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# **Eco-efficiency of Poland**

## **Using LCA for ecological tax reform**

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# Ecological tax reform

- The proposals of modifications to the system of economic instruments and a possibility of implementing an **ecological tax reform** in view of the Integrated Product Policy (IPP) have been prepared in Poland in 2006 using LCA technique.
- An environmental tax reform (ETR) shifting the **tax burden from welfare-negative taxes**, (e.g. on labour), **to welfare-positive taxes**, (e.g. on environmentally damaging activities, such as resource use or pollution) can be a win-win option to address both environmental and employment issues.

# General assumptions

- The modifications proposed to the system of economic instruments for the environmental protection **are not the target in itself**, but should support and secure a better performance of **the ecological priorities** as formulated in the State's ecological policy.
- That is why the range of the respective economic instruments should not only result from decisions or political choice, but also from the **criteria** which are commonly accepted in the pertinent references and the performance practice in the countries with vast experience in the application of those instruments.

# Economic instruments in Poland

- **Environmental fees and fines** - their role was to create incentive for companies to reduce the resource use and to invest into technologies friendly for the environment.
- They were introduced in 1980s. The present system is not perfect, mainly due to difficulties in valuation of the environment, and impact on the companies competitiveness at the EU markets.
- 62 different substances introduced to the air, i.e. SO<sub>2</sub> – 0.40 PLN /1 kg, CO<sub>2</sub> – 0.21 PLN/Mg, or As – 279.95 PLN/kg
- 1056 different type of waste for storage, i.e. non-ferrous mining or municipal 14.42PLN/Mg

# Economic instrument in Poland

- **Product fees and deposit charges** – their role was to promote recovery and recycling of some products (mainly packaging waste). They were introduced in 2002. Companies (both producers and importers) pay product fee only if not received the indicated (by law) level of recycling. They were calculated based on their influence on the environment and cost of utilisation.
- The recycling target for plastic in 2007 – 25%, the product fee introduced in 2002 was – 2,50 PLN/kg
- The recycling target for paper in 2007 – 48%, the product fee introduced in 2002 was – 0,60 PLN/kg

# Regionalized nAMEA-type matrix (RAMEEA)



- The currently realised in Małopolska RAMEEA project (Regionalized nAMEA-type matrix):
  - supports the life cycle thinking in the environmental policy design,
  - is the response to the needs expressed by the regional policy makers.

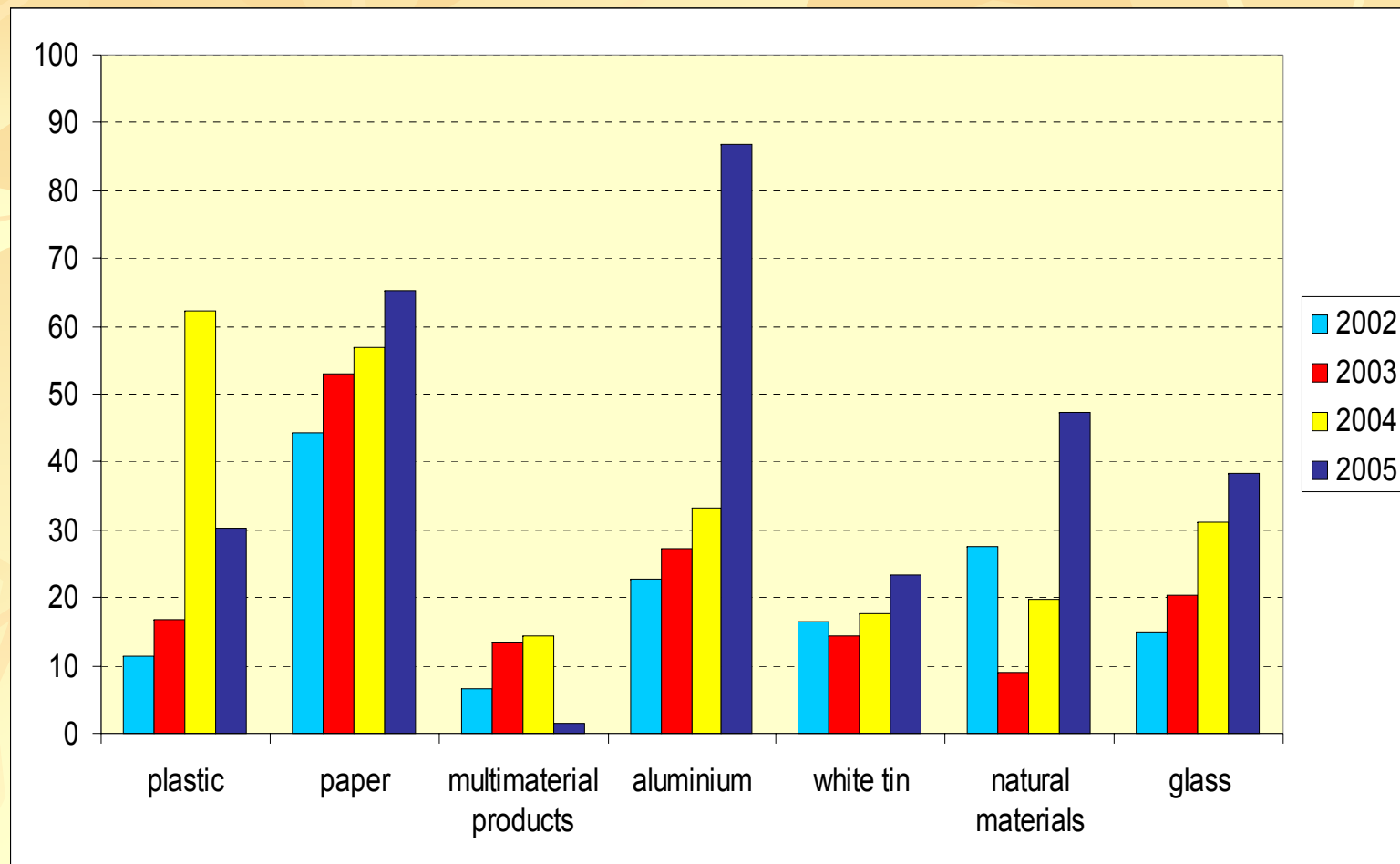
# European Waste Management



- The currently realised in Małopolska EWM project:
  - supports the life cycle thinking in waste management.



# RECYCLING of packaging material IN POLAND



**Realized level of packaging materials' recycled in 2002-2005 (%)**

# Research methodology

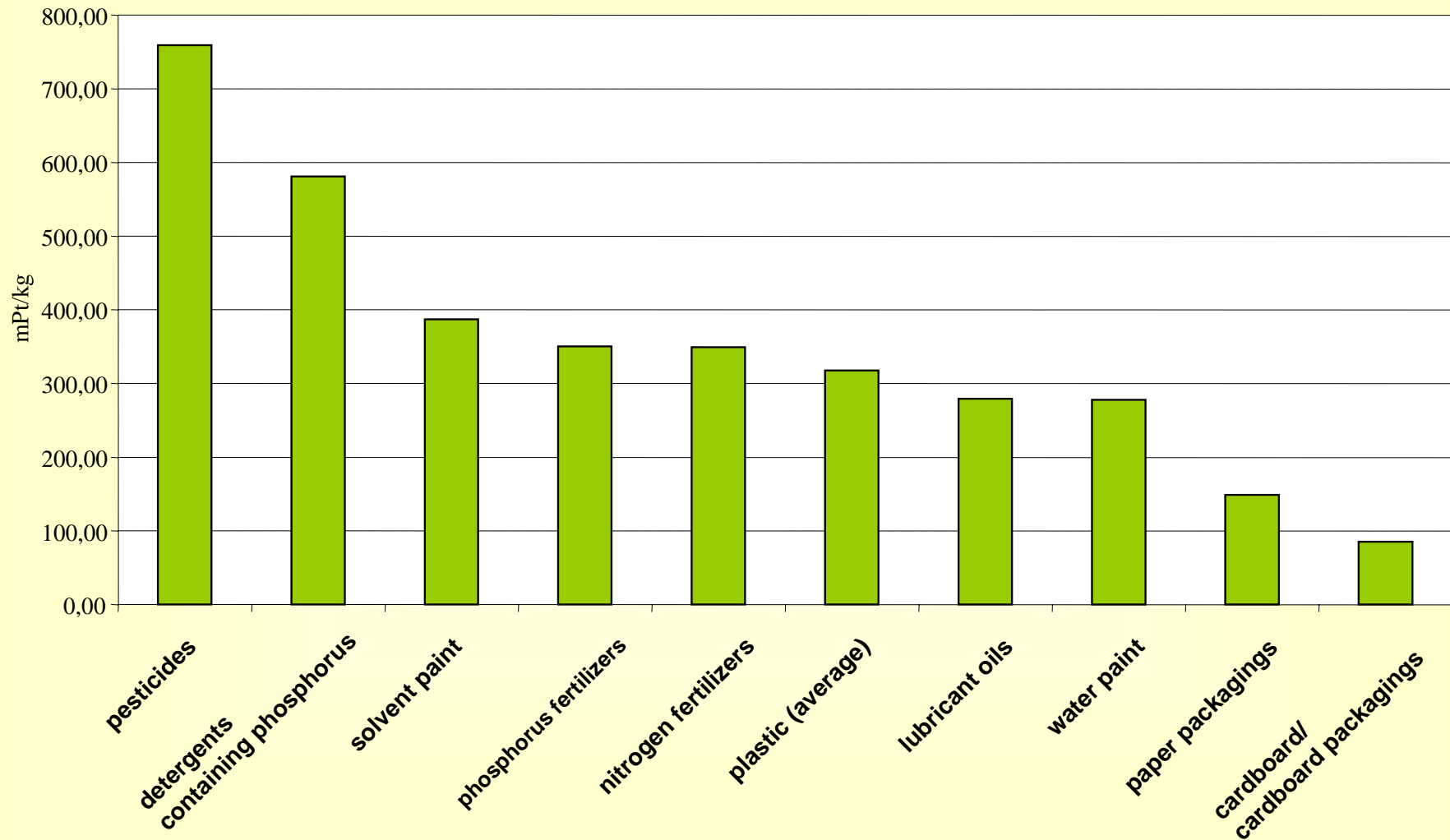
- Some changes to the system of product and deposit charges was proposed in 2006.
- The analysis of conformity of fiscal instruments, presently in effect in Poland, with the IPP targets was performed and the most significant challenges and limitations relative to an ecological tax reform were indicated.
- **LCA analysis** – for selected products to assess the influence on the environment
- **Partial equilibrium model** – in the valuation of the legitimacy of implementing the ecological tax reform

# Proposed modifications to the system of product and deposit charges

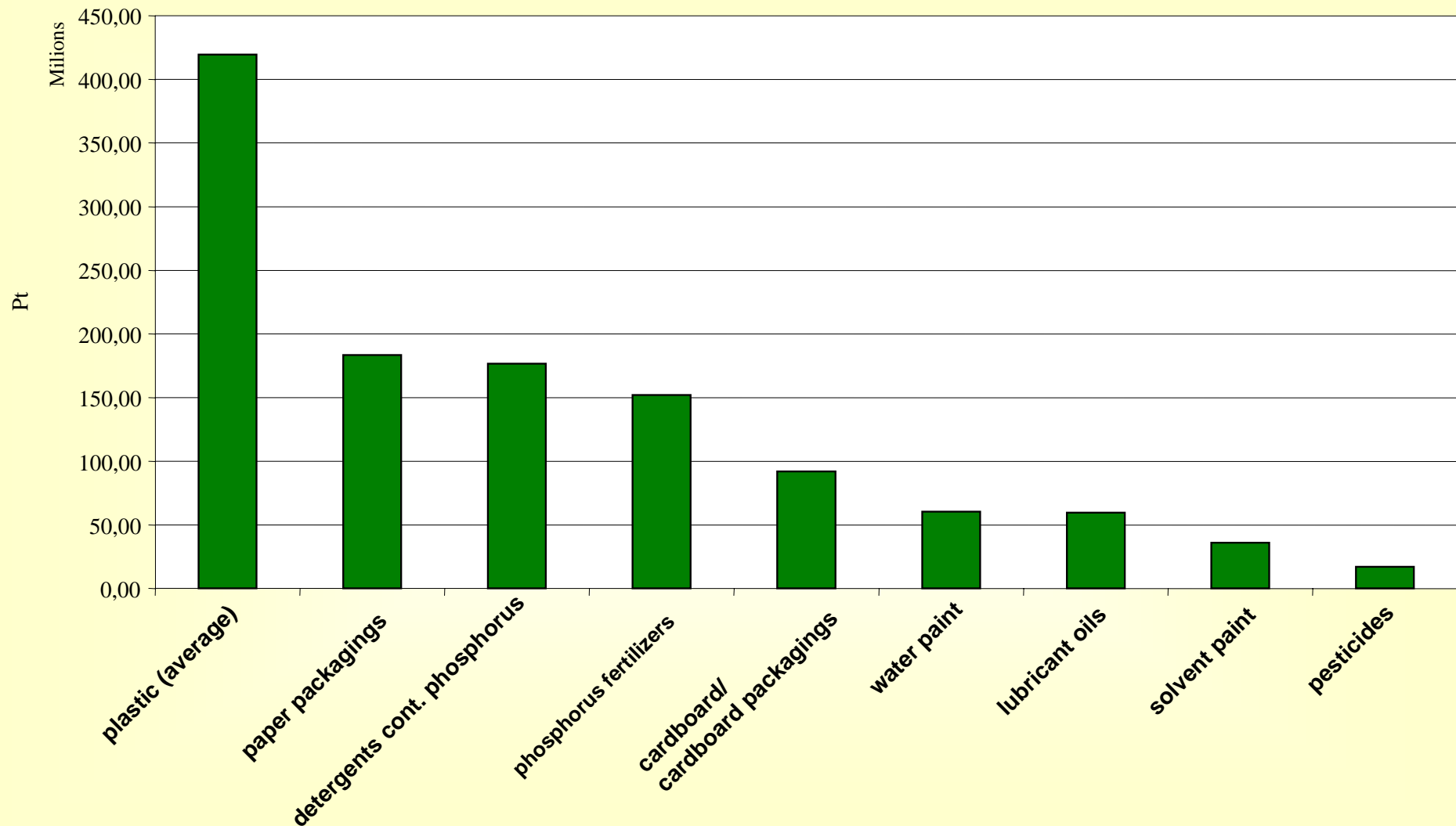
Extension of the lists of products subject to the system of product charges by adding:

- Pesticides and other chemical plant protectants,
- Fertilizers containing phosphates,
- Detergents and cleaning agents containing phosphates (detergents),
- Varnishes and lacquers based upon organic solvents
- Carrier bags, plastic flatware and dishes

# Histogram of environmental impact for respective substances – consumption volumes excluded



# Histogram of environmental impact with consumption volumes (data for the year 2004) – nitrogen fertilizers excluded



# Ecological efficiency of solutions proposed – product charges

- Measured by means of the fall in demand for respective products in consequence of an increase in their price – in relation to the product charge rate and the value of the of the demand and supply price flexibility.
- Data required: consumption, prices, price-related and mixed flexibility of demand, supply flexibility.
- Price: for the assumption made in the matter of the demand rigidity, the ecological efficiency of the solutions postulated is limited.

# **Ecological efficiency of solutions proposed – deposit charges**

- Measured by the level of recovery and recycling of products subject to such an instrument.
- Extension of the application range of this instrument upon a larger than before number of products can guarantee a better efficiency.
- Possible refund of the charge is an efficient stimulus for consumers and guarantees a better than now level of recovery and recycling of such products.

# Conclusions

- This is the first study to use the LCA method for identifying significant environmental aspects.
- The study allowed to determine:
  - the impact of the selected group of products on the environment
  - their ranking according to the eco-rate level
  - the eco-rate level taking into consideration the consumption in Poland
- The study was done on the request of Ministry of Environment to support the implementation of IPP in Poland.

# Conclusions

## Product and deposit charges

The proposed modifications should follow two lines:

- Modification of the system of product and deposit charges
- Extension of those charges on a wider range of products which are environmental nuisance
- Those modifications are postulated by various expert teams in their respective opinions

# Conclusions

## Ecological tax reform

- Taking into consideration the conditions related to the implementation of the ecological tax reform and bearing in mind the research results, the authors of this study make a point that no ecological tax reform should be implemented in Poland, even in such a narrow range as presented.
- This thesis can be justified by the absence of convincing arguments for the existence of an economical dividend even if such an extensive instrument, as the general equilibrium model is applied in the effect analysis.

## LCA w wybranych ośrodkach naukowych w Polsce:



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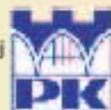
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# Ekologiczna Ocena Cyklu Życia

# Ekologiczna Ocena Cyklu Życia LCA

(Life Cycle Assessment)

LCA umożliwia:

- Projektowanie wyrobów przyjaznych środowisku
- Określenie potencjalnego wpływu danego wyrobu na środowisko
- Przystosowanie produkcji do wymagań ochrony środowiska
- Zwiększenie opłacalności produkcji
- Uzyskanie deklaracji środowiskowej i odpowiedniego ekoznaku

LCA w strategiach i komunikatach Komisji Europejskiej oraz wybranych krajów:

- Zintegrowana Polityka Produktowa (IPP)
- Zrównoważone wzorce produkcji i konsumpcji sprzyjające realizacji zasad trwałego, zrównoważonego rozwoju
- Strategia tematyczna w sprawie zrównoważonego wykorzystania zasobów naturalnych
- Promowanie zrównoważonego wykorzystania zasobów: strategia tematyczna w sprawie zapobiegania powstawaniu odpadów i ich recyklingu

Dodatkowe informacje:

- <http://lca.jrc.ec.europa.eu/EPLCA>
- <http://www.mgi.gov.pl>
- <http://www.mos.gov.pl>

