

The Case of Car Exports through the Hamburg Port

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and Use of Platinum Group Metals
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Öko-Institut e.V. at a glance...



Independent Non-Profit Organisation founded 1977

based in Freiburg (Germany)

1980 Darmstadt Office

1991 Berlin Office



Membership Organisation with *circa* 3.000 Members

Budget *circa* 7,5+ Mio. Euro per year

95% of budget from projects, 5% fees and donations

Research and Consulting for Governments,

Business and Non-Governmental Organisations

approx. 150 projects annually.

Optimization of Precious Metals Recycling: Analysis of Exports of Used Vehicles and Used Electrical and Electronic Devices at Hamburg Port



**Buchert, M. et al. (Öko-Institut e.V.)
Expert advice by Hagelüken, C. (Umicore Precious Metals Refining),
FZK 363 01 133, commissioned by Federal Environment Agency
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Motivation for the Case Study

- **Growing export streams of used goods (used cars etc.) from Germany**
- **Export of used cars: mainly as products (not as waste)!!!**
- **The destination pattern and the details of the material flows are not well known and has to be investigated**
- **Goods like used cars: valuable mines above ground with a remarkable relevance for resource efficiency**

Objectives

- **Investigation of the export streams from Germany on the seaway of used cars and used EEE-goods as relevant goods with PGM content**
- **Better understanding of the key players (e.g. shipping companies) and the specific market mechanisms**
- **Information about the destination pattern and the details of the material flows**
- **Dissemination of the perspective for market actors like shipping companies to participate in enhanced international recycling co-operation in the future**

Platinum Group Metals (PGM) - Relevance of Automotive Catalytic Converters

- **PGM are essential for automotive catalytic converters**
- **Global increasing gross demand**
- **Auto catalysts are the most important application (52% of the global PGM demand in 2006)**
- **Less than 40% rate for recycling in Germany only (despite high prices); caused by high export flows of used cars**
- **Secondary PGM offers clear ecological benefits (5 – 100 times lower emissions etc.) compared to primary production (mining)**

Problems of PGM Recycling Flows of Consumer Goods

- A fundamental lack of waste management infrastructures and know how in many destination regions
- Insufficient car maintenance, bad road conditions
- High probability for destruction of catalyst → emission of ceramic/PGM (misfire, bumps on converter ...)
- Inadequate handling of catalysts, no emission legislation /-control in place
- Difficult logistical frame conditions

Result: Unacceptable PGM losses



Methodology of the Investigation

- **Data from statistics (Foreign Trade Statistics of the Federal Office for Statistics, Germany etc.)**
- **Secondary literature**
- **Interviews with identified important actors (Nov. 2006)**

Interview Partners (I)

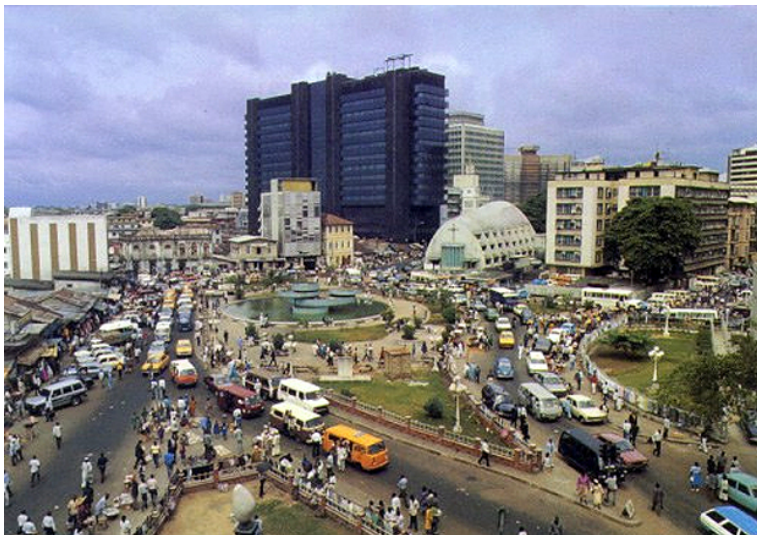
- **Federal Office for Statistics, Germany**
- **Mrs Osyguß: „The international value-added chain of the export of used goods from Germany to West Africa – the used vehicles example”, master thesis, Institute for Geography, Hamburg University 2006**
- **Hellmann Process Management (Osnabrück)**
- **GRIMALDI Germany GmbH (Hamburg)**
- **Authority for Urban Development and Environment (Hamburg)**

Interview Partners (II)

- **Customs Authority (Hamburg)**
- **Mundial Roro Shipping Services GmbH, (Hamburg)**
- **Harbour Police Hamburg, (Department for Environment Offences)**
- **UNIKAI mbH (Hamburg)**

Main Destinations for used Cars through the Hamburg Port

- **Most relevant destination:** **West Africa**
- **Next relevant destination:** **Middle East**
- **No significance:** **Latin America**



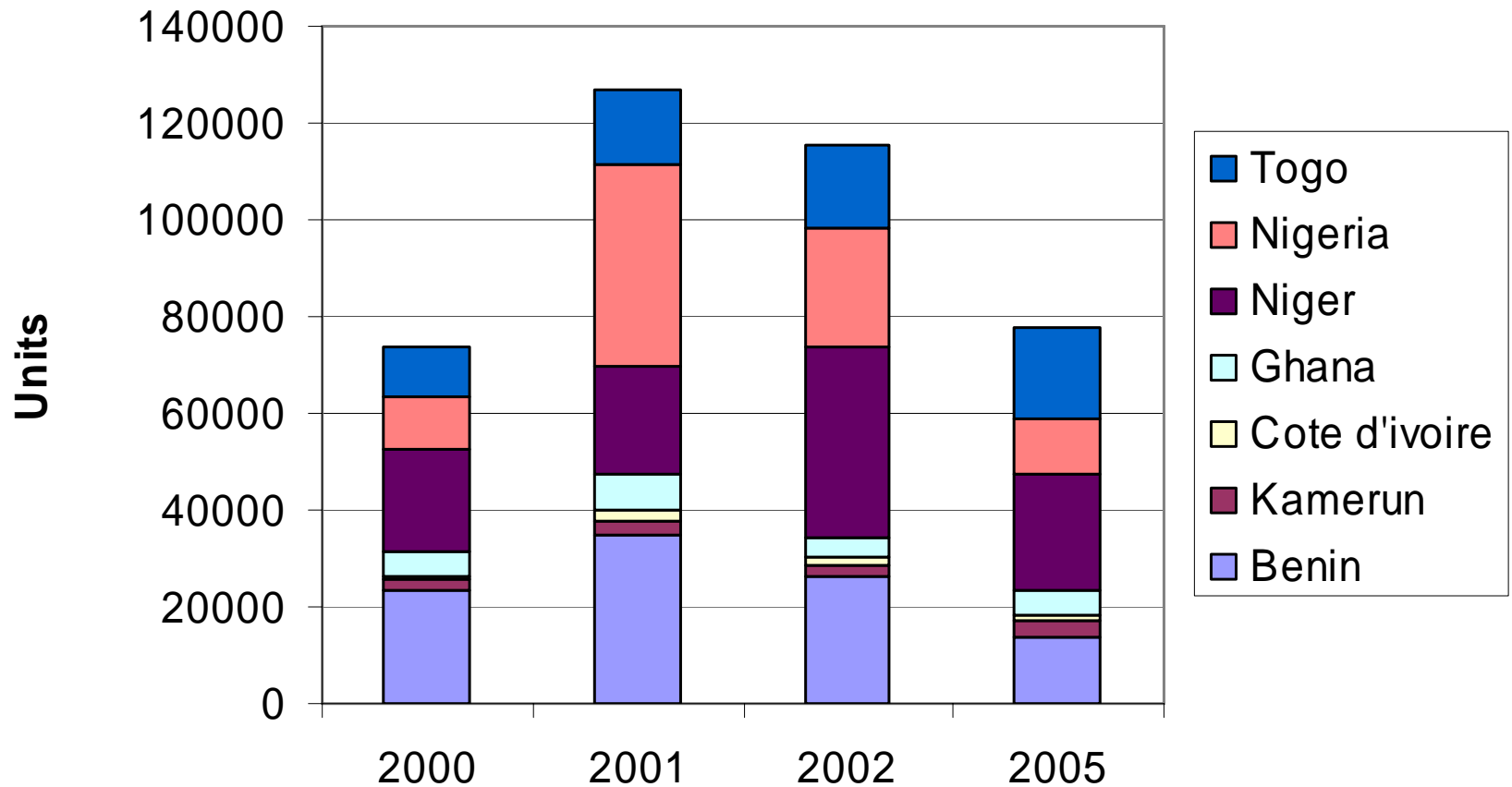
Destination West Africa



Used Cars in the Foreign Trade Statistics

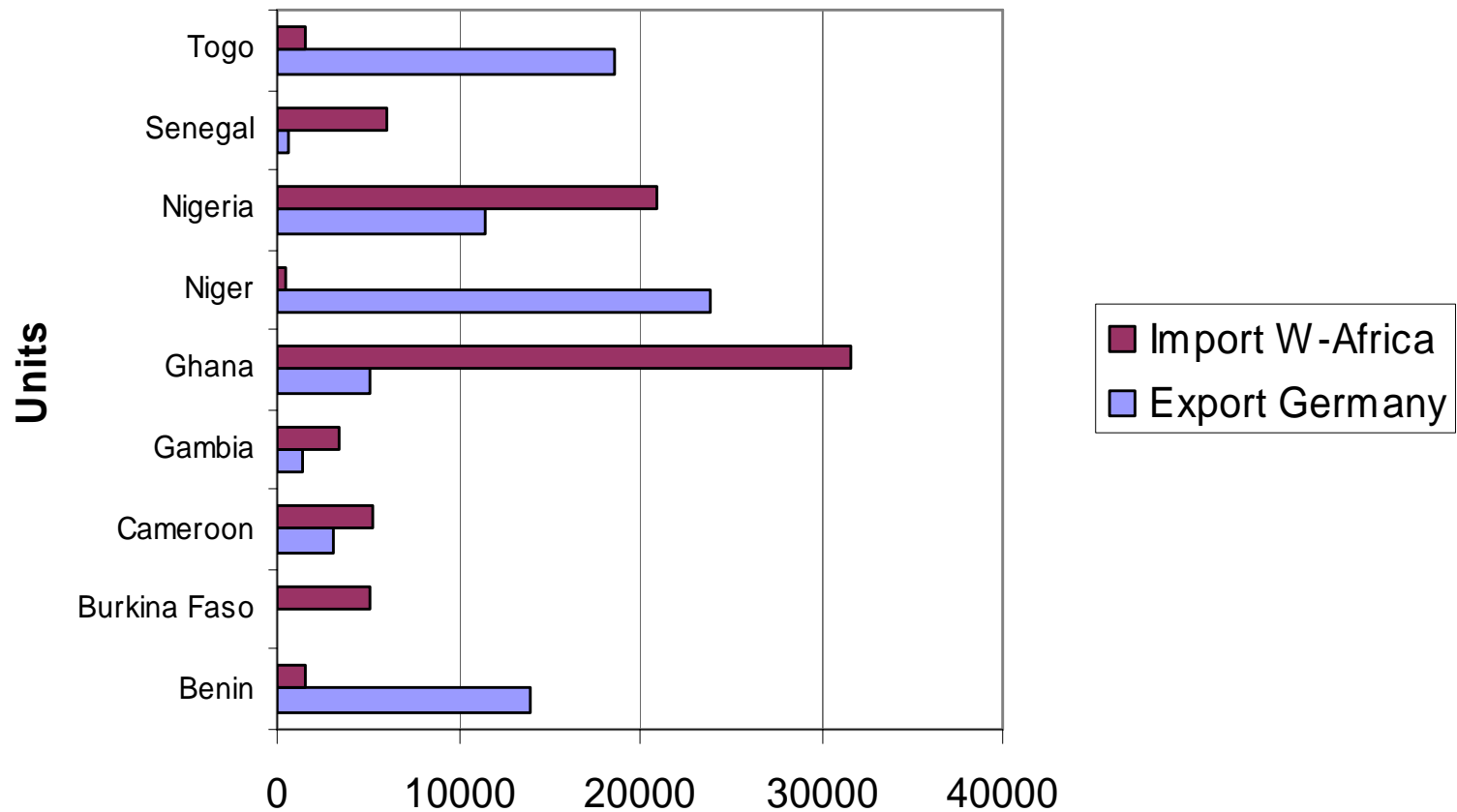
- **Used cars from Germany: data available for seven categories (4 spark ignition engine cat., 3 Diesel cat.)**
- **Extra EU export (Nigeria for instance):
Data listed (used cars) for every single export activity with at least 1000€ or 1000kg: data for most used cars are listed**
- **Intra EU export (e.g. from Germany to Belgium): most exported used cars are not listed (no private export; commercial exports, if the company has exported a value of more than 300,000 Euro in the previous year)**

Export of used Cars from Germany to West Africa



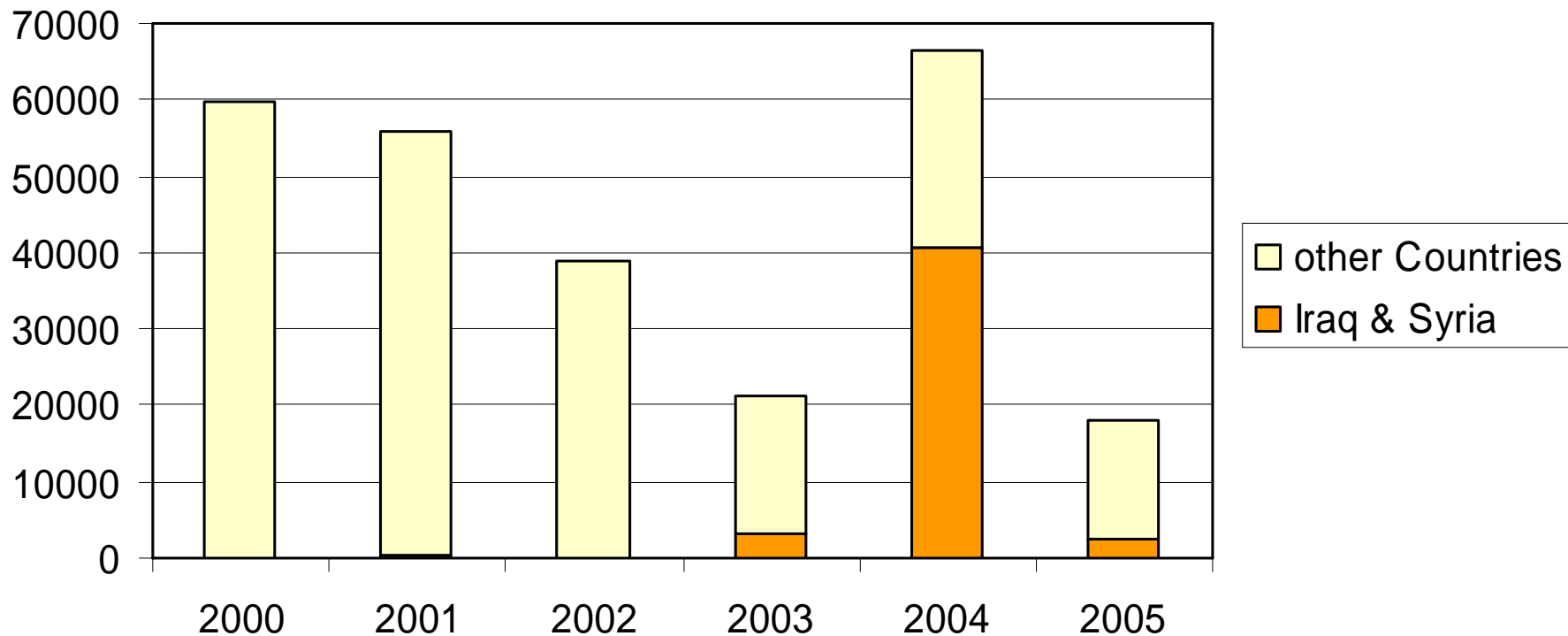
Data: Federal Office for Statistics, Germany; since 2001: import restricted in Nigeria

Export of used Cars from Germany (82000) to and Import from Germany to West Africa (78000)



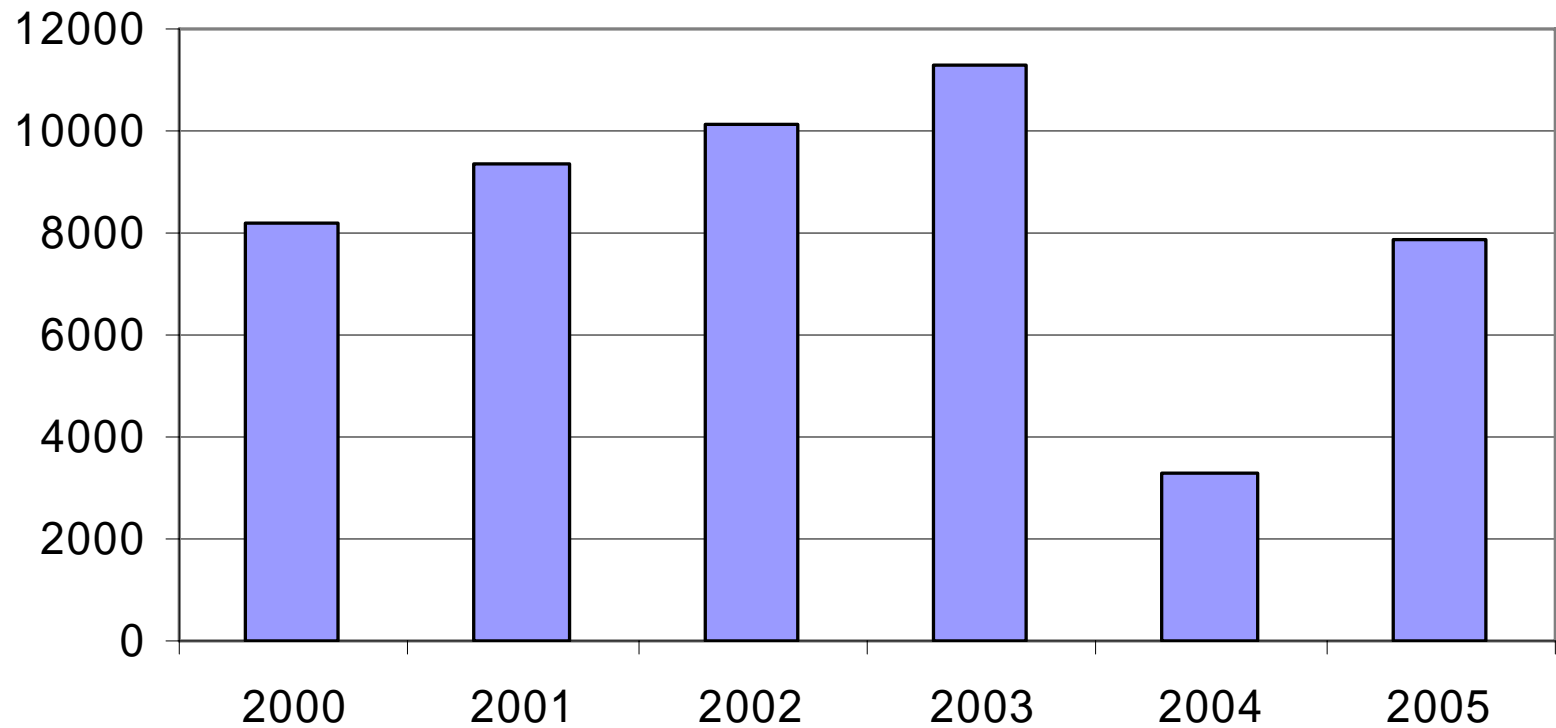
Data: Federal Office for Statistics, Germany and UN-comtrade

Export of used Cars to Middle East



Data: Federal Office for Statistics, Germany

Value of exported used Cars to Middle East (€/unit)



Data: Federal Office for Statistics, Germany

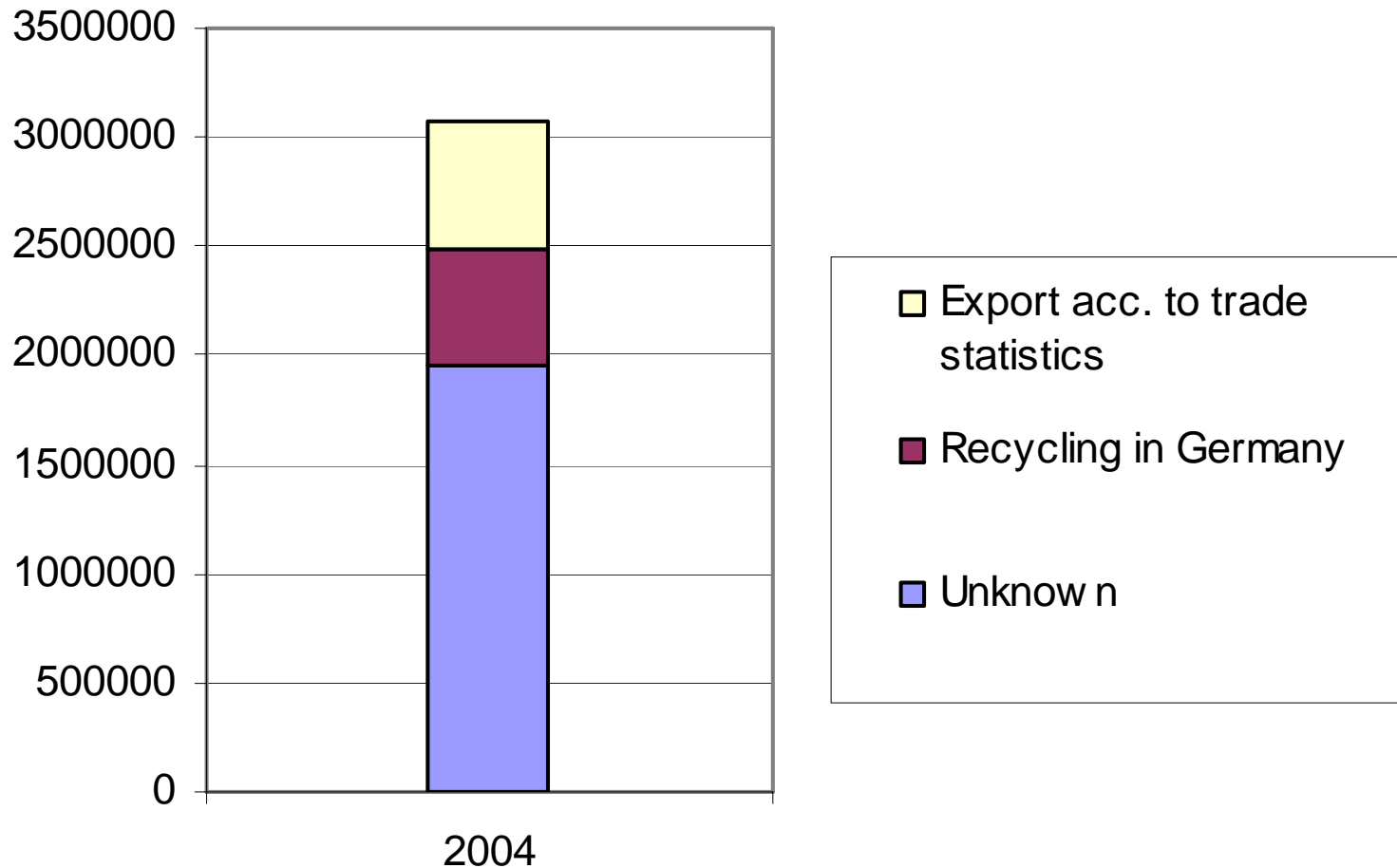
Export of used Cars - Interview Results (I)

- **Hamburg = most important seaport in Germany; relevance of Antwerp (Belgium) concerning export of used cars from Germany in the same magnitude (may be even more than from Hamburg)**
- **Used cars transferred over Hamburg seaport are coming from all over Germany and DK, S, SF, A, I**
- **Hamburg: 100,000 – 110,0000 cars per year to West Africa**
- **Hamburg: additional 20,000 cars per year to Middle East (2004 about 80,000 units)**
- **Hamburg seaport: most important players concerning West Africa: GRIMALDI Line and Abou Mehri; concerning Middle East: Van Uden Line, POL-Levant Line, Mundial RoRo**

Export of used Cars - Interview Results (II)

- **Bremerhaven seaport: ca. 10,000 additional units per year**
- **Neustadt/Holstein: German seaport (Baltic sea): destinations Russia and Baltic states: data not yet investigated**
- **Nigeria = most important final destination in West Africa**
- **Value per unit of exported used cars to West Africa: 800 – 2,000 Euro: cars usually loading space for EEE and other second hand goods**
- **Shipping companies could be interesting partners for international recycling co-operation in the future (currently ca. 50% free loading capacity on the way back from West Africa!)**
- **Partners in the destinations are necessary for recycling co-operation**

Fate of deregistered vehicles from Germany



Valuable Materials in used Cars – Yearly Potential of 2.5 Million Units

- **Steel:** about 1.3 Million tons
- **Aluminium:** about 180 kilotons
- **Copper, Lead etc.** about 110 kilotons
- **PGM:** about 6.25 tons



Conclusion concerning Export of used Cars



- **Direct export of used cars to non-EU countries are almost listed completely in the Foreign Trade Statistics**
- **Indirect export of used cars to non-EU countries over third states (EU member states like Belgium) are not listed in the most cases**
- **Total export of used cars from Germany (ca. 80% of deregistered vehicles) = about 6.25 tons PGM: means about 30% compared to the total net demand for PGM in Germany per year!**

Recommendations

- **Clarity concerning the rate of net exported used cars out of the EU-25 (now EU-27): How many used cars are exported to destinations outside the EU?**
- **Intensify of the connections with actors at Hamburg seaport (and at further seaports); objective: advanced international recycling streams**
- **Improvement of the data situation concerning used electrical and electronic goods at Hamburg seaport (and at other seaports)**
- **Clear and easy-to handle criteria to distinguish used goods and waste: see “Correspondents Guidelines No 1 – Subject: Shipments of Waste Electrical and Electronic Equipment” – similar guidelines to distinguish ELV and used cars in the future?**

Let us work for future co-operation in an internationally operating and optimized closed-cycle materials economy!



He could be a partner in a material recycling value chain!

Thank you for your attention!

