1. Introduction

1.1 Overview of the electronics sector in China

(1) Characteristics and present situation of exportation

- A key sector in China economy.
- Total product value of the electronics industry in 2005 was 2670.7 billion RMB, increased by 21.8% compared with 2004.
- Export value was over 200 billion USD in 2004. In 2005, the export value reached 1/3 of China's total export value.
- Pearl River Delta, Yangtze River delta and the Region of Bohai Sea shared in the whole industry all surpass 70%.
1. Introduction

1.1 Overview of the electronics sector in China

(1) Characteristics and present situation of exportation

Five main export categories:
- Consumer Electronics (also called Black Electronics);
- Electronic Components;
- Household Appliances (including White Electronics and Small Electric Appliances);
- Automatic Data Processing Equipment;
- Telecommunication products.
1. Introduction

1.1 Overview of the electronics sector in China

(1) Characteristics and present situation of exportation

According to the statistics of OECD, China has taken the first place instead of U.S.A as the largest exporter of the information and communications technology (ICT) products such as PCs, mobile phones, DVD players and digital cameras in the global market since 2004.
1. Introduction

1.1 Overview of the electronics sector in China

(1) Characteristics and present situation of exportation

Latest news

During the first five months in 2006, exportation of the electromechanical products increased with more than 25.7% compared with the same period of 2005.

- Market is mostly in the developed countries;
- The electronics take very vital position in the export of Chinese products;
- Foreign invested enterprises are the main exporter;
- Processing and assembling products with the imported material and parts are the major exported Chinese electronic and electrical products.
1. Introduction

1.1 Overview of the electronics sector in China

(2) Characteristics of SMEs in China

By 2005, more than 26000 SMEs, which are labor-intensive ones along with the following characteristics:

1) Small scale with low centralized production;
2) Single-product provision, lack of capital, poor technology and specialization level and slow re-launching of product;
3) Weak awareness of environment protection and lack of strict environmental management system;
4) Lower information acquiring capacity and little knowledge on social responsibility of environment and product safety;
5) Lack of necessary investment on technical improvement.

Very difficult for the SMEs to deal with the environmental legislations, standards, conformity procedures and other initiatives launched by developed countries at present.

Will go marginal in the new green rush if the environmental management will not be able to be strengthened and the investment on R&D such as eco-design won't be increased.
1. Introduction

1.2 Key electronics industry associations and information dissemination routes

(1) Key electronics industry associations
- as listed in the report

(2) Information dissemination routes
- Official (China government and foreign government) and unofficial networks;
- Official bulletins of information and official documents;
- Seminars organized by relevant domestic and foreign departments and institutions;
- Some foreign organizations;
- Industry associations;
- Relevant consultation and research institutions;
- Some relevant departments within the enterprises.

2. Legislation and industry initiatives

2.1 Existing EU and Japan legislations

(1) WEEE, RoHS and Eup Directives
(2) HARL, LPEUR and GPL in Japan
(3) CSR
(4) Eco-Design Tools and Techniques

Websites are listed in the report
## 2. Legislation and industry initiatives

### 2.2 Legislation in China

<table>
<thead>
<tr>
<th>Existing Laws or Regulations</th>
<th>Effective date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Protection Law of the People’s Republic of China</td>
<td>December 26, 1989</td>
</tr>
<tr>
<td>Cleaner Production Promotion Law <em>(Under amending)</em></td>
<td>January 1, 2003</td>
</tr>
<tr>
<td>Labor Law of the People’s Republic of China</td>
<td>January 1, 1995</td>
</tr>
<tr>
<td>Law of the People’s Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste <em>(under amending)</em></td>
<td>April 1, 1996</td>
</tr>
<tr>
<td>Safe Production Law of the People’s Republic of China</td>
<td>November 1, 1995</td>
</tr>
<tr>
<td>Administrative Measure on the Control of Pollution Caused by Electronic Information Products</td>
<td>March 1, 2007</td>
</tr>
<tr>
<td>Regulations on Checkout and Supervision Procedures concerning Imported Used Mechanical and Electrical Products</td>
<td>October 1, 2003</td>
</tr>
<tr>
<td>Bulletin Regarding to Strengthening Environment Management of WEEE</td>
<td>August 26, 2003</td>
</tr>
<tr>
<td>Technical Policies for controlling Pollution of Waste Battery</td>
<td>October 9, 2003</td>
</tr>
<tr>
<td>Technical Policies for controlling Pollution of dangerous Waste</td>
<td>December 17, 2001</td>
</tr>
<tr>
<td>Administrative Measures Regarding the Environmental Administration of New Chemical Substances</td>
<td>October 15, 2003</td>
</tr>
</tbody>
</table>

### Regulations under legislation and Standards under development

<table>
<thead>
<tr>
<th>Regulations under legislation and Standards under development</th>
<th>Date of Issuance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Statute on the Recycle of End-of-life and Used Home Appliances and Electronic Products</td>
<td>August 18, 2004</td>
</tr>
<tr>
<td></td>
<td>Oct., 2005 under consultation</td>
</tr>
<tr>
<td></td>
<td>Now Under legislation</td>
</tr>
<tr>
<td></td>
<td>Will come soon in 2007</td>
</tr>
<tr>
<td>Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products</td>
<td>under establishing</td>
</tr>
<tr>
<td>Labeling for the Control of Pollution caused by Electronic Information Products</td>
<td>under establishing</td>
</tr>
<tr>
<td>Testing Methods for Regulated Substances in Electronic Information Products</td>
<td>under establishing</td>
</tr>
</tbody>
</table>
2. Legislation and industry initiatives

2.2 Legislation in China

Some local regulations:

- Administrative Measure of *Shanghai* on the Control of Pollution Caused by Electronic Information Products
- Administrative Measure of *Guangdong* on the Reuse and Recycle of Wasted Electronic Information Products
- Regulations of *Guangdong* province on the Pollution Prevention and Control of Electrical Products
- Recently, Administrative Measure of *Beijing* on the Recycle of End-of-life and Used Home Appliances and Electronic Products

They all aim to regulate the behavior of enterprises, dealers and customers, and to build the local System of call-back, reuse, and recycling of E-wastes.

2.3 Industry Initiatives

(1) On the national level

Governmental ministries are taking pro-active measures to meet the challenges by amending or making regulations and policies, providing technical guidelines or services for exportation, organizing seminars to trace the new trend of EU and Japan legislations.

(2) On the Industry level

Trade organizations, research institutions and associations launched initiatives in various forms such as seminars about:
- Situation of legislation progress on recycling and disposing of E-wastes
- Sharing experience from foreign recycling industry
- Situation of internal experimental stations and the problems encountered,
- Proposed corresponding management ideas and methods.
2. Legislation and industry initiatives

2.3 Industry Initiatives

The most significant:

- China WEEE Recycling Union has been established by the CHEAA organizing the key exporters of home electrical appliances such as Huawei, Heir, Changhong, Chuangwei and etc.
- On September 22, 2006, the Peak Meeting of China WEEE Recycling Union was held in Beijing.
- A co-operation contract between the Union and Hellmann Process Management of Hellmann Group in Germany was signed, which build up a bridge for Chinese exports to recycle the WEEE in EU market.

3. Industry Initiatives in China

Bank of China launched First Chinese SRI Fund
- BOC’s new Sustainable Growth Equity Fund was launched on May 31, 2006
- The first fund in China to apply SRI (social responsible investment) criteria.
- Management of this fund will look beyond financial performance to include sustainability of the business model, corporate governance, corporate strategy and the attitude towards social responsibility” as investment criteria.
3. Industry Initiatives in China

Implication of SRI fund for China

- To promote positive and socially responsible corporate behavior ...as well as long term capital appreciation for investors.
- Essential to drive as much of China’s growth as possible into more energy-efficient and sustainable technologies and production, which is crucial for China’s future development.
- For sustainable development, including electronics sector.

2. Legislation and industry initiatives

2.3 Industry Initiatives

(3) Enterprises

Large electronic product manufacturers

Respond positively.

As a globally famous IT enterprise, Lenovo puts great emphasis on environmental protection. From the purchasing of raw material, designing, to producing, all are strictly implemented according to a whole series of international eco-producing system.

Foreign-owned and export-oriented enterprises

Most familiar with the requirements and standards of environmental and healthy conditions in general and have a relative high level of awareness on the environmental and health requirements.
2. Legislation and industry initiatives

2.3 Industry Initiatives

- SMEs
- Know little about environmental and health issues in key international markets;
- Lack environment awareness;
- No strict environmental administration;
- Low level of specialization and production centralization;
- Most lack of enthusiasm to apply for the environmental label, the systematic environmental certification such as ISO14000 series and the eco-design.

- Nearly 1/3 SMEs in the home electrical appliances field plan to quit the EU market after the enforcement of RoHS.

3. Implications for suppliers

(1) Employment loss & Employment creation

- It becomes crucial to test and control the product of every working procedure, it also makes adding the related supervising position become necessary.
- It also provides a lot of chances for improving the 3rd party certification institution, and creates new employment in the society.
- Once the production line fall into disuse, there will be a huge threat in the relative worker’s employment.
3. Implications for suppliers

2. Small suppliers and possible marginalisation

According to Shenzhen Computation Quality and Check Academe’s statistic, Sony has referred to about 4000 providers in the censor to meet the EU’s Directives of, among which just about 25% of them passed.

Besides, the Panasonic Company has done the same filtration; it has 208 providers and involving 7268 accessories of the air condition. But about 25% (1860) of them are not eligible, and it means that 1/4 of the providers then is not eligible to the EU new command.

Medium and small suppliers may encounter difficulties meeting given standards under the strict regulations. Some parts, especially SMEs, would be eliminated from the supply chain due to limitations of ROHS, for the high cost of the substitute or the lack of technique.

As analyzed in Costs of compliance, the cost increased would be enormous for SMEs who can not afford.

For most of the SMEs in China, their junior productions brought tremendous pressure on the technique update:

- Silver cadmium oxide (AgCdO) is a necessary touch material used widely in electrical equipment switch node.
- Polybrominated diphenyl ether (PBDE) is a common use flameretardant in plastic.
- Lead stearate is a plastic heat stabilizer which is used most widely and there is nearly no mature product or technique to substitute in domestic industry chain. In some electrical products, only the jointing material which contains the lead can meet the jointing technical standard, and make sure that the appliance performs well.

3. Implications for suppliers

3 (3) Poverty Alleviation

- Quality control
- Supply chain management
- Third-party certification
- Waste recycling

All the above will contribute a lot to the poverty alleviation, especially in the town and rural area.
3. Implications for suppliers

(4) Costs of Compliance

At present most of the manufacturers use the tin with a high content of lead, whose price is about 60 RMB per kilogram. According to RoHS, using the non-lead tin to substitute, the price will rise to 260 RMB per kilogram.

As the implementation of the directives, the manufacturers of the final products will have a stricter requirement in controlling the component of the upstream-suppliers. The suppliers of the components must supply the authentication, which surely will make the suppliers and manufacturers pay a higher cost of call-back to deal with the E-waste.

The implementation of the WEEE and RoHS may make the cost of the Chinese household appliance increase at least 10%.

Cost of call-back

Higher cost of the substitute in technology

The product’s cost increase

Costs of compliance

Product certification

4. Gaps and future needs

4.1 Management needs

1. Awareness on environmental/health requirements and information management
2. Improving the eco-labeling system of the electronic industry
3. Collecting and disseminating the information
4. “3C” Certification and export permission
5. Environment department inside enterprise
4. Gaps and future needs

4.1 Management needs

1. Awareness on environmental/health requirements and information management

4.2 Technical needs

1. Eco-design

- Minimizing or avoiding the use of toxic and hazardous substances
- Reducing energy consumption of electric and electronic products
- Decreasing noise etc.
4. Gaps and future needs

4.2 Technical needs

- Eco-design in China

- Administrative Measure on the Control of Pollution Caused by Electronic Information Products, ordered by MII, NDRC, MofC, GAC, SAIC, GAQSIQ and SEPA.

- In order to implement the eco-design for the electric and electronic products in China, training on how to technically guarantee the product free of the restricted substances and capacity building on technical innovation are important to the whole industry.

---

Eco-design in China

Reduction of energy consumption in electric and electronic products

- In China, energy shortage emerged with the rapid economic growth in recent years. Energy-saving is gradually drawing more and more attention national wide. Energy-saving is one of the key objectives in China’s eleventh “Five-Year planning”.

- In the electric and electronic industry, conducting R&D for new technologies and new products is one pro-active way to achieve the energy-saving objective in China’s eleventh “Five-Year planning” and to meet requirements of the EU and Japan legislations as well.
Take Washing machines for example:

- Water-saving washing machines not only comply with the basic national standards of GB/T4288 (household electric washing machines), but its water-consumption quantity for each load of which should be in accordance with the Class B of amended GB/T4288 as well. Washing Machines according to National standard (GB/T 4288) in amendment are graded with four grade A, B, C, D, which matches the internationally advanced level, nationally advanced level, nationally middle level and nationally general level indicated by the performance of cleanness, water-contained, noise, water consumption, electricity consumption and malfunction.

Example of Refrigerators

- A new standard for refrigerators entitled Limit of Electricity-consumption and Grade of Energy Efficiency of Household Refrigerators was implemented in China on Nov. 1st, 2003. Refrigerators put into market must have the Energy Efficiency Label since then. According to the grade of electricity efficiency calculated from the experimental results of electricity-consumption combined the volume, refrigerators are ranked into five grades, namely A, B, C, D and E.
- The electricity consumption of refrigerators has already remarkably reduced by 15%. Refrigerators whose energy-consumption figure is close to the present limit will be pushed out of the market in the near future.
2. System of call-back, reuse, and recycling of waste electronics

- **Government**
  An electronic product recycling act in need soon, explicitly regulating the responsibilities of the producers, retailers and consumers.

- **Industry**
  A union for recycling of the E-wastes generated from home electrical appliances in China was set up in July 2005. But in need of technical assistances from DCs on how to operating the recycling system within and outside of China.

- **Enterprises**
  - Well-proofed testing and substitution techniques at the newest level;
  - Environment-friendly recovery, reuse and recycling techniques;

---

5. Capacity Building Plans

5.1 Main purpose of training

- To arouse the environment and safety consciousness, especially for SMEs;
- To introduce to the producers and the relative ministries the specific requirements on the environment, safety and resource saving;
- To explain the impacts of WEEE, RoHS and EuP directives on the Chinese electronics industry and how to reduce the negative impacts;
- To enhance the enterprises’ capacity to conduct eco-design for products;
- To enhance the technical capacity to substitute the 6 toxic and hazardous substances restricted in RoHS directive;
- To enhance the capacity for SMEs to avoid being marginalized.
- To enhance the electronics enterprises’ capacity to integrate the environment requirements on electronic products in EU and Japan legislations into the quality control system (ISO9000), as well as the manufacture process;
- To enhance the electronics enterprises’ capacity to meet the requirements of the relative EU and Japan regulations and laws.
5. Capacity Building Plans

5.2 Training Plan

(1) Short term plan

a. Organizers of the trainings

Related universities, research centers, and the government departments should be united to establish a training Center, whose tasks should be as below:

- To formulate the training rules;
- To invite trainers and organize the trainees;
- To determine the numbers of the trainees and the charge standard;
- To develop training content and determine the time of enrollment;
- To check the training performance;
- To issue the graduation certificates for the trainees.

b. Targets of the trainings

- Administrative managers from the electronics enterprises, esp those from SMEs;
- Technical managers from the electronics producers (including suppliers);
- Designers from the electronics enterprises (including supplier);
- Persons working with governmental trade-related ministries or related departments in charge of the import and export of electric and electronic products;
- Persons from the industry associations.
5. Capacity Building Plans

5.2 Training Plan

(1) Short term plan

  c. Training content

- WTO multilateral trade agreements, especially the "TBT Agreement" and the "SPS Agreement"
- Requirements on the electric and electronic products of ROHS, WEEE, EUP directives in EU and HARL, LPEUR, GPL in Japan;
- Related laws, regulations and policies in China (see also 2.2);
- Capacities and skills for eco-design;
- Impacts of the EU directives on export of Chinese electric and electronic products, the possibility for SMEs to be marginalized;
- Production process and methods (PPMs);
- Substitution of the 6 kinds of hazardous substances restricted in RoHS;
- Analysis on methods and cost of the recycling of the E-wastes;
- Relationship between WEEE, RoHs and EuP directives;
- Possible ways for the Chinese electronics enterprises to meet the requirements of the EU directives.

(2) Medium/longer term plan

a. Institutions building in medium /longer term plan

- Setting up the training center
- Developing all-around educations on environment and safety
5. Capacity Building Plans

5.2 Training Plan

(2) Medium/longer term plan

b. Perspectives for the medium/longer term plan

- Sustainable development strategy is the basic policy for fulfilling the modernization in China;
- Development of economy and foreign trade must be coordinated with the environment protection;
- Technical innovation for new production technology and the processing methods must be promoted;
- Following trainings should be enhanced to the production enterprises:
  - Training in the green management;
  - Training in the skill for eco-design;
  - Training in green marketing.

THANKS!