

Kaizen and Economic Development of Japan

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First Phase: *Kaizen*: Start up and Early Development

- ▶ Strong concern about the foreigners' perception of Japanese products: Cheap, but low quality
- ▶ Improvement of quality without increasing cost (or with improvement of productivity) was considered as the best strategy (Japan and Japanese companies were very poor after the World War II)
- ▶ QC fitted best to the strategy: lower rate of defective products improved quality and productivity

Japanese products: from poor quality to high quality

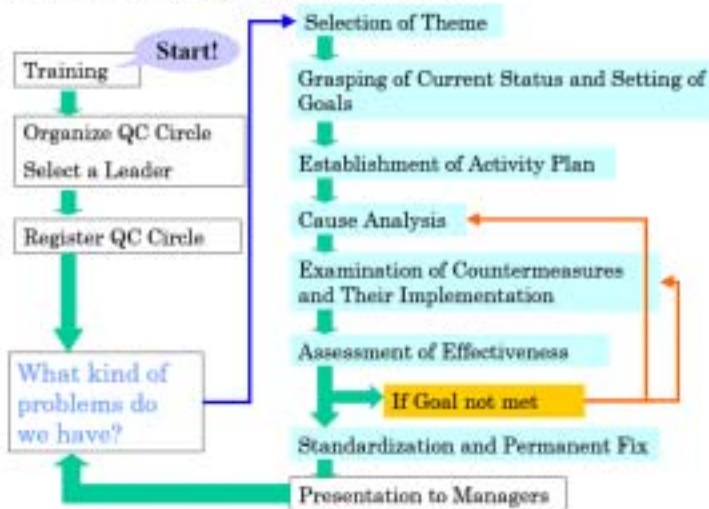
- ▶ Until around 1950, Japanese products were perceived worldwide as being very inexpensive, but with poor quality. By the 1980s, products made in Japan were known all over the world for their high quality and reliability. *What happened during those three decades?*
- ▶ *Cited from IDB (2003)*

From statistical QC to Kaizen and QCC

- ▶ First step: Japanese companies first introduced the **statistical quality control** (SQC) approach, based on the guidance of Dr. Deming and Dr. Duran
- ▶ Second step: The Japanese way of QC was gradually consolidated when it was applied at the factory floor level. Instead of the “top-down” approach common in the US and other countries, a “bottom-up” approach was adopted in Japan. A team commonly known as the “Quality Control Circle” (“**QC Circle**” or QCC) was organized

QC Circle Activity: An Example

Figure 50 QC Circle Activity Procedure



- ▶ In this process, Dr. Kaoru Ishikawa, Mr. Taiichi Ohno and others made theoretical and practical contributions, and introduced many tools of Japanese QC/Kaizen
- ▶ (See for more details, the GRIPS's booklet *"Introducing Kaizen in Africa"*)

***Kaizen*, together with other efforts made Japanese industries very competitive**

- ▶ “To be fair, we cannot say that the quality management (with *Kaizen*) was the sole factor for vigorous expansion of production and export; however, it was one of the major factors as many observers concur.” (Cited from IDB (2003); Words in parenthesis are added by the author)

Second Phase: *Kaizen*: Scale up (Rapid increase of QCC and consolidation of TQC

- ▶ Early seventies, Japan faced a very serious crisis caused by Oil shock and strong appreciation of yen
- ▶ Need to improve competitiveness through quality and productivity improvement to face strong appreciation of yen
- ▶ Need to save energy and improve energy efficiency to face ten times higher oil price
- ▶ *Kaizen* was diffused rapidly and QC circles increased
- ▶ QC with *Kaizen* was scaled up to Company wide (Company wide QC) and **Total Quality Control (TQC)**

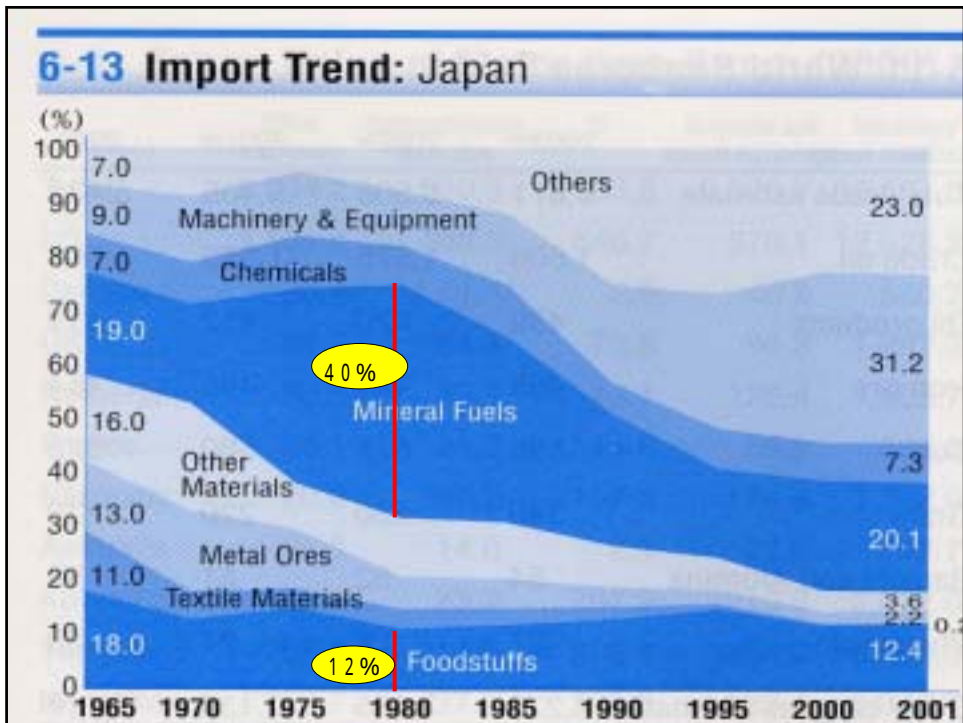
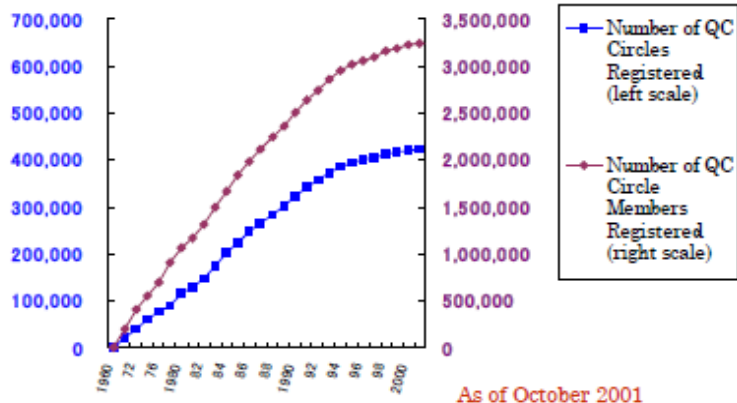


Figure 1

Number of QC Circles and Members Registered at JUSE (Japan)



Scale up and spread out of Kaizen and QCC (QC Circles)

- ▶ Scale up to company wide QC / Total quality control (TQC) including distribution, after-service, purchasing of materials and machinery, etc.
- ▶ Spread out to non-manufacturing sectors such as health care, construction, office work (general clerical work), etc.
- ▶ Together with "scale-up" and "spread-out", total number of QC circles and members participating in them increased rapidly

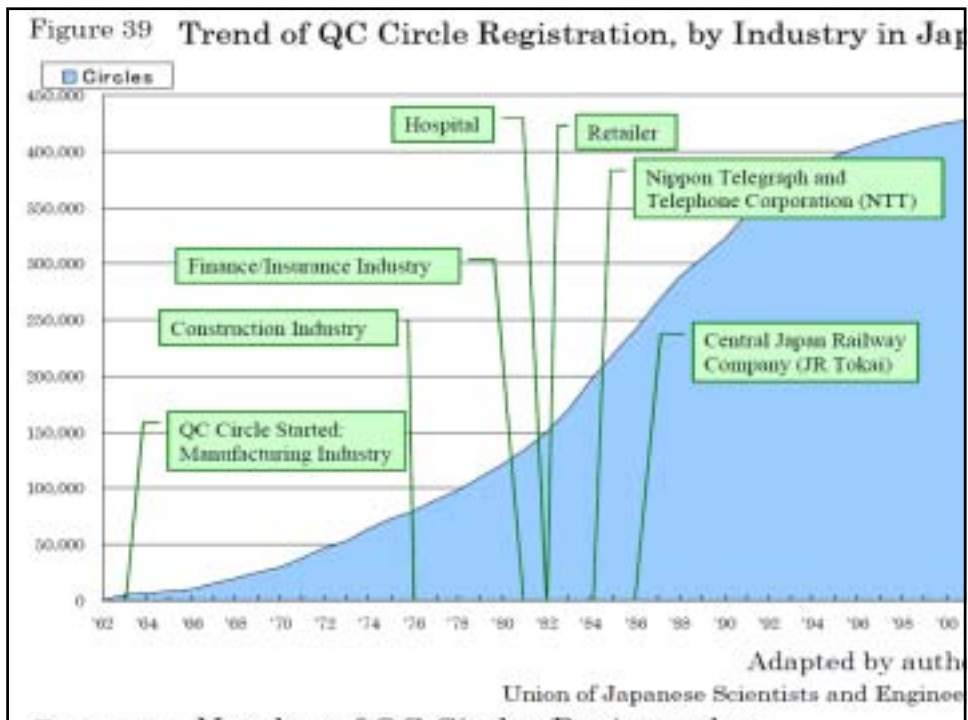
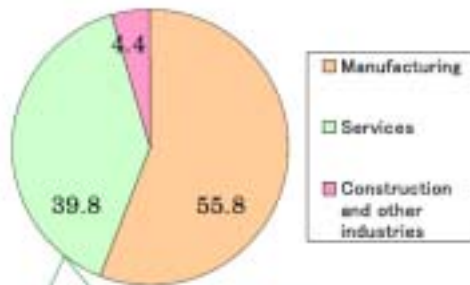


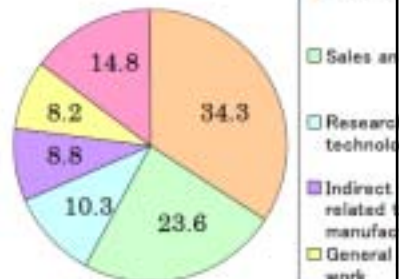
Figure 40 Number of QC Circles Registered at QC Circle Headquarters (Japan)

(a) According to industry category



Services: commercial, financial, transportation, electric power, and communications firms.

(b) According to functional category



Notes: n: 13,020; Unit = %; 1990, 1992 and 1994 average

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QC and energy saving efforts

- ▶ One of the significant impacts of Japanese TQC is often explained by describing the development of car industry during the oil crises in the 1970s. During this period, TQC was extended to activities for energy conservation and measures for resource maintenance.
- ▶ It greatly impacted various industries and became more securely established as a valuable quality framework for Japanese industrial development. (QC Circles expanded in 70s and 80s in Japan, see graph)

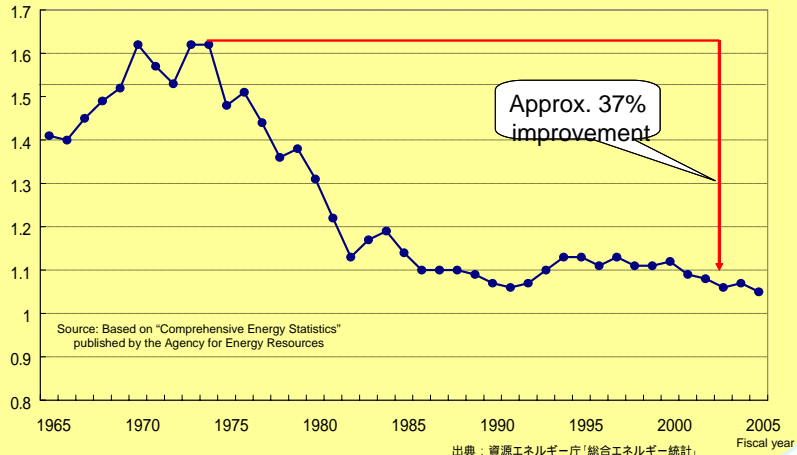
*This paragraph is cited from IDB (2003)
(sentence in the parenthesis is of the author)*



Energy Efficiency improved approximately 37 % in last 30 years in Japan

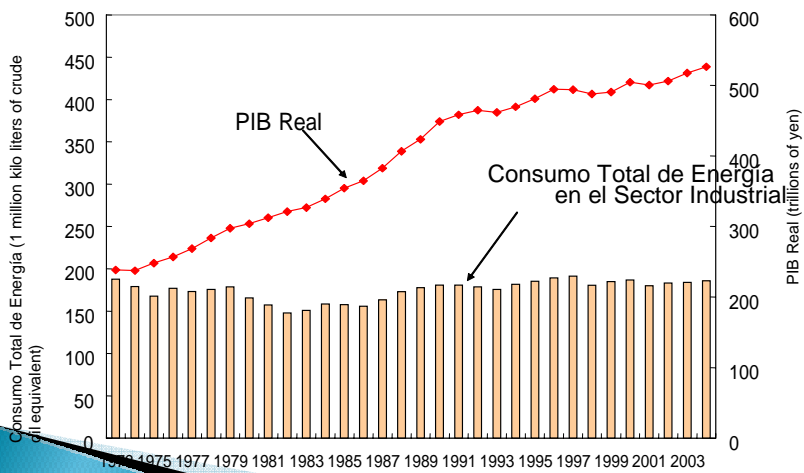
★ En los últimos 30 años, Japón aumentó la eficiencia energética en más de un 30% **Energy consumption and real GDP growth**

(Kilotons based on petroleum conversion/1 billion yen)



Energy consumption in industrial sector has not increased while GDP of Japan doubled

El Consumo de Energía en el Sector Industrial no ha aumentado mientras que el Producto Interno Bruto (PIB) de Japón se duplicó



Energy consumption has not increased in the industrial sector while it increased in other sectors in Japan

Consumo de Energía Final por Sector (Japón)

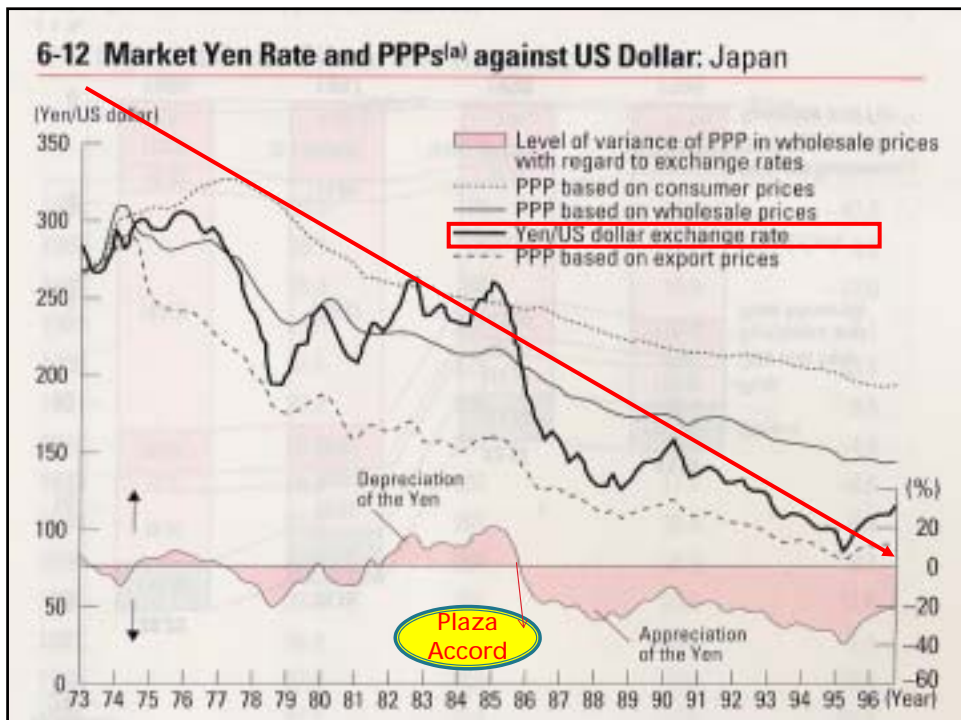


Kaizen (as well as TQC) was one of the factors which increased the energy efficiency in Japan

- ▶ To be fair, we cannot say that *Kaizen* (as well as TQC) was the sole factor for amazing improvement of energy efficiency in Japan in 70s and 80s; however, it was one of the major factors.

Third Phase: *Kaizen*: **Spread Out** to Asia and other regions of the world

- ▶ Japan faced new challenges from mid 80s: globalization and stronger competition with emerging countries as well as continued appreciation of yen (**Plaza Accord, 1985**)
- ▶ *Kaizen* continued to be important both in Japan and overseas, especially for Total Quality Management (TQM), concept based on Japanese-made TQC
- ▶ *Kaizen* was widely diffused to countries where Japanese companies made investment and technological transfer



- ▶ Japanese manufacturing companies shifted their production bases to East Asia where production costs were lower.
- ▶ First, Japanese firms **tried to duplicate the quality management system** in their factories abroad. Moreover, as they endeavored to increase local procurement of intermediate inputs, **local suppliers were requested to conform to Japan's quality standards.**
- ▶ (For more details see GRIPS's booklet)

Transfer and adaptation of Kaizen overseas (**Spread out**)

- ▶ *Several tracks:*
- ▶ Through FDI from Japan to East Asia, US, Latin America, Europe and other regions
- ▶ Through Japanese cooperation: JICA, AOTS, APO (Asia Productivity Organization) together with Japan Productivity Center and JUSE
- ▶ Other tracks: third countries (such as Singapore), international organizations (WB, IDB, etc.) as well as **demonstration effects**

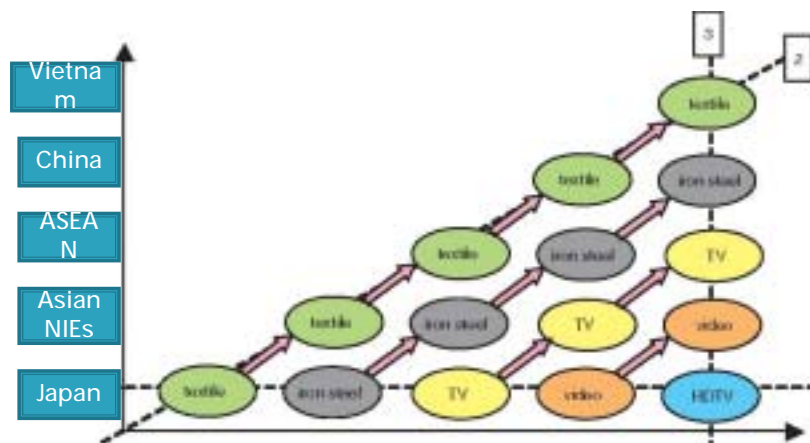
- ▶ *In this context Professor Masaaki Imai's book "Kaizen: The Key to Japan's Competitive Success", 1986 made a substantial contribution to introduce Kaizen to the world*
- ▶ *(For more details, see "Introduction" of the GRIPS's booklet)*

Through FDI from Japan to East Asia, US, Latin America, Europe and other regions

- ▶ From 70s, because of strong appreciation of yen, increase of wage of Japanese workers and other factors, Japanese companies expanded their production overseas.
- ▶ Together with FDI, Japanese companies made technological transfer and introduced Japanese-made QC practices (Kaizen, TQC) and management (TQM) to their subsidiaries in East Asia, US, Latin America, Europe and other regions

Flying Wild Geese and Technological Transfer

- ▶ FDI and technological transfer were essential components of the Flying Wild Geese development pattern in Asia. “Regional economic networks that developed over the course of Asia history provided the backdrop for active trade and investment between each country during the economic growth period” JICA/JBIC document prepared for TICAD IV, (May 2008)
- ▶ In this process, Japanese companies through their investment transferred Kaizen, TQC, TQM and other quality and productivity related methods and systems



Flying Geese

Shift of Industrial Structural Change in Asia (Source: JICA/JBIC document prepared for TICAD IV, May 2008)

Strengthened (Integrated) 'Flying Geese':
Sourcing of parts and components for a hard disk drive

Integrating Production



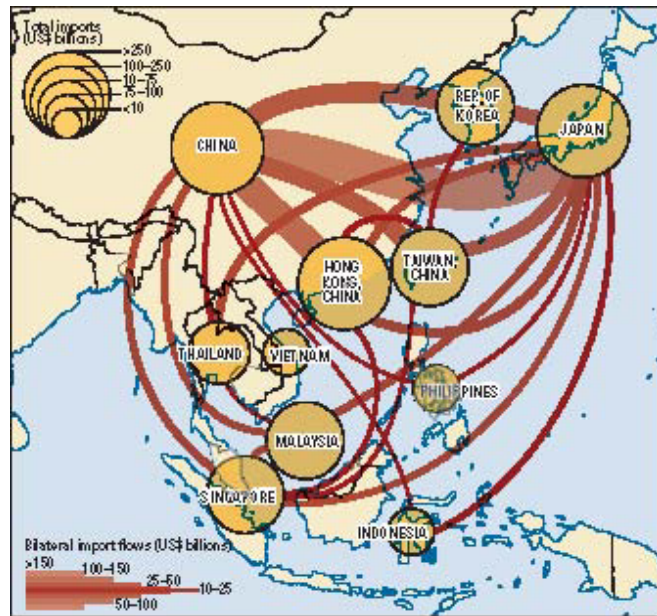
Intra-Regional Trade in Asia (Source: World Bank, *World Development Report 2009*)

Strengthened (Integrated) 'Flying Geese':
Sourcing of parts and components for
automanufacturing within ASEAN

Figure 2.5: Interdependence of auto manufacturing within ASEAN



Source: Nomura Research Institute, Ltd. (2004)



Source: Gilad Khan, 2007

Intra-Regional Trade in Asia (Source: World Bank, *World Development Report 2009*)

Some Interesting Examples

- ▶ Muruti-Suzuki in India
- ▶ Panasonic and Bridgestone/Firestone in Costa Rica
- ▶ EMBRAER
- ▶ *(At random selection)*

Maruti-Suzuki, the largest car-maker of India with 50% share of the market now , has a successful history of 27 years in India

- ▶ Investment by Suzuki Motor of Japan was made in 1982
- ▶ Japanese management has been firmly consolidated in a society very different from Japanese
- ▶ More than 2000 workers and engineers of Muruti-Suzuki were trained in Japan
- ▶ See Bhargava R.C and Takashi Shimada, *Suzuki's Strategy in India*, 2006

Panasonic and Bridgestone/Firestone in Costa Rica

- ▶ See Short Video

VIDEO

Case of EMBRAER

- ▶ *EMBRAER, the third largest airplane maker of the world, is a Brazilian company with 37 subsidiaries in the world (founded in 1969 and privatized in 1994)*



EMBRAER's Quality Policy

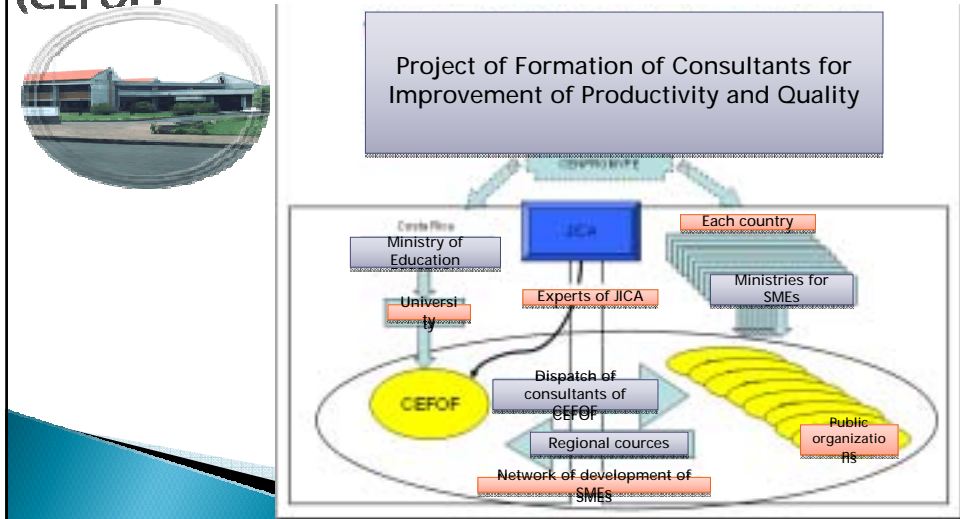
- ▶ *Some relevant aspects of EMBRAER's Quality Policy*
- ▶ Eliminate waste and everything that does not aggregate value;
- ▶ Ensure ongoing improvement in all business processes through the **involvement of people and teams at all levels**, focused on customer satisfaction;
- ▶ **Focus on the human being as core entity of the entire development process** of the Company.
(Cited from HP of EMBRAER)
- ▶ *Kamban system is introduced in the plant*

JICA's cooperation for CEFOF, in Costa Rica, Central America

- ▶ "The Technical Instructor and Personnel Training Center for Industrial Development of Central America (referred to as CEFOF) in the Republic of Costa Rica" was implemented by JICA from 1992 to 1997.
- ▶ "Project of Productivity Improvement for Enterprises in the Republic of Costa Rica" was implemented by JICA from 2001 to 2005
- ▶ Project of Formation of Consultants for Improvement of Productivity and Quality" just started with cooperation of JICA

Figure 2

Cooperation for the Technical Instructor and Personnel Training Center for Industrial Development of Central America (CEFOF)



Impacts of the CEFOF projects supported by JICA

- ▶ Various kind of positive impacts on productivity improvement for the companies that have received consulting services of the Project, such as: Correct and common understanding of key words at working place; **Positive change of attitude among workers** (way of thinking, awareness of security and Kaizen);
- ▶ Introduction of 5S into companies, which made positive contribution, because the program requires **participation of everyone, not only workers but also management**, that secures sustainability of the 5S program;

- ▶ Improvement of motivation of employees; **Simplification and standardization of production process**, improvement of **team work**, better awareness of international competition in global business; Introduction of ISO9001-2000 which improved efficiency of company operation and provided more focus on customers' satisfaction
- ▶ For more details, see the GRIPS's booklet

Closing remarks

- ▶ Kaizen **takes time**: Its key features are incremental and continuous and involvement of the entire workforce
- ▶ To fully implement Kaizen, **workers' participation and administration's commitment** is essential
- ▶ Other important messages are included in the Introduction of the GRIPS's booklet

References

- ▶ Izumi Ohno, Kenichi Ohno and Sayako Uesu (2009), "Introducing Kaizen in Africa: Introduction", *GDF Booklet on Kaizen*
- ▶ Inter-American Development Bank, Japan Program (2003), *Handbook of TQM and TQC*
- ▶ Masaaki Imai (1986), *Kaizen: The Key to Japan's Competitive Success*, MacGraw-Hill Publishing Company
- ▶ JICA/JBIC (2008), *Report of the Stocktaking Work on the Economic Development in Africa and the Asian Growth Experience*

Thank you very much

- ▶ This presentation is preliminary and personal: Comments welcome