KAIZEN in Africa: towards Industrial Development

JICA-ACET Information Seminar

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Outline

1. KAIZEN and JICA’s Cooperation
2. JICA KAIZEN Project in Ethiopia
3. Other examples on KAIZEN in Africa
4. Wrap up
1. KAIZEN and JICA’s Cooperation
KAIZEN - spread in the world

Kaizen has spread among Japanese companies in Japan and abroad. JICA has also offered assistance for KAIZEN to many developing countries in Asia, Latin America, Eastern Europe and now in Africa!

“5S” in many languages

1. Seiri (Sort) 2. Seiton (Set) 3. Seiso (Shine) 4. Seiketsu (Standardize) 5. Shitsuke (Sustain)

Source: JICA’s World No.28 (2010)
What is KAIZEN?

- Simply a word which means “improvement” in Japanese
- Incremental and continuous improvement with the involvement of entire workforce
- Quality and Productivity Improvement
- Without additional cost: “If no money, use your brain.”
- Participatory process and bottom-up from factory floors (gemba)
- Emphasis on process as well as results
- Idea of Kaizen is embedded in Japanese work style as well as daily life

Kaizen and innovation complement each other.

Source: Imai (undated), Ueda (2009)
KAIZEN tools
Kaizen Umbrella

- Customer orientation
- TQC (total quality control)
- Robotics
- QC circles
- Suggestion system
- Automation
- Discipline in the workplace
- TPM (total productive maintenance)

- Kamban
- Quality improvement
- Zero defects
- Small-group activities
- Cooperative labor-management relations
- Productivity improvement
- New-product development

## KAIZEN tools

<table>
<thead>
<tr>
<th>5S</th>
<th>For working environment improvement</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>(1) <em>Seiri</em> (sort), (2) <em>Seiton</em> (set), (3) <em>Seiso</em> (shine), (4) <em>Seiketsu</em> (standardise), (5) <em>Shitsuke</em> (sustain)</td>
</tr>
<tr>
<td></td>
<td>Philosophy and checklist for good housekeeping</td>
</tr>
<tr>
<td></td>
<td>A variety of translation in English and other languages</td>
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</table>

<table>
<thead>
<tr>
<th>Muda dori</th>
<th>For problem finding and countermeasures</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Elimination of <em>muda</em> (waste)</td>
</tr>
<tr>
<td></td>
<td>7 types of <em>muda</em>: (1) overproduction, (2) inventory, (3) repair/rejects, (4) motion, (5) processing, (6) waiting and (7) transport</td>
</tr>
</tbody>
</table>

*Source: various cited in GRIPS (2009).*
### KAIZEN tools

| QC 7 Tools          | For problem analysis and countermeasures  
|                     | (1) Pareto Chart, (2) Fishbone Chart, (3) Histogram, (4) Graph / Control Chart, (5) Check Sheet, (6) Scatter Diagram, (7) Stratification |
| QC Circle           | For sustainable improvement and entire involvement  
|                     | Small groups who collectively find a problem, discuss alternative remedies, and propose a solution |
| Suggestion Box      | For sustainable improvement and entire involvement  
|                     | Suggestion system for bottom up |

KAIZEN tools

<p>| | |</p>
<table>
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<tr>
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<tbody>
<tr>
<td><strong>TQM</strong></td>
<td>○ Total Quality Management</td>
</tr>
<tr>
<td><strong>TPS</strong></td>
<td>○ Toyota Production System</td>
</tr>
<tr>
<td><strong>JIT</strong></td>
<td>○ Just-in-time System (a part of TPS)</td>
</tr>
<tr>
<td><strong>Kamban</strong></td>
<td>○ Signboard: A system/tool for JIT</td>
</tr>
<tr>
<td><strong>SMED</strong></td>
<td>○ Single Minutes of Exchange of Die</td>
</tr>
</tbody>
</table>

…and many more

JICA’s assistance in Kaizen

- Beginning with the project for Singapore in 1983
- Spread from Asia to Eastern Europe, Latin America and Africa
- JICA has assisted in capacity development of quality/productivity organisations
  - Singapore, Hungary, Brazil, Egypt, Ethiopia etc.
- Pilot/demonstration + action planning: Tunisia, Ethiopia
- Regional: Central America - Costa Rica
- African Union Commission (requested)
- Others
  - As a component of industrial development project
  - In various sectors: from manufacturing to service such as hospital, electricity and public services
  - Individual experts and senior Volunteers
  - Group training in Japan and third-country training (Malaysia etc.)

Source: modified from Ueda (2009).
JICA KAIZEN assistance spread in Africa

LEGEND
- Project implemented/ing
- Project officially requested
- MPC course participated
- (only for Sub-Saharan)

(In addition to the individual countries, African Union Commission is requesting for JICA assistance on Kaizen)

Various backgrounds/elements for KAIZEN in Africa (1)

i. Policy support and initiative
   - National mid-term plan, industrial strategy …
   - Ethiopia: H.E. Prime Minister’s strong initiative

ii. Implementing/related ministry/agency
   - Ministry of Industry: most often observed
   - Ministry of Trade: international competitiveness
   - Ministry of Labour: productivity movement
   - Ministry of Education: TVET system
   - Ministry of Health: hospital
   - Agencies/Centres: Productivity Centre, Development Agency (Zambia ZDA), Small enterprise development agency (Ghana NBSSI) …
   - Specially established organisation: Productivity Centre, Kaizen Centre, Kaizen Unit (Ethiopia, Tanzania), Kaizen Institute (Ethiopia, Zambia) …
Various backgrounds/elements for KAIZEN in Africa (2)

iii. Target sector/size
- Sectors: Manufacturing, others (service, public, hospital …)
- Sub-sectors: Metal, agro, food, textile, leather …
- Size: Large, medium, small and micro

iv. Existing mechanism
- BDS provider/facilitator
- Productivity Centre
- Management consultant: public, private
- Private sector organisation

v. Contents of KAIZEN programme
- 5S, Muda elimination, QC Circle …
- OJT, TOT, pilot project, seminar/workshop …

2. JICA KAIZEN Project in Ethiopia
KAIZEN in Ethiopia (Phase I & II)

Industrial Policy Support to Ethiopia – Background

- **TICAD IV** (May 2008)
- **G8 Hokkaido Toyako Summit** (Jul. 2008)
- **Symposium: Economic Development in Africa and the Asian Growth Experience** (May 2008)

- Debate on a more active role of the government in economic policies
- Introduction of JICA’s KAIZEN Project in Tunisia

Debate on how to make the Asian Experience relevant with accelerating economic growth in Africa

JICA’s Follow up of Japan’s Commitment to Africa
JICA’s Cooperation Framework for Industrial development of Ethiopia

Support to formulate industrial development policy for Ethiopia
Intellectual exchange of views on industrial development strategy, and policy recommendations from Japan based on the Asian development experience.

Support to nurture private companies
Technical cooperation of JICA for enhancing competitiveness of the private sector learning from the JICA’s experience in Tunisia.

Request from Prime Minister Meles (July 2008)

In parallel

“Policy Dialogue on Industrial Development”
(1st Phase: Jun. 09-May 2011)

“The Study Project on Quality and Productivity Improvement (KAIZEN)”
(Pilot Phase: Oct. 09-Jun.11)
Profile of the project

1. Name: The Project on Quality and Productivity Improvement (Kaizen) in Ethiopia

2. Objective:
   - To formulate a national plan for enhancing activities on quality and productivity improvement for Ethiopian enterprises in industrial sector
   - To formulate a manual for explaining and guiding the quality and productivity improvement activities
   - To transfer relevant skills and techniques to the staff members of the Kaizen Unit, Ministry of Industry

3. Period:
   2 years (August 2009 ~ June 2011)

4. Implementing Institutions:
   - Ministry of (Trade and) Industry (MoTI/MOI) of Ethiopia
   - Japan International Cooperation Agency (JICA)
## Ethiopia KAIZEN Project Phase I (2009-11)

### Major activities

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activities</th>
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</table>
| 1     | • Situation analysis on quality/productivity improvement activities / Visit to factories for preliminary diagnosis  
      • Preparation for the pilot project (Kaizen methodology selection, selection of 30 pilot companies with criteria) |
| 2     | o Implementation of the pilot project  
      a. to visit the pilot companies to diagnose the situation, and to give guidance on the quality and productivity improvement activity (KAIZEN) with the staff members of the Kaizen Unit, MoTI  
      b. to repeat factory visit periodically and give KAIZEN advice and to monitor the KAIZEN process  
      c. to evaluate the pilot project and compile recommendations to the factories |
| 3     | • Formulation of a National Plan including an Action Plan of KAIZEN  
      • Formulation of a Manual |
some of the achievements obtained in the 30 pilot companies

Fig. 1  **Sort, Set-in-order & Shine (3S)** are implemented to standardize the inventory stock

Before Kaizen

After Kaizen

Source: JICA Study Team (2010)
Ethiopia KAIZEN Project Phase I

Sample Improvement Results at 30 Pilot Companies

Qualitative Results:

- Clean working environment created,
- Team work and motivation of workers developed,
- Health and occupational safety of workers improved,
- Lower level workers accustomed to suggesting improvement ideas to management decisions – Increased Employee Participation,
- Knowledge obtained on how to meet quick delivery and to reduce costs.
Quantitative Results

✓ Monetary impact from the improvements reported is USD 30,000/company. The reporting ranges from USD 600 to USD 190,000. Example includes:
  ➢ By reducing costs (a) USD 600/month and (b) USD 4,600/year;
  ➢ By generating additional income of USD 70,000/year;
  ➢ By just decreasing down time USD 12,000,
  ➢ By rectifying raw materials defect used for manufacturing USD 140,000;
  ➢ By identifying, repairing and reusing of usable machines & equipment worth of USD190,000.

✓ Non-Monetary Measures of Improvement include:
  ➢ Increasing labor productivity, by reducing time loss for searching tools on average 50%;
  ➢ Reduction of floor space around 50%;
  ➢ Defect ratio improvement in the range of 50-70%;
  ➢ Lead time improved in the range of 16 to 90%;
  ➢ Labor saved from 15 to 90%.

Note: originally calculated in Ethiopian currency Birr (ETB) and converted into USD at the rate: USD1 = approx. ETB 17

Source: JICA Study Team (2010)
Ethiopia KAIZEN Project Phase I
Sample Improvement Results (3)

Quantitative Results (examples)

- Company A (Metal)
  Recovered additional revenue with an amount of 118,995 birr

- Company B (Metal)
  Lead time reduced from 2 weeks to 1 week

- Company C (Textile)
  Reduced wastage of time by 624 min/month

- Company D (Chemical)
  Reduced wasters of over production by 50%
  Motion and movement by 100%

- Company E (Agro)
  Decreased flour wastage by 190 qtl of wheat flour

- Company F (Agro)
  Produced additional 12,000 lit/day
  By eliminating 6 hours dawn time/day

- Company G (Agro)
  By decreasing milk wastage recovered 846 birr/day

Source: JICA Study Team (2010)
### Ethiopia KAIZEN Project Phase I

#### Assessment of Capacity Development of KU members

<table>
<thead>
<tr>
<th>Level</th>
<th>Competence</th>
<th>Assignment</th>
<th>Before project</th>
<th>After project</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>no experience of KAIZEN</td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>I</td>
<td>Competent to conduct KAIZEN activities for yourself</td>
<td>Junior KAIZEN Consultant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>Competent to guide KAIZEN activities</td>
<td>Assistant KAIZEN Consultant</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>III</td>
<td>Competent to provide consultancy services on KAIZEN</td>
<td>KAIZEN Consultant</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>IV</td>
<td>Competent to provide consultancy services on KAIZEN</td>
<td>Senior KAIZEN Consultant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>Competent to provide consultancy services on KAIZEN</td>
<td>Lead KAIZEN Consultant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: JICA Study Team (2010)*
Ethiopia KAIZEN Project Phase II

Project on Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN)

1. Project Purpose:
   - The system is established to disseminate quality and productivity improvement (KAIZEN) to private enterprises in a sustainable manner.

2. Period:
   - 3 years (November 2011 - November 2014)

3. Implementing institutions:
   - Ethiopian KAIZEN Institute (EKI: gazetted and established in October 2011, based on the Phase I Project), Ministry of Industry
   - Japan International Cooperation Agency (JICA)
## Ethiopia KAIZEN Project Phase II
### Comparison between Phase I and Phase II

<table>
<thead>
<tr>
<th></th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage</strong></td>
<td>Planning with pilot project</td>
<td>Dissemination</td>
</tr>
<tr>
<td><strong>Implemented by</strong></td>
<td>Kaizen Unit (KU)</td>
<td>Ethiopian Kaizen Institute (EKI)</td>
</tr>
<tr>
<td><strong>Target</strong></td>
<td>Large and Medium Enterprises (LMEs)</td>
<td>LMEs + Micro &amp; Small Enterprises (MSEs)</td>
</tr>
<tr>
<td><strong>Area</strong></td>
<td>Addis Ababa and surroundings</td>
<td>All Ethiopia</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>2009-11 (2yrs)</td>
<td>2011-14 (3yrs)</td>
</tr>
<tr>
<td><strong>Scheme</strong></td>
<td>Technical Cooperation for Development Planning</td>
<td>Technical Cooperation Project</td>
</tr>
</tbody>
</table>

Source: Homma (2012)
Ethiopia KAIZEN Project Phase II
Enterprise supporting system for LMEs and MSEs

Mol: Ministry of Industry
MoE: Ministry of Education
MoUDC: Ministry of Urban Development and Construction
EKI: Ethiopia KAIZEN Institute
FeTA: Federal TVET Agency
ReTA: Regional TVET Agency
TTTI: TVET Teacher's Training Institute
TVET: Technical and Vocational Education and Training
FeMSEDA: Federal MSE Development Agency
ReMSEDA: Regional MSE Development Agency
CRC: Cluster Resource Centre
LMEs: Large and Medium Enterprises
MSEs: Micro and Small Enterprises
TTT: TVET Trainers' Trainer

Source: JICA Study Team (2011)
Ethiopia KAIZEN Project Phase II

Planned KAIZEN dissemination structure

Source: JICA Study Team (2011)
3. Other examples on KAIZEN in Africa
Ghana – KAIZEN as a part of a project for MSE development

Project for Formulating a Strategic Model for Quality / Productivity Improvement through Strengthening BDS for MSEs

- Project period: April 2012 – April 2015 (3 years)
- Implementing agency: National Board for Small Scale Industries (NBSSI), Ministry of Industry and Trade
- Utilising and Capacity building of Business Advisory Centres (BACs) and its network
- Target area: Ashanti Region
- Overall Goal: Replication of the “Strategic Model” in the whole of Ghana
- Project purpose: formulation of the “Strategic Model”
- Function of BDS provision/facilitation
- Some Kaizen experiences in Ashanti in the past
- Kaizen as an additional tool of BDS / as a way of thinking
MOTI: Ministry of Trade and Industry
NBSSI: National Board for Small Scale Industries
BAC: Business Advisory Centre
GRATIS: Ghana Regional Appropriate Technology Industrial Service
RTF: Rural Technology Facility
BDS: Business Development Service
MSE: Micro and Small Enterprise

Project Purpose: Formulation of the “Strategic Model”

Output 1: formulation of the system and capability to continuously improve the capacity of BACs’ BDS provision/facilitation

Output 2: Improvement of the capacities of BACs to provide/facilitate BDS by (i) Improving the existing BDS, and (ii) Adding KAIZEN concept to BDS: through OJTs and seminars/workshops

Output 3: formulation of the “tools” to be used in the replication of the “Strategic Model” in the whole of Ghana

Overall Goal: Replication of the “Strategic Model” in the whole of Ghana
Kaizen in Zambia

- Started in 2009 with the QC Circle based approach, wider and growing participation of companies / organisations: manufacturing, non-manufacturing and public institutes

  1\textsuperscript{st} Zambia National KAIZEN Conference (12-13 Feb 2010)
  - 9 teams from 6 organisations participated
  - 18 QCCs in 4 public, 5 QCCs in 4 non-manufacturing and 20 QCCs in 5 manufacturing in operation in 2010

  2\textsuperscript{nd} Zambia National KAIZEN Conference (18-19 Feb 2011)
  - 20 teams from 9 organisations participated
  - 44 QCCs in 12 public (ministries, local councils, colleges), 23 QCCs in 5 non-manufacturing (finance, school, water supplier) and 19 QCCs in 8 manufacturing (various) in operation in 2011

- Participated in 36\textsuperscript{th} International Convention on Quality Control Circle (ICQCC) on 11-14 Sep 2011 in Japan (possibly first presentation from Africa)

Source: modified from Adachi (2012).
3rd Zambia National KAIZEN Conference (16-18 Feb 2012)

- 30 teams from 19 organisations participated
- 30 QCCs in public, 17 QCCs in education, 16 QCCs in general services and 18 QCCs in manufacturing

Currently under the framework of “Zambia Investment Promotion Project - Triangle of Hope”

Zambian Government sets up “Kaizen Institute of Zambia (KIZ)”

A JICA technical cooperation project to support KIZ and disseminate Kaizen is under formulation in response to the official request by Zambian Government.

Source: modified from Adachi (2012).
4. Wrap up
Wrap up - Implication

- How Kaizen spread in the world and Africa: various practices/lessons available in the world
- Kaizen is: mindset, philosophy, way of thinking
  ↔ tool, technique, methodology
- Involvement of top management (country, company)
- Process-oriented, practical, field-oriented, implementation
- Sustainability – Self-sustainable
- Learning process and customisation
- Complementarity with policy dialogue
Thank you

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