on design knowledge and construction experience that covers all kinds of power transmission network. We have in-house the many kinds of specialists required for all project stages from initial investigations, planning, designing, tender processing to construction supervision. We also have the sophisticated tools and technologies at the planning and designing stages, such as PSS/E, DigSILENT, PS-CAD, E-TAP, and SIMDIST for network analysis, and PLS-TOWER, PLS-CADD for transmission line design.

Nippon Koei has more than 60 years experience in consulting services for developments of power transmission networks in more than 40 countries. We have worked on a total of more than 13,000 km of transmission lines.

Selected Overseas Project Experience showing Transmission Line Distance Range

<table>
<thead>
<tr>
<th>Line Distance</th>
<th>Country</th>
<th>Project</th>
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</thead>
<tbody>
<tr>
<td>1106 km</td>
<td>India</td>
<td>Simhadri &amp; Vizag Transmission System Project</td>
</tr>
<tr>
<td>330 km</td>
<td>Vietnam</td>
<td>Ham Thuan - Da Mi Hydropower Project (with the Associated Transmission Line and Substations)</td>
</tr>
<tr>
<td>322 km</td>
<td>Bangladesh</td>
<td>West Zone Power System Development Transmission Line Project</td>
</tr>
<tr>
<td>300 km</td>
<td>Lao PDR</td>
<td>Greater Mekong Power Network Development Project</td>
</tr>
<tr>
<td>240 km</td>
<td>Afghanistan</td>
<td>Emergency Infrastructure Rehabilitation and Reconstruction Project (Part B: Power Component) – Transmission Line Heiratan – Pul-e-Khumri</td>
</tr>
<tr>
<td>174 km</td>
<td>Sri Lanka</td>
<td>Transmission &amp; Grid Substations Development Project</td>
</tr>
<tr>
<td>102 km</td>
<td>Peru</td>
<td>Electric Frontier Expansion Project (II)</td>
</tr>
<tr>
<td>64 km</td>
<td>Indonesia</td>
<td>Peusangan 1 &amp; 2 Hydroelectric Power Development Project</td>
</tr>
<tr>
<td>50 km</td>
<td>Kenya</td>
<td>Sondu/ Miriu Hydroelectric Power Project</td>
</tr>
<tr>
<td>48 km</td>
<td>Nepal</td>
<td>Transmission Component of Rural Electrification, Distribution &amp; Transmission Project</td>
</tr>
</tbody>
</table>

500 kV Shin Sakato Substation, Japan
Renewable Energy

We are specialists in solar, wind, geothermal, mini-hydro, and biomass energies. Nippon Koei is also a leader in bringing renewable energy & electrification even to rural and remote areas, having completed projects in over 35 countries in Asia, Middle East, Africa, and Latin America.

We provide one-stop service for renewable energy and energy conservation from project formulation to operation and maintenance. Our strong expertise in field of conventional energy gives us the ability to realize the best mix for an energy supply system.

Services for Government and Public Entities

- Study for establishing a national plan to introduce and promote renewable energy and/or energy conservation
- Study for establishing a national master plan for rural electrification and renewable power development
- Investigation, feasibility study, design and construction supervision for renewable energy and energy conservation projects

Services for Private Companies

- Assistance to formulate and promote renewable energy projects followed by feasibility study, design and construction supervision
- Operation and maintenance of renewable energy plant as an Independent Power Producer

Selected Project Experience

**Solar Power Generation**

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<th>Country</th>
<th>Project Description</th>
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<tr>
<td>Belize-Bolivia-Uruguay</td>
<td>Project for Clean Energy Promotion Using Solar Photovoltaic System</td>
</tr>
<tr>
<td>Lesotho-Kazakhstan</td>
<td>Rural Electrification Project with Photovoltaic Technology</td>
</tr>
<tr>
<td>Ghana</td>
<td>Human Resource Development for Disseminating PV System</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Rural Area Photovoltaic Hybrid Systems Utilization Study</td>
</tr>
<tr>
<td>Jordan</td>
<td>Reduction of Greenhouse gas emissions and Economic Growth Compatibly through Solar</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>Intl Joint Substantive Experiment &amp; Development in Solar Power System</td>
</tr>
<tr>
<td>Madagascar-Namibia</td>
<td>Rural Electrification and Water Supply by Solar Power</td>
</tr>
</tbody>
</table>

**Other Renewable Power Generation**

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia</td>
<td>Preparatory Survey for Laguna Colorada Geothermal Development</td>
</tr>
<tr>
<td>Colombia</td>
<td>Prefeasibility Studies for Macizovolcanico del Ruiz Geothermal Field</td>
</tr>
<tr>
<td>Cambodia</td>
<td>Rural Electrification on Micro-Hydropower in Remote Prov. of Mondul Kiri</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Rural Electrification by Mini-Hydropower in Ache</td>
</tr>
<tr>
<td>Japan-Malaysia</td>
<td>Technical Assistance on EFB Pellet Plant Construction Project</td>
</tr>
<tr>
<td>Myanmar</td>
<td>PDD Model Certification for Piggery Methane Recovery Project</td>
</tr>
<tr>
<td>Nepal</td>
<td>Basic Study on Rural Electrification (Mini Hydropower)</td>
</tr>
</tbody>
</table>

**Rural Electrification**

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhutan</td>
<td>Green Power Development Project (Off-Grid Rural Electrification)</td>
</tr>
<tr>
<td>El Salvador</td>
<td>Formulation of a National Renewable Energy Master Plan</td>
</tr>
<tr>
<td>Georgia</td>
<td>Renewable Energy Development Project</td>
</tr>
<tr>
<td>Ghana</td>
<td>Preparatory Study for Master Plan Study on Rural Electrification Using Renewable Energy</td>
</tr>
<tr>
<td>India</td>
<td>Special Assistance for Project Formation for Renewable Energy Development Project</td>
</tr>
<tr>
<td>Kenya</td>
<td>Preparatory Survey for Renewable Energy Promotion Program in Africa (III)</td>
</tr>
<tr>
<td>Mongolia</td>
<td>Rural Power Supply by Renewable Energy (Wind &amp; Solar)</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Special Assistance for Project Sustainability for Rural Electrification Program</td>
</tr>
<tr>
<td>Peru</td>
<td>Master Plan Study for Rural Electrification by Renewable Energy in Republic of Peru</td>
</tr>
</tbody>
</table>

Mini Hydro Project, Cooperative Rural Electrification in Aceh & North Sumatra, Indonesia
Nippon Koei has designed and supervised construction of thermal power plant projects since the 1970s.

To further rehabilitation of the electrical grid in Iraq, from 2004 we prepared the refurbishment plan for gas power plant and the construction plan for heavy-duty diesel power plant. Since 2011 as part of feasibility study investigation, Nippon Koei has participated in the project for environmental protection, equipment repair and installation of coal-fired power plants to take the load off the country’s base.

### Selected Project Experience

<table>
<thead>
<tr>
<th>Type</th>
<th>Country</th>
<th>Project</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Turbine</td>
<td>India</td>
<td>Study on Tripura Gas Based Power Project</td>
<td>280 MW</td>
</tr>
<tr>
<td>Gas Turbine</td>
<td>Iraq</td>
<td>Project for rehabilitation of gas power station in Mosul (50 MW) and Taji (75 MW)</td>
<td>125 MW (25 x 5)</td>
</tr>
<tr>
<td>Diesel Power</td>
<td>Iraq</td>
<td>Project for construction of diesel power station in Samawah</td>
<td>60 MW (15 x 4)</td>
</tr>
<tr>
<td>Large-scale plant</td>
<td>Iraq</td>
<td>Special Assistance for project formation for Large Scale Power Plant Construction Project in the southern region of Iraq</td>
<td>n/a</td>
</tr>
<tr>
<td>Coal Fired Thermal</td>
<td>Botswana</td>
<td>Preparatory Survey on the Project for Morupule “A” Power Station Rehabilitation and Pollution Abatement</td>
<td>132 MW (33 x 4)</td>
</tr>
<tr>
<td>Coal Fired Thermal</td>
<td>Philippines</td>
<td>Review on EPC contract documents for the Coal Fired Thermal Plant to be constructed in Mindanao</td>
<td>210 MW (105 x 2)</td>
</tr>
</tbody>
</table>

![Coal thermal power plant and turbine, Botswana](image1)

![15 MW Diesel engine, Iraq](image2)

### Energy Conservation / Energy Cost-Savings

Nippon Koei is a specialist in energy conservation. We have conducted energy audits for more than 200 buildings and factories and have averaged 20-30% energy cost-savings in private firms.

As an ESCO company (Energy Service Company), we manage projects designed to improve energy efficiency and maintenance costs for facilities over a 5- to 20-year time period. Typically we offer the following service modules:

- Develop, design and arrange financing for energy efficient equipment
- Install and maintain the energy equipment
- Measure, monitor and verify the project’s energy savings

The Bottom Line: We assume the risk that the project will save the amount of energy designed

### Selected Project Experience

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
</table>
| Commercial Facilities & Buildings | Development Study for Institutional Capacity Development of Energy Management in the Building Sector, Iran  
Comprehensive Technical Cooperation in the Field of Energy, Indonesia  
Study on Introduction of Energy Saving Project for Complex Commercial Bldg, Chiba, Japan  
Advisory Services and Study on Introduction of Energy Saving and ESCO Project in Facilities and Buildings of Central and several Local Governments, Japan |
| Hotels            | Study on Energy Saving, Japan                                                                     |
| Hospitals         | Advisory Services for Energy Saving and ESCO Project, Japan  
Analysis of Energy Saving and ESCO Project, Indonesia                                                |
| Factories         | Advisory Services for Introduction of ESCO Project to Plants: Japan, Indonesia, Malaysia          |
Nippon Koei offers a full range of engineering services to efficiently implement railway development projects. Our experience covers the planning, development of new railways, rehabilitation and upgrading of existing railways, as well as the complex integration of railway subsystems.

Such subsystems include signaling, telecommunications, rolling stock, traction power supply, train operation, depots and workshops, as well as interface control with the environment surrounding the railway. We also render expertise related to soft components such as institutional setup, restructuring, reform, safety, and efficiency enhancement of existing railway operators.

Sustainability of railway business depends heavily on the management capacity of the railway enterprise, regardless of whether the managing agency is a public body or private enterprise. Nippon Koei’s expertise is well-suited to assist with institutional development / revitalization and we offer consulting services for railway reforms, restructuring, privatization studies, and capacity building. Regarding the issue of corporate restructuring, our track record includes feasibility study for the privatization of the entire Polish Railways.

Nippon Koei offers a full range of engineering services to efficiently implement railway development projects. Our experience covers the planning, development of new railways, rehabilitation and upgrading of existing railways, as well as the complex integration of railway subsystems.

Our expertise extends from conventional railways to newer technologies such as light rail transit and linear-induction-motor systems. Selected projects in each area are as follows:

**Selected Project Experience**

### MRT (Mass Rapid Transit)/ Urban Railway
- **Egypt**  
  Cairo Metro Line4 Project
- **Indonesia**  
  Jakarta MRT North-South Line Project
- **Thailand**  
  Bangkok Blue Line Extension Project
- **Vietnam**  
  Ho Chi Minh City MRT Project
- **Tunisia**  
  Tunis South Suburban Line Electrification Project

### High Speed Railway & Shinkansen
- **India**  
  Ahmedabad-Mumbai-Pune High Speed Railway Project
- **Vietnam**  
  Hanoi-Ho Chi Minh City High Speed Railway Project

### Intercity Railway
- **Cambodia**  
  Whole Cambodian Railway Rehabilitation Project
- **India**  
  Delhi-Mumbai Semi-High Speed Train Project
- **Thailand**  
  Denchai - Chiang Rai Railway Project

### Freight Railway
- **Indonesia**  
  Coal Transportation Railway for Private Company
- **India**  
  Western Dedicated Freight Corridor Transportation Project (Delhi - Mumbai)
- **Mongolia**  
  New Railway Project 1,600 km

### Monorail/LRT
- **Brazil**  
  Sao Paulo Monorail Project
- **India**  
  Delhi Monorail Project
- **Iran**  
  Teheran Monorail Project
- **Panama**  
  Panama Monorail Project
- **Japan**  
  Tama Monorail Project

*Photo: Double Stack Container Cars*

*Notes For Western Dedicated Freight Corridor Transportation Project (Delhi - Mumbai) in India, we are planning similar trains.*
Nippon Koei has more than four decades of design and construction management experience from trans-continental highways, high-capacity high-speed urban highways and viaducts to rural roads. We have planned, designed and supervised construction and modernization of road projects in over 50 countries.

At the core of our success is our pool of highly skilled engineers, specialists and project managers who deliver planning, design and contract supervision for the full spectrum of highway facilities.

We draw on years of accumulated experience and application of cutting-edge engineering technology in road and tunnel projects, and we pay careful attention to road transport policy, environmental issues, and traffic control and management.

For rural areas, we focus to protect the social environment and road structures by the use of flood control and road disaster management. We also possess the high-level technical expertise in all the fields required for tunnel projects.

Selected Project Experience

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>Tanjung Priok Port Access Road</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>Western Kazakhstan Road Network Rehabilitation Project</td>
</tr>
<tr>
<td>Morocco</td>
<td>Construction of the Mediterranean Bypass</td>
</tr>
<tr>
<td>Nepal</td>
<td>Project for the Improvement of Kathmandu - Bhaktapur Road</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Pakistan Transport Plan Study (Pilot Implementation)</td>
</tr>
<tr>
<td>Philippines</td>
<td>Subic-Clark-Tarlac Expressway Project</td>
</tr>
<tr>
<td>Swaziland</td>
<td>Northern Main Road Construction Project (MR 5 &amp; MR 6)</td>
</tr>
<tr>
<td>Turkey</td>
<td>Bozüyük - Mekece Road Improvement Project</td>
</tr>
<tr>
<td>Uganda</td>
<td>Greater Kampala Road Network &amp; Transport Improvement</td>
</tr>
</tbody>
</table>

Nippon Koei has provided complete ITS (Intelligent Transportation Systems) technology to allow mega-cities to addresses the transport problems of chronic traffic congestion and accidents, air pollution, and inadequate capacity of public transportation services, unregulated parking and poor logistics.

We provide complete upstream to downstream solutions for the road system from traffic monitoring through crafting of ITS master plans so that large cities can reduce inefficiencies in existing road infrastructure through dissemination of traffic information and improvement of traffic control. ITS normally comprises traffic monitoring, control and management system, electronic toll collection system (ETC), and fiber optic and wireless network systems. We provide services for planning, design and construction supervision works for ITS implementation.

Selected Project Experience

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>Introduction of ITS on Road Network in Hyderabad Metropolitan Area</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Tanjung Priok Access Road Construction Project Phase I</td>
</tr>
<tr>
<td>Japan</td>
<td>Electric Communication Facilities for the ITS in Toyouka Area</td>
</tr>
<tr>
<td>Vietnam</td>
<td>North-South Expressway Construction Project (HCMC - Dau Giay Section)</td>
</tr>
</tbody>
</table>

*Notes: TMS = Toll Management System, HTMS = Highway Traffic Management System
Nippon Koei, together with its tunnel specialist subsidiary Nippon Civic Consulting Engineers (NCC), is a leader in the field of tunnel engineering and engineering solutions to natural obstacles, offering total tunnel solutions all over the world. Our tunnels in Japan survived without any major damage during the massive Tohoku and Hanshin Earthquakes.

We specialize in TBM shield tunnels, immersed-tube tunnels, and cut-and-cover underground structures in urban areas as well as conventional tunnels through hills and mountains. We excel at designing shield tunnel segment linings in technically challenging settings that require special tunneling machines such as the Multi-Face (MF) and rectangular types. Our tunnels always address the six basic quality concerns: security, 100-years durability, earthquake-resistance, load capacity, waterproofing, and fire-resistance.

For over half a century, we have participated in countless tunnel projects for roads, railways, underground reservoirs, waterways, drainage, common-ducts, and pipelines across Japan, Asia, Europe, and Africa. Our expertise covers all project phases and extends to the design of tunnel management systems and traffic control equipment for securing user safety and smooth traffic operations in the vicinity of the tunnel and the wider road network. We provide services for the rational repair and reinforcement of existing tunnels to extend their economic life. NCC carries out lining design and construction supervision for innovative shield tunnel types. We are also active in research and development for the continual advancement of the technology used in their construction.

NCC is also the only company in Japan offering technical support for an advanced monitoring system that underpins maintenance management and ensures tunnel durability.

Selected Project Experience

- **Brazil**  Technical advisor of tender documents of San Paolo Metro Line No.4
- **China**  Verify the detailed design of Shanghai Metro, Yangpu Line
- **Egypt**  Subway Line No.4 from middle Cairo to Pyramids area, passing under the Nile River, and Rehabilitation of Ahmed Hamdi Tunnel under Suez Canal
- **Indonesia**  Basic design of Jakarta Mass Rapid Transit System, South-North Line
- **Japan**  Tokyo Bay Aqua-Line Expressway Tunnel & Tokyo Port Seaside Road Tunnel
- **Korea**  Technical advisory services of Seoul Metro Line No.7
- **Qatar**  Feasibility study of Abu Hamour sewage tunnel
- **Thailand**  Construction supervision of MRT Blue Line Extension construction project
- **Turkey**  Detailed design railway immersed tunnel under Bosporus Strait
- **Vietnam**  Hai Van Tunnel, and Basic Design of Ho Chi Minh City Urban Mass Rapid Transit (UMRT) Line-1

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Hai Van Tunnel, Vietnam  Rehabilitation of Ahmed Hamdi Tunnel under Suez Canal, Egypt

Shield method construction  Immersed Tube tunnel  Water pipe in shield tunnel
Nippon Koei’s bridge engineering expertise is second to none, with experience ranging from short-span, low-clearance bridges to long-span, high-elevation, structurally complex bridges crossing great rivers and straits. We have designed and built hundreds of bridges all over the world.

We excel in complex bridge projects such as those that cross major rivers, link islands, permit ship passage, face complex configuration constraints, and cross precipitous terrain. The bridges we built have been recognized for exceptional application of technology, engineering quality and safety.

Nippon Koei adopts landscape-simulation technology to create aesthetically pleasing bridges, participates in disaster management and safety inspection projects, and conducts non-destructive tests and durability studies of existing bridges. Our team of engineers has provided planning, design, construction supervision and technical assistance services.

We support our work through accumulated in-house knowledge and advanced technical capabilities. We maintain our own database of seismic activity, natural disasters, and weather conditions around the world. We have a thorough understanding of regional characteristics such as the design capabilities of local firms. We reinforce our own technical skills for design with advanced methods such as 3-D analysis, finite element method, and dynamic analysis.

Selected Project Experience

- **Bangladesh**: Meghna and Meghna Gumti Bridge Construction Project
- **Bosnia and Herzegovina**: Construction of Doboj Bridge and Modrica Bridge
- **Cambodia**: Construction of Mekong Bridge
- **Chile**: Construction of New Bio-Bio Bridge
- **Ecuador - Peru**: New Makara Bridge Construction Project
- **India**: Nizamuddin Bridge Construction on NH-24
- **Jordan**: Construction of King Hussein Bridge
- **Lao PDR - Thailand**: Second Mekong International Bridge Construction Project
- **Mozambique**: Reconstruction of Bridges on the Main Roads Project
- **Pakistan**: North West Frontier Provinces Bridge Construction
- **Palau**: Construction of a New Koror-Babeldaob Bridge
- **Sri Lanka**: Construction of New Mannar Bridge and Improvement of Causeway
- **Sudan**: New White Nile Bridge Construction
- **Tunisia**: Rades-La Goulette Bridge Construction Project
- **Vietnam**: Can Tho Bridge Construction Project

King Hussein Bridge, Jordan

Postage stamp commemorating the opening of the bridge.

Rades-La Goulette Bridge, Tunisia

Koror-Babeldaob Bridge, Palau

Pakse Bridge, Lao PDR
Nippon Koei is a leading Port consultant. We have completed over 50 major ports expansion projects including national port planning, container terminals, general/bulk/industrial cargo ports for oil & gas, coal, LNG, etc., and fishery harbors. We also implement conservation of coastal areas and beaches, and development of inland waterway transport networks.

Our services include port planning, survey, feasibility study, basic and detailed designs, tender document preparation, and construction supervision.

We also offer disaster risk management services for ports and waterfront residences. To support this work, Nippon Koei maintains its own R&D Center with hydraulic model and laboratory for mathematical models simulations, tsunami, cyclone, and ship movement simulations.

Selected Project Experience

Port Expansion
- Croatia: Rijeka Port
- East Timor: Dili Port
- El Salvador: La Union Port
- Georgia: Poti Port
- Ghana: Sea Ports
- Indonesia: Tanjung Priok & Ujung Pandang Ports
- Iraq: Umm Qasr & Khor Al-Zubayr Ports
- Kiribati: Beto Port
- Lithuania: Klaipeda Port
- Oman: Oman Port
- Peru: Callao Port
- Philippines: Feeder Ports
- Thailand: Ranong Port
- Turkey: Izmir Port
- Vietnam: Cai Lan Port

Container Terminal
- Cameroon: Douala Port Container Terminal
- Myanmar: Yangon Port (Thilawa)
- Vietnam: Hai Phong Port, Van Phong Intl Transshipment Terminal, Cai Mep-Thi Vai Intl & Lack Huyen Ports

General/Bulk/Industrial Cargo Port Development
- Brazil: Itaqui Port & Pecem Port
- Cambodia: Sihanoukville Port
- Indonesia: Port of Donggi Senoro LNG
- Thailand: Map Ta Phut Industrial Port
- Vietnam: Imported Coal Transshipment Terminal

Coastal Area Development (beach rehabilitation, revetments, etc.)
- Indonesia: Bali Beach Conservation & Jawa-Bali Ferry Terminals
- Vietnam: Bassac River Diversion

Disaster Risk Management (for ports and waterfront residences)
- Indonesia: Ache Province and Affected Area in Northern Sumatra
- Maldives: Tsunami Recovery, Rehabilitation and Development
- Myanmar: Yangon Port and Main Inland Water Transport
- Sri Lanka: Tsunami Affected Area of Southern Region

Fishery Port Development
- Indonesia: Larantuka Fishery Harbour
- Sri Lanka: Galle and Tangalle Fishery Harbors
- Tanzania: Dar es Salaam Fish Market Complex
Nippon Koei is particularly experienced in the field of Airport engineering having planned and engineered over 70 airport projects in 30 countries.

Our engineering approach of airport development projects is a comprehensive one based on dependable project formulation, interdisciplinary expertise, and advanced technology since airport development projects are highly complex and impact other economic sectors such as urban and regional development, industry, tourism, and the environment.

Projects studied and engineered by Nippon Koei include new construction, expansion, and modernization of airports of various categories and capacities, from domestic and regional to international airports handling various types and sizes of aircraft. We also plan and design airport civil engineering facilities, buildings, Satellite Communication/Navigation/Surveillance (CNS) and Air Traffic Management (ATM) facilities, aviation security including rescue and fire fighting (RFF) facilities, and other service facilities.

With our ample experience and advanced facilities, Nippon Koei has the capacity to manage total aviation services such as field surveys and investigations, planning, pre-feasibility, and feasibility studies, traffic demand forecasts, navigation procedure planning, economic and financial analysis, environmental and social assessments, computer-aided simulation analyses, detailed design, construction supervision, and transfer of technology.

**Selected Project Experience**

**New Airport Development**
- China: Shanghai Pudong International Airport
- Guatemala: New Guatemala City International Airport
- Indonesia: Jakarta Metropolitan Multiple Airport Development
- PNG: New Rabaul Airport
- Thailand: Don Mueang & Suvarnabhumi International Airports

**Improvement of Existing Airport**
- Japan: Narita International Airport
- Lao PDR: Vientiane International Airport
- Madagascar: Ivato International Airport
- Micronesia: Phonpei International Airport
- Sri Lanka: Bandaranaik International Airport
- Ukraine: Boryspil International Airport
- Vietnam: Tan Son Nhat International Airport

**CNS/ATM**
- Philippines, Vietnam, Lao PDR, Cambodia

**Aviation Security**
- Indonesia: Major Airports Security System
- Lao PDR: Contingency Exercises on Airport Security

**Transport Master Plan**
- ASEAN: ASEAN Strategic Transport Plan
- Tanzania: Comprehensive Transport and Trade System
Water Resources Management

Nippon Koei has over 60 years experience in executing projects for water resources development and management projects. We have formulated nation-wide water resources development master plans for Korea, Malaysia, Philippines, Vietnam, Kenya, etc. and have implemented hundreds of water resources projects all over the world.

We adopt an integrated approach to maximize the benefits of water resources and minimize adverse impacts from water related disaster. For example:

- Our experience in the water resources services ranges from water policies, legislation and institutional reforms to design and implementation of water resources facilities such as dams, barrages, and sluice gates.
- We offer comprehensive water resources development and management plans from small river basin to national level for optimum use of water resources and ecosystem conservation under the concept of Integrated Water Resources Management (IWRM).
- We offer win-win solutions among stakeholders including local communities, central and local government, NGOs and private sector.
- We propose and implement adaptation and mitigation alternatives to address climate change issues including drought and flooding.

Integrated Water Resources Management

<table>
<thead>
<tr>
<th>Country</th>
<th>Basin/Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>Citarum River Basin &amp; Brantas River Basin</td>
</tr>
<tr>
<td>Philippines</td>
<td>Pampanga River Basin &amp; Bicol River Basin</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>Whole Delta River Basin</td>
</tr>
<tr>
<td>Macedonia</td>
<td>All River Basins</td>
</tr>
</tbody>
</table>

Water Resources Existing Facilities Rehabilitation Project

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>Brantas and Solo River Basin</td>
</tr>
</tbody>
</table>

Water Transmission Project

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecuador</td>
<td>Chone-Portoviejo River Basin Water Resource Development</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Pahang-Selangor River Water Transfer Project</td>
</tr>
</tbody>
</table>

Flood Management

Nippon Koei is highly experienced and possesses specialized expertise in the field of flood damage mitigation. We have solved a diverse array of flood damage problems through both structural and non-structural measures.

Structural measures for flood management schemes have included dams, retarding basins, river improvement, diversion floodways, channel widening and drainage improvement. We use multi-sector approach considering forest and cropland protection on upper basin to mitigate flood water on lower basin.

Non-structural measures aimed at alleviating flood damages and building community disaster management system have included land use management, land improvement and resettlement, flood forecasting and warning & evacuation systems, and training and education of local engineers and residents.

Selected Project Experience

**River Improvement Project**

<table>
<thead>
<tr>
<th>Country</th>
<th>River Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>Solo River &amp; Madura River</td>
</tr>
<tr>
<td>Philippines</td>
<td>Pampanga River &amp; Aguasan River</td>
</tr>
<tr>
<td>Brazil</td>
<td>Itajai River</td>
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</tbody>
</table>

**Disaster Prevention Project**

<table>
<thead>
<tr>
<th>Country</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philippines</td>
<td>Mt. Pinatubo &amp; Mt. Mayon</td>
</tr>
<tr>
<td>Nepal</td>
<td>Kulekhani River Basin</td>
</tr>
</tbody>
</table>

**Flood Management and Mitigation Project**

<table>
<thead>
<tr>
<th>Country</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philippines</td>
<td>Agno, Cagayan &amp; Cavite River Basins</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>South Western Area</td>
</tr>
<tr>
<td>Tunisia</td>
<td>Mejerda River Basin</td>
</tr>
</tbody>
</table>

**Flood Forecasting and Warning System**

<table>
<thead>
<tr>
<th>Country</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philippines</td>
<td>Agno, Bicol, Cagayan &amp; Pampanga River Basins</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>Whole Country</td>
</tr>
</tbody>
</table>

**Countermeasures for Sedimentation Project**

<table>
<thead>
<tr>
<th>Country</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>Wonogiri Dam &amp; Brantas River Basin</td>
</tr>
<tr>
<td>Philippines</td>
<td>Tarlac River</td>
</tr>
</tbody>
</table>
Water Supply

Nippon Koei has engineered a wide range of urban and rural water supply facilities in more than 20 countries. These have included water intakes, water transmission pipelines, pumping stations, reservoirs and water treatment plants.

Additional services we provide include NRW (Non Revenue Water) and leakage water reduction programs, asset information management, water tariff structural study, advisory service for water business management and efficient facility operation, and formulation of PPP (Public and Private Participation) projects. We also offer consulting services for financial, environmental, social and institutional issues, as well as urban area planning and water resource development related to water supply projects.

Large-Scale Water Supply Systems

Nippon Koei is particularly expert in planning, design and construction supervision of large-scale urban water supply systems.

Our services draw upon our experience and in-depth expertise in the fields of water resource development, structural design including anti-earthquake design, soil mechanical engineering, treatment process design, mechanical/electrical design as well as project management.

Small-Scale Water Supply Systems

Nippon Koei provides design and construction supervision services for small-scale rural water supply systems. Our projects have included hydro-geological study (groundwater development), community development, technical transfer / training, and institutional development.

Selected Project Experience

India   Hogenakkal Water Supply & Fluorosis Mitigation Project
Jamaica The Kingston Metropolitan Area Water Supply Project
Japan   Kohoku Reservoir and Pumping Station Construction Project
Libya   Great Man-made River Project
Peru    Lima Marginal Areas Sanitary Improvement Project (Phases I, II and Huachipa System)
Philippines Water Supply and Sewerage System Development in West Zone of Metro Manila (PPP Study)
Turkey Greater Istanbul Water Supply II - Melen System
Vietnam Nhon Trach Water Supply Project

Huachipa Water Supply System, Peru

Selected Project Experience

India   Hogenakkal Water Supply & Fluorosis Mitigation Project
Jamaica The Kingston Metropolitan Area Water Supply Project
Japan   Kohoku Reservoir and Pumping Station Construction Project
Libya   Great Man-made River Project
Peru    Lima Marginal Areas Sanitary Improvement Project (Phases I, II and Huachipa System)
Philippines Water Supply and Sewerage System Development in West Zone of Metro Manila (PPP Study)
Turkey Greater Istanbul Water Supply II - Melen System
Vietnam Nhon Trach Water Supply Project

Rural Water Supply Project, Kenya

Rural Water Supply Project, Rwanda

Selected Project Experience

Indonesia Water Supply in Gunungkidul Regency of Yogyakarta Special Territory
Kenya   Project for Rural Water Supply (Phase I&II)
Peru    Study for Development of Water Supply and Sanitation System in Amazon
Rwanda  Rural Water Supply Project
Nippon Koei is well-known in planning, design and construction supervision of large-scale urban wastewater and drainage systems. We have engineered a wide range of sewerage and urban drainage facilities in more than 15 countries. These have included trunk sewers, drainage channels, pumping stations and water treatment plants.

We provide runoff analysis, water quality simulation of public water bodies, diagnosis and reinforcement design of existing sewer lines, asset information management, sewerage tariff structural study, advisory service for efficient facility operations, and formulation of PPP (Public and Private Participation) projects. We also offer consulting services for financial, environmental, social and institutional issues related to the project implementation and O&M.

We have extensive expertise in large-scale deep underground structures such as shield tunnels, underground rivers, and underground storm water reservoirs (as big as 8.5 m diameter, 45 m depth and 1500 m length). We also are experienced in the fields of urban area planning, water environment conservation, hydrology, hydraulics, structural design including anti-earthquake design, soil mechanical engineering, treatment process design, mechanical/electrical design and project management.

Nippon Koei has invented new devices and technologies such as for CSO (combined sewer overflow) mitigation device, which was developed by our R&D Center. This device is being increasingly introduced in Japan, Korea, USA and European countries.

Selected Sewerage Project Experience

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iraq</td>
<td>Baghdad Sewerage Facilities Improvement Project (Engineering Service for Detailed Design)</td>
</tr>
<tr>
<td>Japan</td>
<td>Water Quality Simulation and Projection of Tokyo Bay</td>
</tr>
<tr>
<td>Morocco</td>
<td>Sewage System Development Project (Phase I &amp; II)</td>
</tr>
<tr>
<td>Panama</td>
<td>Panama City and Bay Sanitation Project</td>
</tr>
<tr>
<td>Peru</td>
<td>Supervision for the Design, Construction and Commissioning of the Works for the Taboada Wastewater Treatment Plant-PTAR Taboada</td>
</tr>
<tr>
<td>Qatar</td>
<td>Doha West Sewage Treatment Works Project</td>
</tr>
<tr>
<td>Thailand</td>
<td>Study on Water Recycle Project for Water Supply in Pattaya City (Study on Private-Initiative Infrastructure Projects)</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Sewage Sludge Treatment/Disposal and Reclaimed Wastewater Reuse</td>
</tr>
<tr>
<td></td>
<td>PPP Study on Project for Yen Xa Wastewater Treatment Plant</td>
</tr>
</tbody>
</table>

Selected Urban Drainage Project Experience

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia</td>
<td>Master Plan for Pruvial Drainage in La Paz</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Plan for Major Drainage and Small lakes Management in Jabodetabek Bopumjurb Area</td>
</tr>
<tr>
<td>Japan</td>
<td>Egawa Stormwater Storage Tunnel Construction Project</td>
</tr>
<tr>
<td>Sir Lanka</td>
<td>Samezu-Katsushima Wastewater and Stormwater Pumping Stations Construction Project</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Greater Colombo Flood Control &amp; Environmental Improvement Project (Phases 1, 2 and 3)</td>
</tr>
<tr>
<td></td>
<td>Drainage Project for Environment Improvement in Hanoi (Stage 1&amp;2)</td>
</tr>
<tr>
<td></td>
<td>Construction Investment of Sewerage and Drainage Components under Haiphong City Environment Improvement Project</td>
</tr>
</tbody>
</table>
Solid Waste Management

To create a “Sound Material-Cycle Society”, Nippon Koei promotes integrated solid waste management through appropriate facilities and social system with the 3R’s (reduce, reuse, recycle). We are recognized for exceptional application of source-separation of solid waste, coordination with stakeholders, and financial arrangements. Our expertise is based on accumulated knowledge and experience in more than 30 countries.

We have assisted many local governments to prepare integrated solid waste management master plans. We have planned related infrastructure such as waste transfer station, recycling center, incinerator and sanitary landfill including equipment for handling waste and have provided the services for capacity improvement for operation and maintenance.

We also provide services to address the hot button solid waste issues of our times such as privatization of solid waste management and regional management of solid waste generated in several municipalities.

We are particularly skilled at facilitating communication with waste generators and stakeholders where change in behavior is the key to better management of the waste stream.

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Selected Project Experience

China
- Improvement of Solid Waste Management in Xian
Cuba
- Integrated Management Plan of Municipal Solid Waste in Havana City
Indonesia
- Regional Solid Waste Management Mammakasata Project in South Sulawesi Province
Japan
- Landfill Project for Industrial Solid Waste, Kanagawa
- Eco Kochi Closed-System Landfill Project
Kenya
- F/S on Nairobi Solid Waste Management Project
Nepal
- Solid Waste Management for Kathmandu Valley
Palau
- Technical Cooperation Project for Improvement of Solid Waste Management
Peru
- Feasibility Study of the Project for Solid Waste Management in Peru
Vietnam
- GIA Minh Solid Waste Treatment Complex Under Hai Phong Sewerage, Drainage & Solid Waste Management Project
- Supply of Equipment for Waste Management in Hanoi City
- Technical Cooperation Project: Implementation Support for 3R Initiative of Hanoi City for Cyclical Society
World Bank
- World Bank, Solid Waste Management Holistic Decision Model, Kawasaki [Japan], Atlanta [USA], Kathmandu [Nepal], Shanghai [China], Lahore [Pakistan], Buenos Aires [Argentina], Sarajevo [Bosnia and Herzegovina], Conakry [Guinea], Amman [Jordan]
Environmental Management

Nippon Koei is well-known worldwide for the quality of its consulting services in environmental management, water, air, land/soil, as well as addressing global environmental issues such as afforestation and climate change.

Where environmental degradation is expected due to development pressure, we can prepare an environmental management plan to minimize degradation by introducing sound policies that balance environmental protection with economic development, including capacity development for relevant administrators and stakeholders concerned with environmental management. We have in-house specialists in the various environmental fields required for all types of environmental management projects to reverse environmental degradation.

Selected Project Experience

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>Regional Environmental Management Improvement Project</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Project on Strengthening Environmental Management Capacity of Local Governments</td>
</tr>
<tr>
<td>India</td>
<td>Attapady Wasteland Comprehensive Environmental Conservation Project</td>
</tr>
<tr>
<td>Iran</td>
<td>Anzali Wetland Ecological Management Project</td>
</tr>
<tr>
<td>Kenya</td>
<td>Project for Improvement of Environmental Management Capacity in Nakuru</td>
</tr>
<tr>
<td>Uruguay</td>
<td>Project on Water Pollution Control and Management of Water Quality in the Santa Lucia River Basin</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Study on Urban Environmental Management, and Environmental Protection for Sustainable Tourism Development in Halong</td>
</tr>
</tbody>
</table>

Environmental and Social Impact Study

Nippon Koei has conducted a wide range of environmental and social impact studies in the planning and design stages of many types of infrastructure development projects to avoid or mitigate negative impacts from projects.

We have a wide spectrum of expert knowledge covering fauna and flora, water quality, soil science, atmospheric science, anthropology, sociology, and rural development that will find solutions to environmental issues in a project and contribute to the achievement of economic development harmonized with protection of the natural and social environment.

Nippon Koei’s long-term experience in environmental and social impact studies, particularly, Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA), and Land Acquisition and Resettlement Action Plan (LARAP) all over the world, ensures the efficient implementation of infrastructure projects and the acquisition of their environmental clearance.

Selected Project Experience

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>Preparatory Survey on Greater Cairo Metro Line No.4</td>
</tr>
<tr>
<td>India</td>
<td>Preparatory Survey for Western Dedicated Freight Corridor Transportation Project</td>
</tr>
<tr>
<td>Zambia</td>
<td>Study on Comprehensive Urban Development Plan for the Greater Lusaka City</td>
</tr>
</tbody>
</table>
Nippon Koei has gained an international reputation for its quality services in planning, designing, and implementing forest and natural resource management projects. We offer comprehensive, effective, practical and site-specific solutions underpinned by a wide range of expertise not only in the fields such as forestry, forest ecology, forest engineering, soil science, agro-forestry and agronomy, but also in rural economy, community empowerment, and small scale enterprise development.

We have a remarkable track record in forest restoration and protection, ecosystem and biodiversity conservation, watershed conservation, nature reserve/national park conservation, protection and rehabilitation of mangrove and coastal forests, and institutional and capacity development of the relevant sectors. Nippon Koei has specifically developed mechanisms to manage and protect natural resources in cooperation with relevant stakeholders and local communities.

**Selected Project Experience**

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>Jalapa Region Ecological Corridor Project</td>
</tr>
<tr>
<td>India</td>
<td>Attapady Wasteland Comprehensive Environmental Conservation Project, Kerala State</td>
</tr>
<tr>
<td>Philippines</td>
<td>Forestry Sector Project</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Forestry Sector Project Loan III (Afforestation)</td>
</tr>
<tr>
<td>Myanmar</td>
<td>Integrated Mangrove Rehabilitation and Management Project through Community Participation in the Ayeyad Delta</td>
</tr>
</tbody>
</table>

**Addressing Climate Change Issues**

As one of the few one-stop service provider in the field of addressing climate change issues, Nippon Koei offers a wide range of services from policy making to implementation of an infrastructure development plan to reduce greenhouse gas emission (GHG).

We have experienced in-house experts who have dealt with the process and mechanisms of the major schemes on combating climate change, such as Clean Development Mechanism (CDM), Bilateral Offset Credit Mechanism (BOCM), and Measurement, Reporting and Verification (MRV) of GHG emission reduction activities. Services we offer include the following:

- Assistance in the formulation of a governmental policy and plan on combating climate change issues
- Assistance in the formulation on climate change adaptation and mitigation plans with necessary infrastructure development activities
- Assistance in the implementation of the climate change adaptation and mitigation plans
- Feasibility study of a CDM project
- Developing an MRV system
- Facilitating the process of registration of a project as a CDM project
- Assistance in the introduction of various carbon offset activities / projects
- Formulation of a new carbon emission training project under post-Kyoto protocol

**Selected Project Experience**

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>Study for Assisting MRV System Development for New Mechanism on Carbon Dioxide Emission Trading in Asian Developing Countries (Bangladesh, Bhutan, Cambodia, India, Indonesia, Lao PDR, Mongolia, Nepal, Philippines, Thailand, Vietnam)</td>
</tr>
<tr>
<td>Myanmar</td>
<td>PUN FCCC Project Design Document (PDD) Preparation for Upper Baluanchang Hydropower</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Study on Preparation of CDM Project Design Document for JICA-Assisted Projects</td>
</tr>
</tbody>
</table>
Nippon Koei has developed and proven technologies that have put us in the forefront of contributions to disaster management initiatives over the last 50 years. We have significantly improved the capacity of national crisis management planning and by protecting the integrity of country infrastructure in the face of natural disasters. We cover all aspects of disaster management from preparedness to emergency response and recovery.

Our disaster risk assessment includes analyzing disaster history, performing a highly accurate disaster hazard analysis, evaluating the physical conditions, socio-economic, and environmental features, and disaster vulnerability. We use this as the basis for efficient and effective disaster prevention activities and organization of disaster management system and crisis management plan.

Our services include real-time monitoring, geological survey measurement & dynamics analysis, design engineering, construction supervision, plans for managing floods and sediment, comprehensive plans for crisis management and mobilization of local community resources, etc. We employ engineering tools such as numerical analysis, DEM and FEM in cooperation with Nippon Koei’s own R&D Center, to plan effective measures based on highly accurate mechanism analysis, and to achieve cost reduction through value analysis.

Selected Project Experience

El Salvador Capacity Development of the Department of Climate Change Adaptation and Strategic Risk Management for Strengthening of Public Infrastructure
ASEAN Data Collection Survey on ASEAN Regional Collaboration in Disaster Management
Philippines Study on Comprehensive Disaster Prevention around Mayon Volcano

Landslide Disaster Response & Planning

Our services address debris flows, slope instability, landslides, avalanche and falling rocks caused by abnormal torrential rain, large-scale earthquakes, and volcanic eruptions threaten a country’s vital economic infrastructure lifelines, especially roads.

We provide experienced professional engineers to make rapid site reconnaissance and risk assessment, and promptly respond with a series of engineering design analyses, emergency restoration, and permanent measures based on extensive experience and know-how. We offer consulting services such as providing information and hazard maps to community residents and the affected areas, recommend traffic restrictions, and also provide technical assistance for future disaster prevention and disaster recovery.

Selected Project Experience

Armenia Study on Landslide Disaster Management
Ethiopia Study of Landslides in Abai Valley
Malaysia Study of Slope Disaster Management for Federal Roads
Nepal Study on Disaster Risk Management for Narayangharh - Mugling Highway
Philippines Project for Countermeasure Construction for Landslides on Sinduhli Road
East Timor Project for the Capacity Building in Road Maintenance

Earthquake & Tsunami Disaster Response & Planning

Under the Comprehensive Restoration Plan for the 2011 Earthquake and Tsunami in Japan, we are providing engineering consulting in over 100 urgent restoration projects, including damage evaluation works for more than 160 bridges, design works for 20 fishery ports, as well as project and construction management applying PPP for the severely damaged Sanriku Coastal Road Reconstruction Project.

To cope with these events that have the potential for causing large-scale devastation and human suffering, we focus on known active faults from the Geological Survey, and we analyze the extent and inundation depth of modulation of target areas. From this analysis, we simulate building damage and human impacts, and then develop an earthquake disaster prevention & mitigation plan including educating residents about evacuation details.

Selected Project Experience

Nepal Study on Earthquake Disaster Mitigation in the Kathmandu valley
Algeria Study for the Earthquake Micro-zoning
Kazakhstan Study on Earthquake Disaster Risk Management for Almaty City
Armenia Project for Seismic Risk Assessment and Risk Management Plan
Agriculture & Rural Development

Over the last 50 years, Nippon Koei has managed 300 agriculture and rural development projects in 50 countries. These have improved the living standards of many rural communities.

We have a full range of in-house expertise from the fields of agronomy, land use, agro-economy, marketing, agro-processing, irrigation and drainage, other rural infrastructure, agricultural research and extension, credit and other supporting systems, etc. In all Nippon Koei led development projects, we ensure that environments are preserved. Our integrated approach includes a long-term commitment to capacity building. Our multi-disciplinary consulting services for Agronomy and Irrigation & Drainage Engineering are listed below.

### Integrated Agriculture & Rural Development Programs

At regional and national levels, we integrate sustainable, environmentally sensitive agricultural policies and dissemination of technical innovations with carefully designed agriculture and rural development programs, awareness of local, national and international market place realities, and balanced by special attention to agrarian, social, economic and ethnic aspects of rural communities.

#### Selected Project Experience

- **Senegal**: Project for Improvement of Productivity in Irrigation Scheme in Valley of Senegal
- **Madagascar**: Study on Rural Development and Watershed Management in South-West Alaotra
- **Palestine**: Project on Improved Extension for Value-Added Agriculture in Jordan Rift Valley
- **Philippines**: Agrarian Reform Infrastructure Support Project I & II & III
- **Sri Lanka**: Pro-Poor Economic Advancement and Community Enhancement (PEACE) Project

### Irrigation Infrastructure Development

Our technical services for irrigation infrastructures include studies, planning, design, construction supervision, water management, operation and maintenance of dams, head works, groundwater wells, canals, and related irrigation facilities as well as establishment and strengthening of water user associations.

#### Selected Project Experience

- **Tanzania**: Mwega Smallholder Irrigation in Morogoro Region
- **Syria**: East Meskene Irrigation Project
- **Ecuador**: Catarama Area Agricultural Development
- **Nepal**: Sunsari Morang Irrigation Project
- **India**: PMC for Andhra Pradesh Irrigation and Livelihood Improvement Project
- **Sri Lanka**: Walawe Irrigation Upgrading and Extension Project Phase II

### Agricultural Support Services & Training

We work to update the knowledge, technical skills, local organizations and technical support services for farmers and local communities based on our extensive expertise for crop diversification, farm product development, marketing, credit schemes, and technical and management training. We also help design and implement information management systems using tools such as GIS to promote more effective and sustainable use of natural resources.

#### Selected Project Experience

- **Senegal**: Promotion of Artisanal Activities through One Village One Product Program (OVOP)
- **Bolivia**: Improvement of Agricultural Products Marketing System in Santa Cruz
- **Indonesia**: Improvement of Rice Post Harvest and Marketing in Farmer Groups
- **Thailand**: Export Oriented Crop Promotion Sustenance
- **Philippines**: Rural Farmers Agrarian Reform Support Credit Program
- **India**: Technical Cooperation Project for Crop Diversification in Himachal Pradesh

### Institutional Development & Empowerment

We empower beneficiaries by strengthening of agricultural and irrigation cooperatives, assisting rural communities to develop the skills and confidence to participate in development programs, and assisting institutional reforms with government agencies.

#### Selected Project Experience

- **Ethiopia**: Capacity Building Programs for Community-Based Irrigation Dev in Central Oromia
- **Kyrgyz**: Community Empowerment Project in the Issyk-kul Oblast
- **Palestine**: Improvement of Local Governance System (Community Empowerment Component)
- **Peru**: Rural Dev for Poor Peasants and Local Capacity Strengthening in Central Highlands
- **Sri Lanka**: Increasing Integrated Management Capacity on Irrigation Sector in Sri Lanka
Urban Development

Nippon Koei, as well as its urban planning, urban development and property compensation subsidiaries Tamano Consultants Co., Ltd. and Kisho Kurokawa Architect & Associates Co., Ltd., has a long history of assisting governments all over the world and in Japan to resolve their urban issues such as urban sprawl, environment deterioration, insufficiency of urban facilities and urban infrastructure. We have engaged over 600 urban development projects and offered services for comprehensive urban development, urban redevelopment, regional development, etc.

Through the method of land readjustment involving re-plotting of land parcels with a new layout plan together with the development of new infrastructures, 30% of the urban area in Japan was developed. For many years we have been No.1 in this field. We have experts in all the disciplines required for urban development such as urban planners, architects, engineers in a variety of fields (road, water supply, electricity, sewerage, drainage), urban design specialists, public consultation specialists, social and natural environmentalists. We also provide management capacity training as a critical component for realizing the master plan, covering the development permit mechanism, detailed plan formulation, urban design formulation, and urban development project implementation.

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Selected Project Experience

Cambodia Study on National Integrated Strategy of Coastal Area and Master Plan of Sihanoukville
Egypt Strategic Urban Development Master Plan Study for Sustainable
Indonesia Study on Integrated Spatial Plan for the Mamminasala Metropolitan Area
Japan Kohoku New Town in Yokohama City, Naha New City, Expo 2005 Aichi, Umeda Station in Osaka, etc.
Kazakhstan Master Plan for the Development of Astana & Technical Cooperation
Lao PDR Project for Urban Development Master Plan Study in Vientiane Capital
Thailand Urban Development Plan and Case Study in the Bangkok Metropolitan Area
Vietnam Revision of Hoa Lac High-Tech Park Feasibility Study

Architectural Consulting

Nippon Koei provides architectural consulting service emphasizing green/earth friendly, nature harmonized and seismic safety for a wide range of facilities: office buildings, commercial buildings, education buildings, welfare & healthcare, airport terminals, port buildings, traffic control buildings, factory buildings, public housing, museums, etc.

Selected Project Experience

Cambodia Architectural facilities for Sihanoukville SEZ
Lao PDR, Thailand Immigration facilities for 2nd Mekong Intl Bridge Construction Project in Lao PDR and Thailand
Myanmar Upgrading the health facilities in Central Myanmar
Vietnam Vietnam-Japan Human Resources Cooperation Center
Iraq Rehabilitation of General Hospitals in Northern, Central and Southern Regions
Industrial Parks & SEZ (Special Economic Zones)

Nippon Koei has assisted developing countries promote and accelerate sustainable industrial development with projects such as development of industrial parks and SEZ that attract private sector investors, including Japanese manufacturers.

We draw on our global resources and expertise that cover all the required infrastructure sectors, including earthworks, road, drainage, water supply, sewerage, electricity and communication systems. Our past projects showcase our expertise and technical skills to address planning, design, construction supervision, maintenance, environmental, and labor-related issues. We aim to harmonize project goals with consideration of regional infrastructure and public services as external system.

Selected Project Experience

- Indonesia: Special Economic Zone Development Plan
- Lao PDR: National Industrial Development Plan
- Malaysia: Kulim Hi-Tech Park
- Thailand: Eastern Seaboard Industrial Development Plan
- Vietnam: Hoa Lac High-Tech Park and Thang Long Industrial Park
- Jordan: Industrial Development in the Southern Districts
- Ecuador: Esmeraldas Export Processing Zone Development
- Costa Rica: Moin and Caldera Industrial Parks and Free Zones Establishment

Public-Private Partnership (PPP) Project Planning

Nippon Koei provides expertise to support government PPP procurement for infrastructure projects especially in the critical preparatory and implementation phases.

Our accumulated knowledge and experience with PPP enables us to develop project and financial structures suitable for projects, and to provide consultancy services for enhancing institutional capability of PPP related organizations. We have financial, legal, regulatory experts, and infrastructure engineers for various sectors; those who have engaged in feasibility studies, transaction advice, design, construction supervision and construction management services. We also support contracting agencies for preparing manuals/guidelines for planning and implementation of PPP projects.

Selected Project Experience

- PPP Operational Improvement
  - India: Pilot Study for Project Formation of Public-Private Partnership in Infrastructure Development
  - Indonesia: Capacity Building for Operation of PPP Scheme Project
  - Philippines: Study on Institutional Improvement for PPP

- PPP Infrastructure Projects
  - Indonesia: Kalimantan Coal Transport Project, Central Sewerage Treatment System in Jakarta
  - Vietnam: Trung Luong- My Thuan Expressway Construction Project, Ben Thanh Central Station Project
  - Peru: Yellow Line (Road) Project, Taboada Wastewater Treatment Plant

Tourism Industry Development

Nippon Koei provides the expertise to optimize tourism development strategies that enhance country growth.

Our comprehensive consulting services include master-planning and feasibility study, support for tourism promotion, tourism product design, tourism infrastructure and facility design (such as roads and museums) and technical training for sustainable management of tourism areas (including business and protection of tourism area). We apply a participatory approach in order to meet the needs of clients and stakeholders, and our experience covers nature, cultural and historic sites as well as world heritage sites and emerging tourism sites.

Selected Project Experience

- Palestine: Study on Tourism Development in Jericho and Jordan River Rift Valley
- Peru: Study for Tourism Development Project in the Northern Peru
- Sri Lanka: Project for the Development of Culture-oriented Tourism in Sigiriya

Industrialization and SME Development Support

Nippon Koei’s expertise is to provide better solutions to the private sector development through the policy advice, planning & research, field facilitation, capacity building and management service.

Our experience includes national industrial policy, local resource based-industry development, industry value-chain development, SME loan management, institutional development of trade & investment promotion organization, industrial estate / SEZ planning & development. We promote “hands-on approach” and leverage “Japanese experience” in order to design feasible and long-lasting solutions to the clients and partners.

Selected Project Experience

- Indonesia: Project on Service Improvement of National Agency for Export Development (NAFED)
- Cambodia: Project for Strengthening of Clusters of Small and Medium Industries
- Cambodia: Project on Enhancing the Investment-Related Services of Council for the Development of Cambodia
Institutional Development

Nippon Koei, as well as its development planning & management subsidiary company KRI International Corp. (KRI), have provided effective consulting services that have assisted in activation of central governments and public institutions to achieve their development goals.

Our consulting services include planning / designing national development master-plan, programs and projects, project management and project evaluation. We cover every aspect of institutional development: namely policy study and analysis, proposing institutional, organizational and managerial improvement, implementation of pilot projects for upgrading institutional functions, capacity development through training and workshops, and finally monitoring and evaluation.

Selected Project Experience

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>Project on Strengthening Multi Sectoral Planning and Budgeting</td>
</tr>
<tr>
<td></td>
<td>Capacity in Oromia Region</td>
</tr>
<tr>
<td>Philippines</td>
<td>Study on Improvement of Internal Revenue Allotment (IRA) System</td>
</tr>
<tr>
<td>Ghana</td>
<td>Financial Management Improvement Project of Ministry of Food and Agriculture</td>
</tr>
</tbody>
</table>

Education Development

Nippon Koei assists countries and regions to address quality improvement in education at all levels from early childhood development (ECD), primary & secondary education as well as higher education & technical and vocational education and training (TVET).

Services include curriculum development, materials development, school management and capacity development of educational administrators, and education planning for various institutions. We are especially good at helping our partners introduce a student-centered approach to teaching and learning at school through providing teacher training, and developing teaching guides. We are also experienced in national studies and research on educational evaluation and administration.

For human resource development contributing to the industrial growth through education and training, our consultants work to design an effective track towards building a high quality human resources pool.

Selected Project Experience

<table>
<thead>
<tr>
<th>Country</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Mongolia</td>
<td>Project for Strengthening Systems for Improving and Disseminating Child-Centered Teaching Methods</td>
</tr>
<tr>
<td>20 countries</td>
<td>Project for “Standardization of Indicators for Evaluating Basic Educational Cooperation”</td>
</tr>
<tr>
<td>Japan and USA</td>
<td>Study on Realization of Learner-Centered Educational System</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Improvement of Vocational Training System to Keep Meeting with the Needs of Industries</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Punjab Literacy Promotion Project</td>
</tr>
<tr>
<td>Sudan</td>
<td>Project for Human Resources Development for Darfur and the Three Protocol Areas in Sudan</td>
</tr>
</tbody>
</table>

Health Sector Development

Nippon Koei’s consulting services in the health sector aim to upgrade the quality of a country’s health system.

In the technical assistance projects, we have helped ministries of health and local governments to upgrade health service delivery system, quality of services, human resource development structure including continuous professional development (CPD) system, as well as policy implementation cycle covering planning, implementation monitoring and evaluation.

In the research projects, we worked with development assistance agencies to collect and analyze data and information on health sector issues such as maternal, newborn and child health (MNCH) and made recommendations on the development assistance strategy. Also overall health sector review has been undertaken in 22 selected countries to advise on our client’s development assistant strategy.

Selected Project Experience

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Uzbekistan</td>
<td>Research on Sustainable Models for Maternal, Newborn and Child Health</td>
</tr>
<tr>
<td>Study on the Reform of Health Care Services in Navoi Region</td>
<td></td>
</tr>
<tr>
<td>22 countries</td>
<td>Health Sector Studies</td>
</tr>
<tr>
<td>Fij, Tonga and Vanuatu</td>
<td>Project for Strengthening of Need-Based in-Service Training for Community Health Nurses</td>
</tr>
<tr>
<td>Syria</td>
<td>Project for Strengthening of Reproductive Health</td>
</tr>
<tr>
<td>12 countries</td>
<td>JICA: Project on Increasing Access to Quality Basic Education in Oromia Region, Ethiopia</td>
</tr>
<tr>
<td>22 countries</td>
<td>JICA: Urgent Rehabilitation and Reconstruction Support Program for Ache Province and Tsunami Affected Areas in North Sumatra, Indonesia</td>
</tr>
</tbody>
</table>

Joint Coordination Committee for Urban Planning, Malawi

Urgent rehabilitation of hospitals/health centers (red) shown against population densities (green) and existing facilities (blue)
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