What’s NEDO?

Yoshiyuki Omori

NEDO
New Energy and Industrial Technology Development Organization

METI
The Ministry of Economy, Trade and Industry

Japan
Introduction of NEDO

September 2004

New Energy and Industrial Technology Development Organization

(NEDO)
Outline of NEDO
Profile

Name
New Energy and Industrial Technology Development Organization (NEDO)

Address
Head Office: MUZA Kawasaki Central Tower, 1310 Omiya-cho, Saiwai-ku, Kawasaki City, Kanagawa 212-8554, Japan

Date of Establishment
October 1, 1980
(Reorganized as an “Incorporated Administrative Agency” on October 1, 2003)

Capital
1 billion euro (as of April 2004) ※ 1 euro = About 140 yen

Representative
Chairman: Tsutomu Makino

Employee
Approximately 1,000
Organization of NEDO
1. Foundation

- Reorganized as an incorporated administrative agency on October 1, 2003.

- NEDO was initially established as a semi-governmental organization on October 1, 1980.
2. Designation

The **New Energy and Industrial Technology Development Organization**

Abbreviation: NEDO

(Incorporated Administrative Agency)
4. Purpose

To carry out research and development utilizing the capabilities of the private sector.

To promote research and development conducted by the private sector on alternative energy technologies, technology for the efficient use of energy, and industrial technology.

Through international cooperation to promote the use of these technologies, in order to improve and commercialize the industrial technology.

To ensure a stable and efficient supply of energy in a manner appropriate for the national and international socio-economic conditions, and to contribute to the development of the economy and industry.
5. Minister in Charge

The Minister of Economy, Trade and Industry
6. Operations

① Research and development of industrial, new energy and energy-conservation technologies

② Introduction and dissemination of new energy and energy-conservation technologies

③ Transition management for the coal industry’s
7. Capital

Approx. 1 billion EURO (as of April 1, 2004)

※ 1 euro = About 140 yen

8. Number of employees

About 1,000

(300 rotating specialists for R&D operations)
9. Executives (As of July 6, 2004)

Chairman Mr. Tsutomo Makino

President Mr. Hiroshi Mitsukawa

Executive Director Mr. Ryuichi Ito

Executive Director Dr. Masami Takayasu

Executive Director Mr. Yoshihiko Sasaki

Executive Director Mr. Takahiko Yamamoto

Executive Director Dr. Sakaé Takahashi

Executive Director Mr. Takayoshi Tanaka

Auditor Mr. Kenichiro Ogawa

Auditor (temporary) Mr. Keiichi Yokobori
History

1980 : Established as the New Energy Development Organization

1988 : Activities expanded to include industrial technology R&D and name changed to New Energy and Industrial Technology Development organization

1990 : Activities expanded to include global environment R&D

1993 : Activities expanded to include promotion of new energy and energy conservation

2000 : Activities expanded to include support for private companies to strengthen international competitiveness

2003 : Reorganized as an “Incorporated Administrative Agency”
Position of NEDO (in Government)

Cabinet

Prime Minister

Minister of State for STP

Cabinet Office
  - Minister's Secretariat
  - Bureau of Science and Technology Policy etc

Ministry of Finance

Ministry of General Affairs (Ministry of Public Management, Home Affairs, Posts and Telecommunications)

Ministry of Education, Culture, Sports, Science and Technology

Ministry of Economy, Trade and Industry

Other Ministries

Council for Science and Technology Policy

(InAAs: Incorporated Administrative Agencies)

Universities (2004-)

JST (Japan S&T Agency)

NEDO

AIST
NEDO’s Main Activities

- R&D of industrial technology, new energy, energy conservation, environmental technology
- Introduction of new energy and energy conservation
- International cooperation
Mission of NEDO

- Strategic R&D of industrial technology and new / renewable energy, energy conservation and environment technology
- High-degree management function
- Contribute to solve energy and environmental issues
- Explanation to people
Research & Development
Japan’s R&D Promotion Scheme

Prime Minister

Council for Science and Technology Policy
- Develop National-level Strategy Coordination

Ministry of Education, Culture, Sports, Science and Technology
Ministry of Economy, Trade and Industry
Other Ministries

Budgets

Grants
Subsidies

NEDO

Universities
Industry
Public Research Laboratories

Grants
Subsidies

R&D management

Private Companies

(Consortium)
# NEDO’s 15 Programs

<table>
<thead>
<tr>
<th>No.</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Health Assurance Program</td>
</tr>
<tr>
<td>2</td>
<td>Bioscience-Driven Recycling-Based Industrial System Creation</td>
</tr>
<tr>
<td>3</td>
<td>Basic Equipment and Devices for Advanced Information Communications R&amp;D</td>
</tr>
<tr>
<td>4</td>
<td>Basic Software Development Promotion Program for Information Communications</td>
</tr>
<tr>
<td>5</td>
<td>New Manufacturing Technology Development</td>
</tr>
<tr>
<td>6</td>
<td>21st Century Robot Challenge</td>
</tr>
<tr>
<td>7</td>
<td>Basic Technology Program for a More Sophisticated Space Industry</td>
</tr>
<tr>
<td>8</td>
<td>New Technology Program for Prevention of Global Warming</td>
</tr>
<tr>
<td>9</td>
<td>3R (‘Reduce’, ‘Reuse’, ‘Recycle’)</td>
</tr>
<tr>
<td>10</td>
<td>Comprehensive Assessment and Management Program for Chemical Substances</td>
</tr>
<tr>
<td>11</td>
<td>Polymer Electrolyte Fuel Cell/ Hydrogen Energy</td>
</tr>
<tr>
<td>12</td>
<td>Next-Generation Low-Emission Vehicle Technology Development</td>
</tr>
<tr>
<td>13</td>
<td>Basic Technology Program for Commercial Aircraft</td>
</tr>
<tr>
<td>14</td>
<td>Nanotechnology</td>
</tr>
<tr>
<td>15</td>
<td>Innovative Material and Materials Industry Creation</td>
</tr>
</tbody>
</table>
### NEDO’s FY2004 R&D Budget

<table>
<thead>
<tr>
<th>Technology Development &amp; Research Development Projects</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Biotechnology and Medical Technology Development Projects</td>
<td>129</td>
</tr>
<tr>
<td>2. Electronic and Information Technology Development Projects</td>
<td>132</td>
</tr>
<tr>
<td>3. Mechanical System Technology Development Projects</td>
<td>161</td>
</tr>
<tr>
<td>4. Environment Technology Development Projects</td>
<td>51</td>
</tr>
<tr>
<td>5. Nanotechnology and Materials Technology Development Projects</td>
<td>119</td>
</tr>
<tr>
<td>6. Fuel Cell and Hydrogen Technology Development Projects</td>
<td>138</td>
</tr>
<tr>
<td>7. New Energy Technology Development Projects</td>
<td>159</td>
</tr>
<tr>
<td>8. Energy Conservation Technology Development Projects</td>
<td>59</td>
</tr>
<tr>
<td>10. R&amp;D Promotion Projects</td>
<td>200</td>
</tr>
<tr>
<td>11. Other Projects (Research Evaluations, Research Projects, etc.)</td>
<td>10</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1163</strong></td>
</tr>
</tbody>
</table>

※1 euro = About 140 yen
I. R&D Projects : 1.2 billion euro

1. Biotechnology and Medical Technology Development Projects ------------------------ 129
   (Fundamental Health Care and Medical Technologies, and Fundamental Process Technologies)

2. Electronic and Information Technology Development Projects ---------------------- 132
   (Next-Generation Semiconductor and Information/Telecommunications Technologies)

3. Machinery System Technology Development Projects ------------------------------- 161
   (Machinery, Welfare Equipment and Space Technologies)

4. Environment Technology Development Projects ------------------------------------ 51
   (Recycling, Environment-Friendly Energy, and Chemical Control Technologies)

5. Nanotechnology and Materials Technology Development Projects ------------------- 119
   (Nanoscale Materials and Process Technologies, and Nanoscale Measurement and Fabrication Technologies)

6. Fuel Cells and Hydrogen Technology Development Projects ------------------------ 138
   (Fuel Cells and Hydrogen Safety Technologies)

7. New Energy Technology Development Projects ------------------------------------- 159
   (New Energy and Superconducting Technologies)

8. Energy Conservation Technology Development Projects ----------------------------- 59
   (Energy Conservation and Low Emission Vehicle Technologies)

   (CO2 Immobilization and Effective Energy Use Technologies)

10. Research and Development Promotion Projects ------------------------------------ 200
    (Solicitations for Proposals (Discovering New Technologies with Potential and Grants for
        Commercial Development), Promotion of Research on Fundamental Technologies)

11. Other Activities (Research Evaluation, Surveys, etc.) -------------------------- 10

※ 1 euro = About 150 yen
II. New Energy Technology Introduction and Dissemination Projects
: 566 million euro

1. Projects Related to the Introduction and Dissemination of New Energy and Energy Conservation
   (Introduction and Dissemination, Field Tests, and Demonstration Tests)
   424
2. International Cooperation Projects
   (Overseas Demonstrations and Cooperative Research)
   106
3. Coal Resources Development Projects
   (Overseas Coal Exploration and Technology Transfer)
   36

III. Post Management on Coal Industry Structural Adjustment
: 24 million euro

1. Domestic Coal Mine Adjustment Project
   4
2. Compensation for Coal Mining Pollution
   20

IV. Alcohol Production and Sales Projects
: 400 million euro

1. Alcohol Production (Planned Alcohol Production = 178 thousand kl)
   104
2. Alcohol Sales (Planned Special Alcohol Sales = 15 thousand kl)
   101
   (Planned General Alcohol Sales = 318 thousand kl)
   196

Total: 2.15 billion euro
Industrial Technology Research and Development Projects

Life Science

① Fundamental Health Care and Medical Technologies

Health Assurance Program

Development of a Physical Functional Alternate or Restoration System
Technology Assessment of Biocompatible Implant Materials Project
Health Assurance Program

Development of a Physical Functional Alternate or Restoration System

Technology Assessment of Biocompatible Implant Materials Project

- Project Budget: 0.7 billion euro (FY2002)
  0.6 billion euro (FY2003)
  0.8 billion euro (FY2004)
Health Assurance Program

Market size: 3.8 trillion yen
Employment: 130,000 people

Market size: 16 trillion yen
Employment: 650,000 people

Protein Function/Structure Analysis
IT utilization
IT/NT Integration
Development Medical Equipment
Development Welfare Equipment
Policy – related Projects

Policy Goal
Policy Goal

- A society where people can live healthily and free from worry
- Longer healthily life expectancy
- More internationally competitive bio industry and medical/welfare equipment industry
Technology Assessment of Biocompatible Implant Materials

System for project proceeding

Part of Project

- **Project Leader** : Professor Okano  
  (Tokyo woman’s medical University)
- **Project Subleader** : Dr. Okazaki (AIST)
- **Project Coordinator** : Omori(NEDO)

Other Participant parties

- Technical Institute of nation (NITE)
- Kyoto University
- 4 Companies (Japan)
Background

Japan is far behind Western countries in terms of standardizing methods to evaluate the performance of implant materials.

There is therefore a strong need to promote technical standardization of surgical implant materials and regenerative medicine to develop fundamental technologies to create new products and cultivate further industrial growth.
Purpose of the project

■ Establish a method of technology assessment
  - To correlate to clinical results
  - To be possible to evaluate life expectancy

■ Accelerate the clinical use of new implants energizing industry

■ Strengthening Japan’s international competitiveness
Subject of Development

① Implant Failure Analysis
   ● Extracting factors influencing clinical results

② Development of Technology
   Evaluating Performance
      ● Setting conditions of Accelerating Tests

③ Development of Technology
   Evaluating Biocompatibility
      ● Evaluating Durability etc. of Biocompatible Materials
Domestic Shares of Artificial Organs (2000yr)

- Pacemaker: 14%
- Blood circuit: 6%
- Artificial kidney: 25%
- Dialysis, Vascular: 16%
- Artificial Joints: 12%
- Internal Fixation Device: 7%
- Graft Stent: 4%
- Artificial heart valve: 2%
- Our Objects of Research: 35%

In Japan

- Dialysis Machine: 6%
- Blood Dialysis Machine: 3%
- Heart-Lung Machine: 6%
- Depend on Imports: 7%
- Heart, Vascular: 4%

Our Objects of Research: 35%
Development of Technology Evaluating Dynamic Performance such as Durability

① Implant Failure Analysis
② Development of Technology Evaluating Performance
③ Development of Technology Evaluating Biocompatibility

Technology Assessment of Biocompatible Implant Materials

Standardization
(1) Domestic Databases （Japan Centra Revuo Medinina, and domestic journals on clinical medicine）and MEDLINE
Extracting：666 cases / 56,555 cases (1992-2001)

(2) US FDA Database (Manufacturer and User Facility Device Experience Database)
Extracting：7,340 cases / 22,772 cases (1992-2003)

From totally 8,006 clinical events, we extract parameters of dynamic tests, and develop technology to evaluate implants.
Method of Experiment

- Implant
  - Bone plate
  - CHS
  - Graft
  - Stent
  - Stentgraft

- Evaluation equipment
- Tear strength
- Punching test

Standardization of evaluation methods

TR
ISO
JIS

Performance evaluation
This R&D project will make use of analysis and simulations of clinical cases to **extract factors that affect clinical results** in order to develop a method of technology assessment that correlates to **clinical results** and allows the evaluation of life expectancy and other issues in a short amount of time.

The project also includes efforts to develop technology for **evaluating hypofunctions and the deterioration** of biocompatible implant materials when used in the human body over a long period of time.