

THE MAQUILADORA ELECTRONICS INDUSTRY ON MEXICO'S NORTHERN BORDER AND THE ENVIRONMENT

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Purpose of the paper

- Intends to draw attention on the importance of dealing with the environmental problems of the electronics assembly industry in Mexico because of:
 - The vulnerable environmental conditions in which these enterprises are set up, particularly those located in the northern Mexican border region,
 - The potentially negative effects on maquiladora workers' and community health as a result of using toxic substances and their inadequate disposal,
 - Missed opportunities of the industry as a consequence of lagging behind rapidly advancing international electronics environmental standards.

Economic relevance of the electronics industry

- Electronics has been horizontally incorporated in a very large range of products and services, it is the second largest industry after the automobile industry in the U.S.
- Between 1992 and 2001 the value of electronics exports to the United States grew fivefold to the United States.
- In Mexico, in 2001, the electronics industry generated
 - 30% of total manufacturing exports
 - 10% of total manufacturing investment,
 - 9,2% of manufacturing employment
 - 9% of manufacturing salaries and
 - 5,8% of manufacturing GDP

Relevance of the electronics industry Pollution

- The electronics industry is often considered among the **low polluting** industries both
 - During its production process as well as
 - Its final product
- They do not belong to the “environmentally sensitive products” (according to Low y Yeats’s, classification, 1992); and they are among the least polluting, according to the Industrial Production Pollution System (IPPS, of the World Bank).
- In the USA this industry produces only 1,6% of the hazardous waste of the total registered by the *Toxic Release Inventory* (TRI).
- Hence, the electronics industry is not comparable to the chemical, petrochemical, cement and other sectors that are ostensibly polluting

Refocusing the environmental problem in the electronics industry (product life-cycle)

- The main problem seems to be the speed at which production expands, especially, of computers.
- Gigantic accumulation of solid waste, that results from its rapid obsolescence.
- When electronic products are inadequately disposed of the hazardous substances are released in the form of *hexavalent chromium; cadmium, mercury, CFC; and lead.*
- Impact on human health of the use of toxic substances in the labor intensive assembly **stage** (*hazardous materials: solvents used to clean circuits, the materials used to solder or glue components (lead).*)

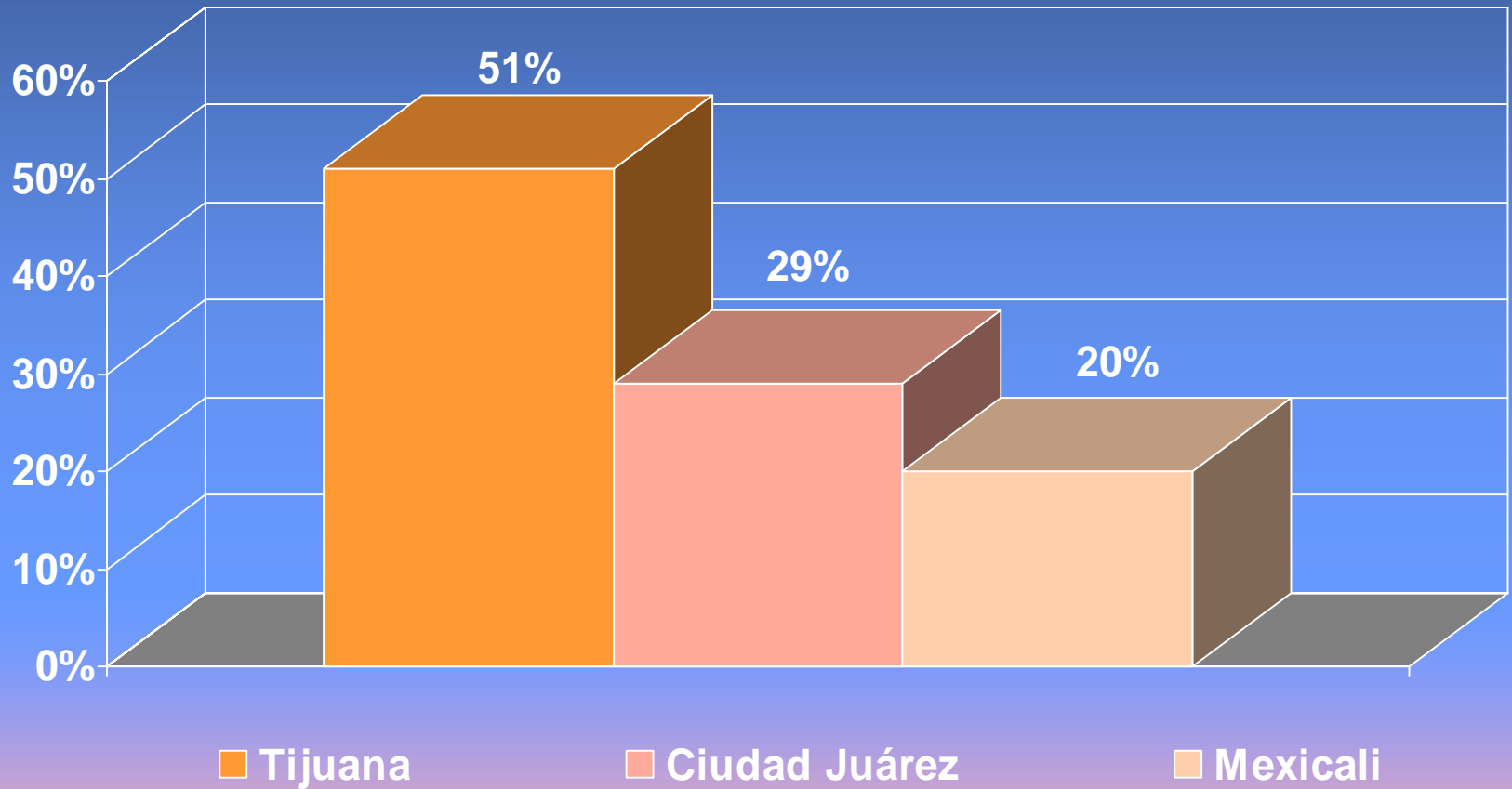
DEVELOPED COUNTRIES' ENVIRONMENTAL STANDARDS FOR THE ELECTRONICS INDUSTRY: European Union

- ***Restriction on Hazardous Substances, RoHS***: restricts the use of some hazardous substances in electric and electronic equipment.
- ***Waste Electrical and Electronic Equipment, WEEE***
Electronics producers must recover obsolete equipment without any cost for consumers and either recycle them or dispose of them in an adequate way.
 - - **August 2004**: these procedures should have been incorporated in each country's domestic law
 - - **August 2005**: producers have to start collecting equipment
 - **December 2006**: EU members should reach an annual average of 4 kilos p/c of recovered waste equipment
- **TCO99**: ecolabeling for personal computers that certify that electronic monitors comply with environmental standards

THE ELECTRONICS INDUSTRY IN NORTHERN MEXICO: ANALYSIS OF A SURVEY (2002)

- Identify the determinants of an active environmental policy for a representative sample of 200 electronic maquiladora industries in the northern Mexican border and its suppliers (active environmental policy: has a unit or person in charge of environmental policy and has introduced technical innovation in this area).
- 54% of the firms had an active environmental policy

Geographic Concentration



Results of the LOGIT model

Greater probability of adopting an active environmental policy if:

- They assembly rather than being suppliers
- Have been operating during a longer period
- Large size of multinational corporation they belong to
- Support of home company in technological innovations, access to patents and supply of inputs & components
- If they count with quality certification.

Environmental policy responds mostly to domestic Mexican environmental standards (mostly horizontal, except for being forced to ship hazardous substances back to US). No direct market or pull effect.

Challenges for the Electronics Maquiladora in Mexico

- Operates under great **competition pressure**. Corporations try to reduce prices through constantly lowering components' costs (Kenney y Curry, 2003). Maquiladoras are designed to be able to relocate geographically according to different comparative advantages offered by different countries, regions. Hence these firms are usually reluctant to invest in environmental protection.
- Multinational firms seem to have different environmental standards, according to where they operate (Sony Dell ,IBM, Matsushita/Panasonic). They do not use the best environmental technology they have access to in Mexico
- Two different final markets for electronic products for two different technology paths:
 - products that comply with high environment standards required by consumers in developed countries
 - Another one, mainly developing countries, with lower environmental standards.
- Coordination between industrial and environmental policies in Mexico