



# SLOVENE PAPER INDUSTRY

## Cases and Challenges of Circular Economy in Paper Mills and Paper Converting Companies

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# SLOVENE PAPER IN PAPER CONVERTING INDUSTRY TODAY

111 companies

7 large  
9 medium  
11 small  
83 micro

4.071  
employees

among 37  
top  
Slovene  
exporters  
5/6  
paper mills

751m € revenues

532m € exports

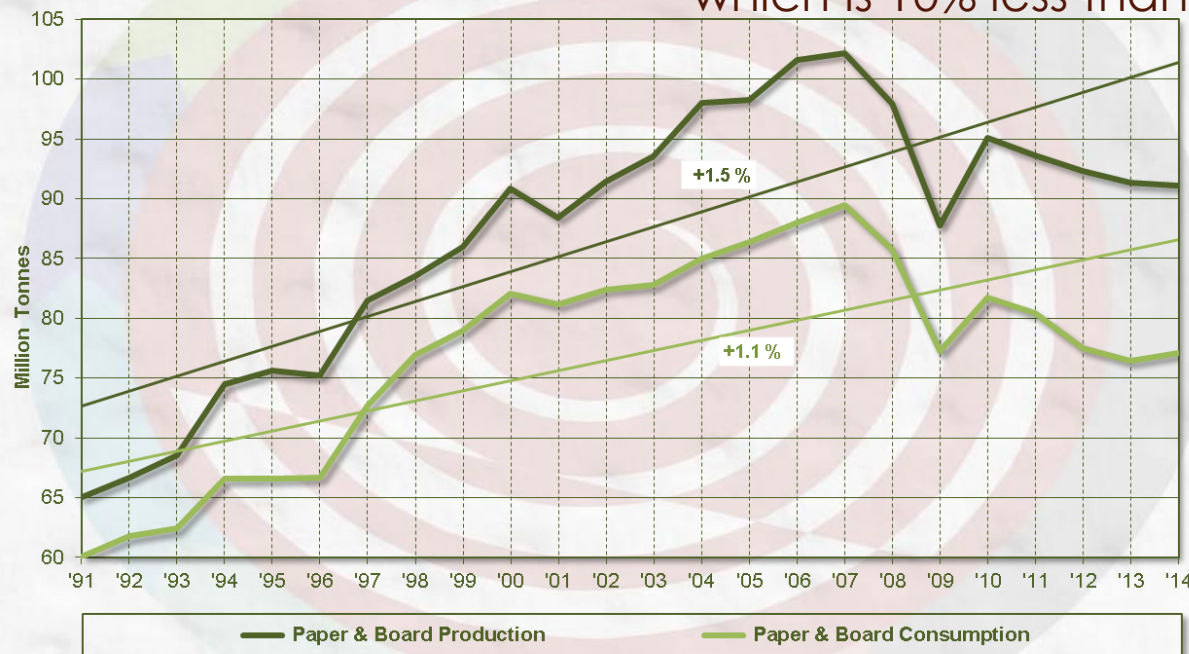
280m € investments  
in the last 10  
years

43,729 € value  
added /  
employee

3.5% of Slovene  
exports by  
converting  
sector in €

>> global paper production: +0.7%

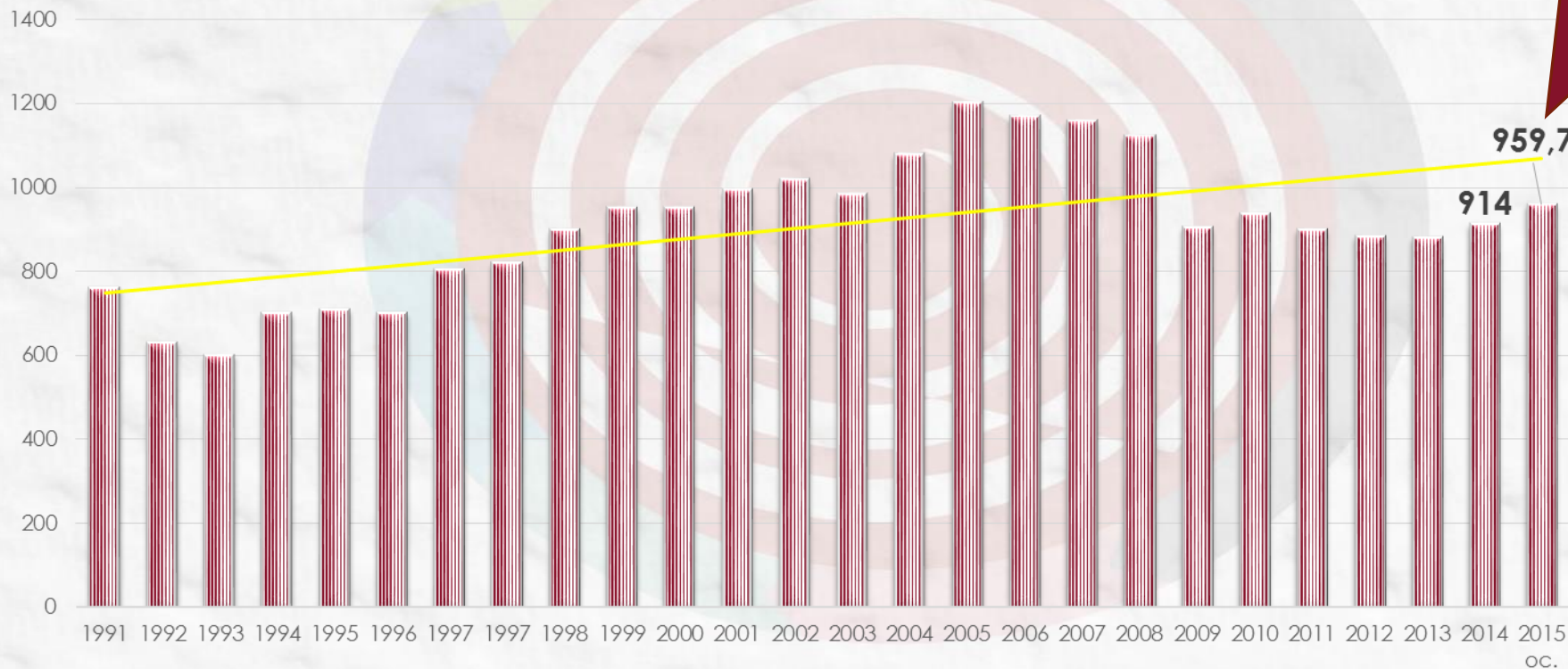
>> paper production in EU (CEPI countries): -0.3% = 91m tons of paper and board  
which is 10% less than before the crisis!



>> paper production in Slovenia: +7.6%, Jan-Aug 2015: +2.5%

# PRODUCTION OF PAPER AND PAPER PRODUCTS in SLOVENIA

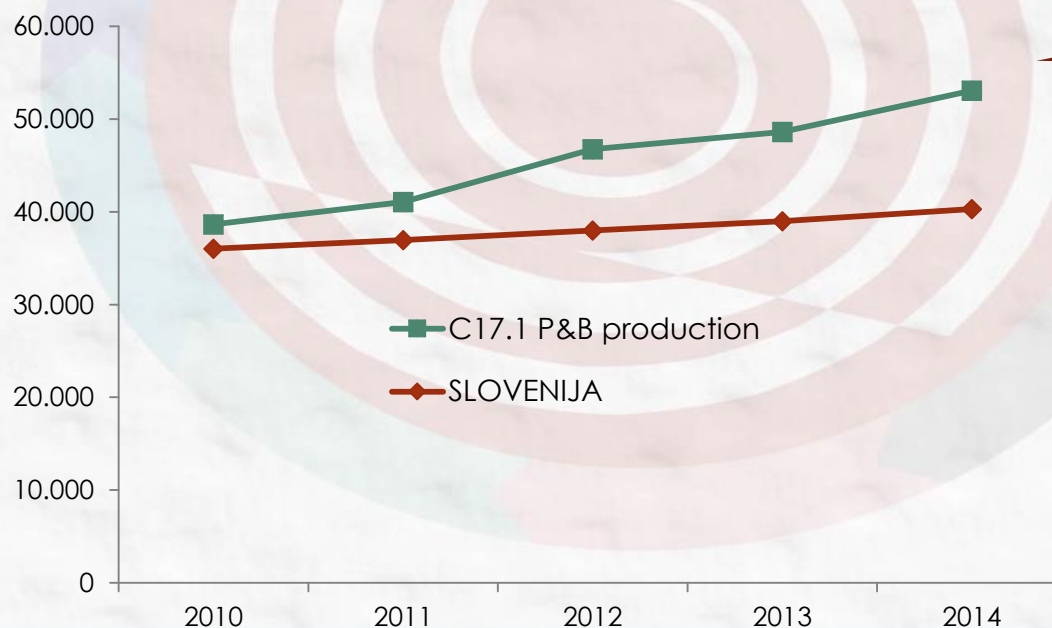
Production of Paper and Paper Converting Products in tons



Of which about:  
- 730,000 tons of paper and  
- 230,000 tons of paper products

# VALUE ADDED PER EMPLOYEE

|  | 2010   | 2011   | 2012   | 2013   | 2014   | Indeks<br>14/13 |
|--|--------|--------|--------|--------|--------|-----------------|
| SLOVENIA                               | 36.044 | 36.966 | 38.006 | 39.011 | 40.324 | 103,4           |
| C Converting sector                    | 34.205 | 35.567 | 36.374 | 38.276 | 40.993 | 107,1           |
| C 17 - P & B production and converting | 34.246 | 36.228 | 37.958 | 38.615 | 43.729 | 113,2           |
| C17.1 P&B production                   | 38.665 | 41.071 | 46.761 | 48.624 | 53.069 | 109,1           |
| C17.2 P&B converting                   | 30.773 | 32.500 | 32.177 | 32.780 | 35.968 | 109,7           |



It represents 2.5% of total value added generated by the converting sector

# HOW IS PAPER INDUSTRY SEEN BY THE PUBLIC?

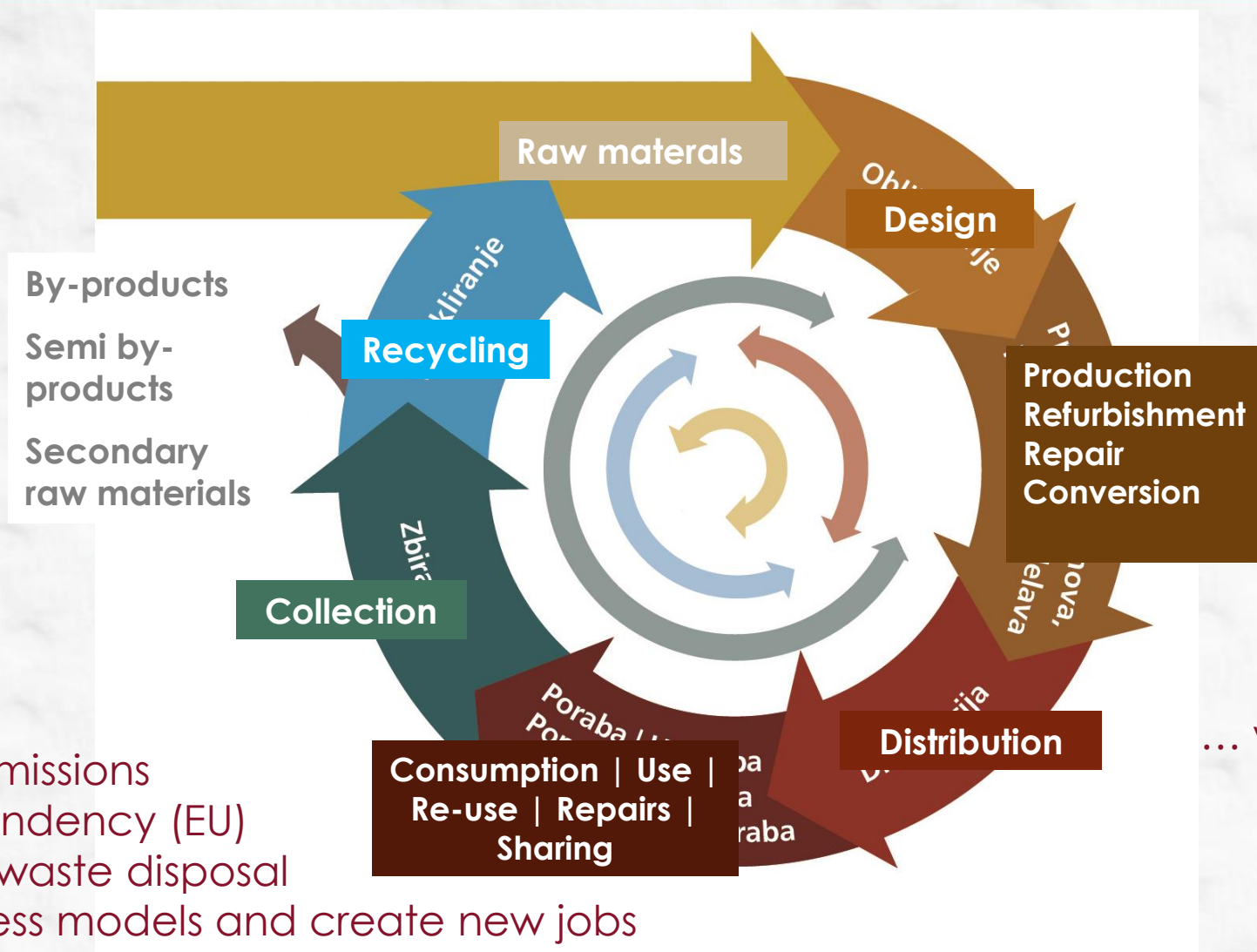
Public IMAGE of the paper and paper converting industry....



**There are many  
misconceptions about  
the paper industry**

# CIRCULAR ECONOMY

WHAT IS IT???



GOALS:

- Reduction in CO<sub>2</sub> emissions
- Lower energy dependency (EU)
- Total elimination of waste disposal
- Establish new business models and create new jobs

... written in the DNA of the paper industry

# 1. RAW MATERIALS

WOOD

PAPER FOR  
RECYCLING

- Paper industry has an important position in the cascading use of wood
- It uses low quality wood to produce high value added products

## CHALLENGE:

>> To buy more wood in Slovenia, the fourth most woody country in the EU

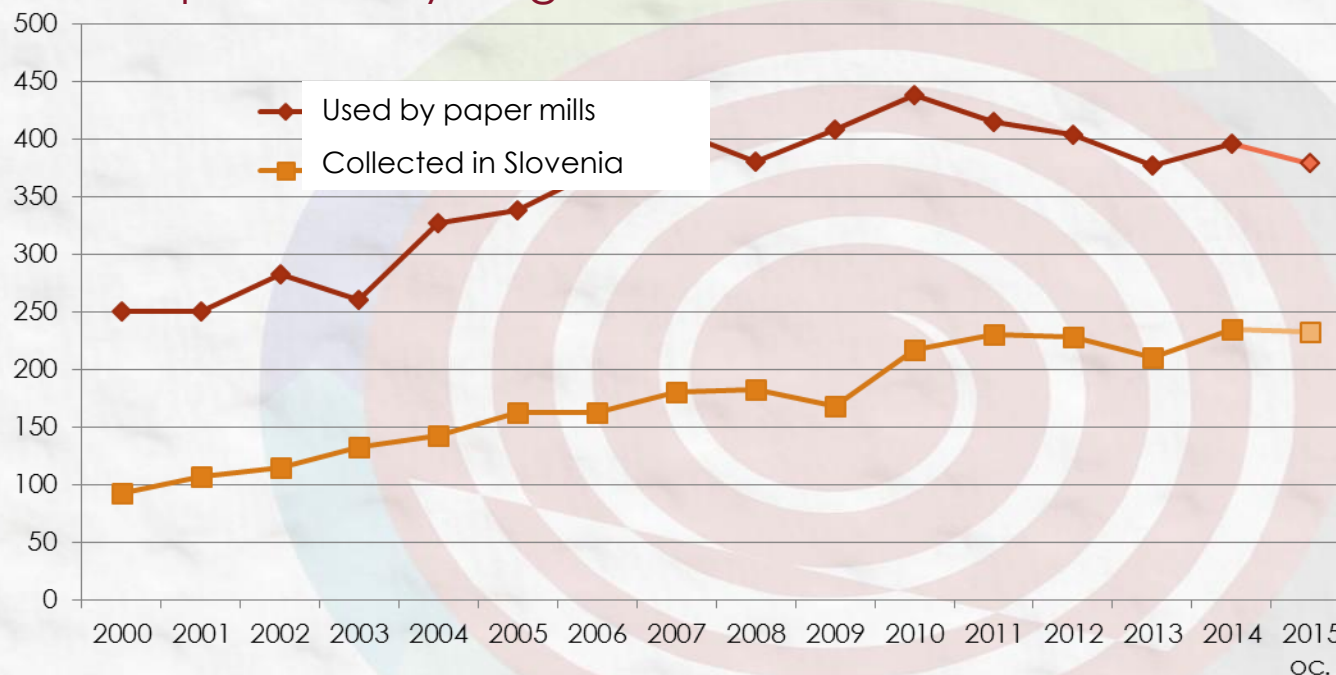
>> „Slovene pulp mill“???





## 2. RECYCLING

Paper for recycling in Slovenia

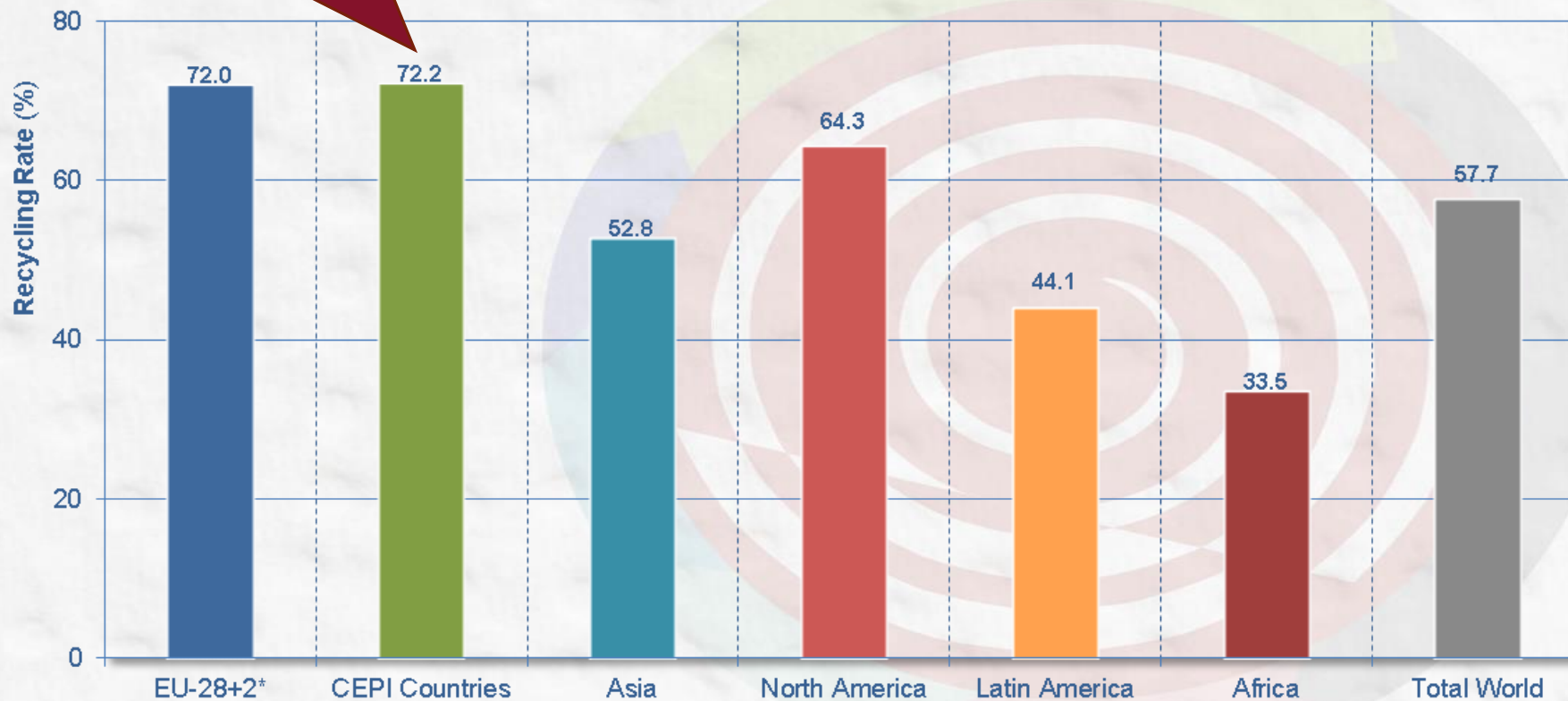


- In 2014, **55.7%** of paper used in Slovenia was recycled (2015 est. 58.6%)
- **109.5 kg / capita** of paper for recycling is collected in SI

Only 51.7% of paper for recycling collected in Slovenia is used by Slovene paper mills, which means that **only a good 30%** of paper for recycling **required by them comes from domestic suppliers**

# RECYCLING RATE

EU is the global champion in paper recycling



Why is that?  
- economic reasons  
- grey market...

55.7%

Slovenia

Source: CEPI, RISI

CHALLENGE: Quality of recycled fibres

- **Closed** loops of resources and raw materials
- Cascading use of resources and raw materials
- **Increasing the efficiency** of the use of raw materials and processes
- Changing waste into raw materials, fuels



Quality certificates and environmental management certificates

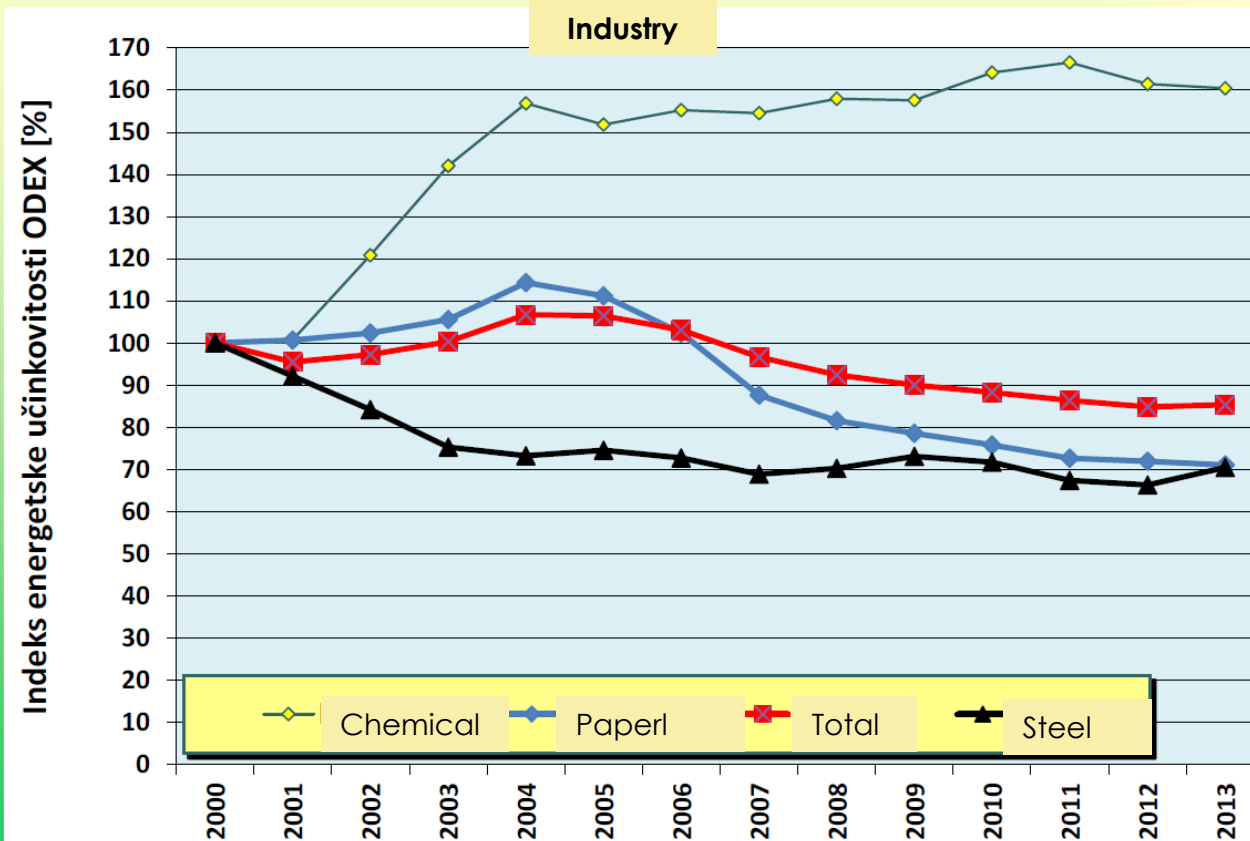
**CHALLENGE:** instead of **paying** for disposal of waste sludge from paper mills we should change it into higher value added products and **earn** with them

# 4. ENERGY



IJS - CEU

## Industrial energy efficiency index (ODEX) in Slovenia



The paper industry ranks among the **most energy efficient** industries in Slovenia, next to the steel industry

Source: Jožef Stefan Institute, 2015

- Reduction in consumption of energy products
- Increase in energy efficiency

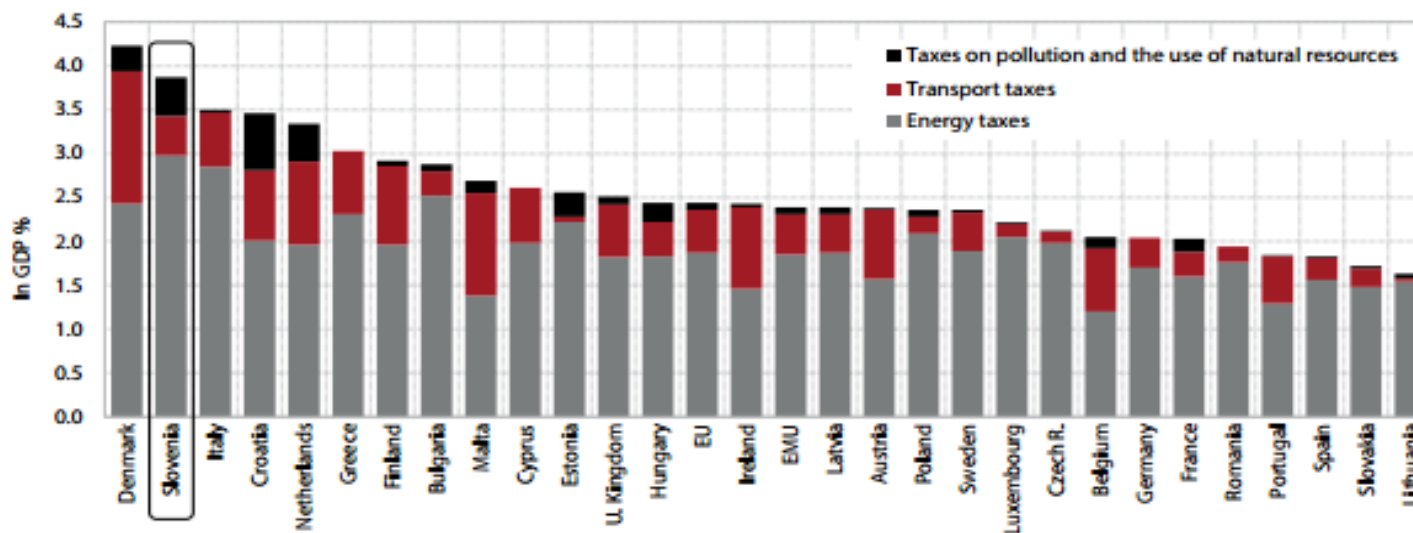
# SLOVENIA HOLDS TOP POSITION ON ENERGY TAX SCALE

Table: Share of revenue from environmental taxes in GDP, Slovenia, in %

|          | 2000 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|----------|------|------|------|------|------|------|------|------|------|------|
| Slovenia | 2.9  | 3.2  | 3.0  | 3.0  | 3.0  | 3.5  | 3.6  | 3.4  | 3.7  | 3.9  |
| EU       | N/A  | 2.5  | 2.4  | 2.4  | 2.3  | 2.4  | 2.4  | 2.4  | 2.4  | 2.4  |

Source: Eurostat Portal Page – Environment and Energy.

Figure: Revenue from environmental taxes, Slovenia and the EU, 2013



Source: Eurostat Portal Page – Environment and Energy.

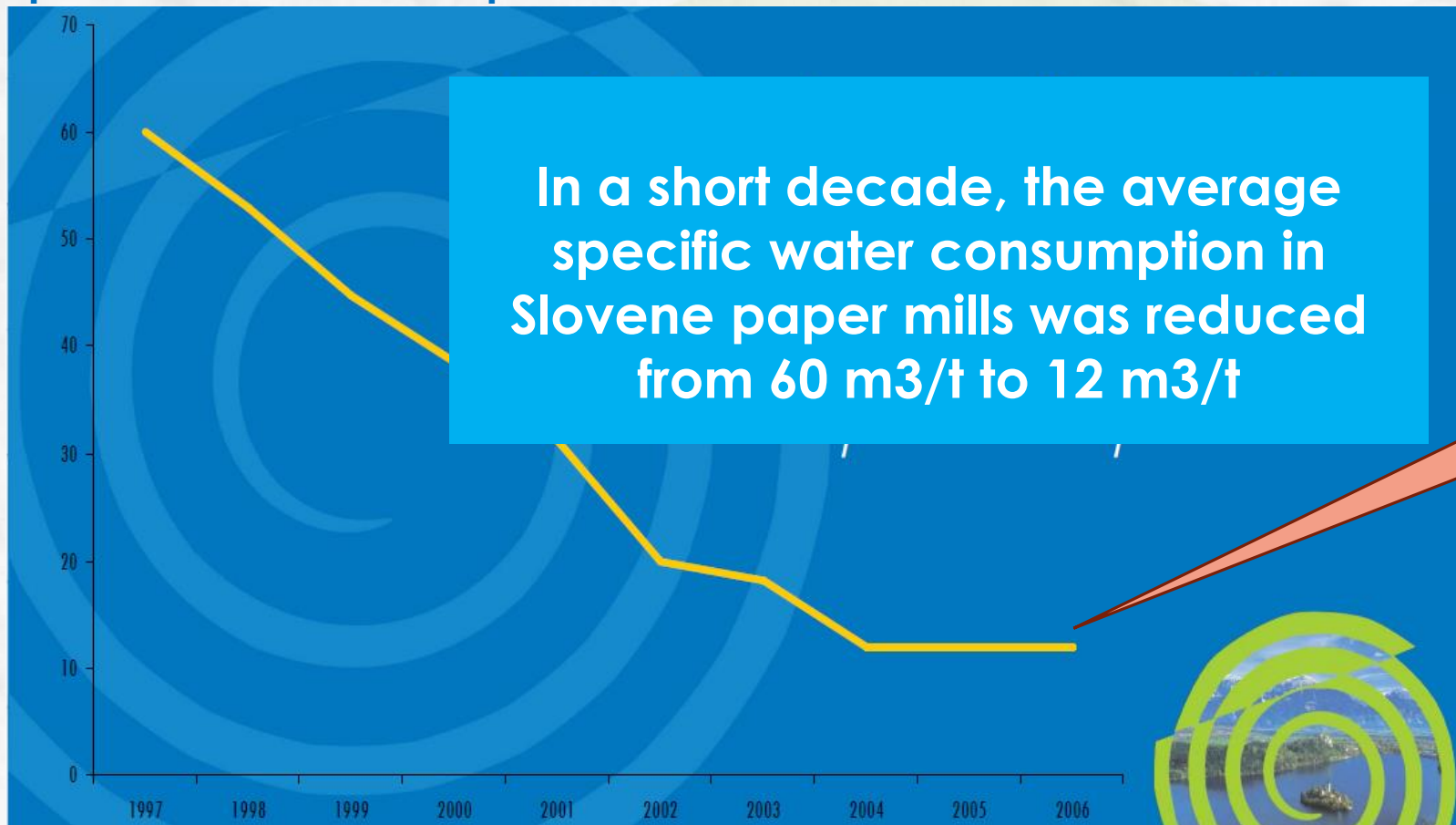
<sup>1</sup> Growth in *transport taxes* reflected an increase in annual road user charges and an additional tax on vehicles with more powerful engines introduced in the middle of 2012. Growth in *taxes on pollution and the use of natural resources* was underpinned by the CO2 tax on motor fuels, which was also introduced in the middle of 2012.

CHALLENGE:  
 Comparable energy costs to those paid by the competition in other member states

EUE  
 RES  
 ETS  
 EXCISE DUTIES  
 CO<sub>2</sub>?

# 5. USE AND CONSUMPTION OF WATER

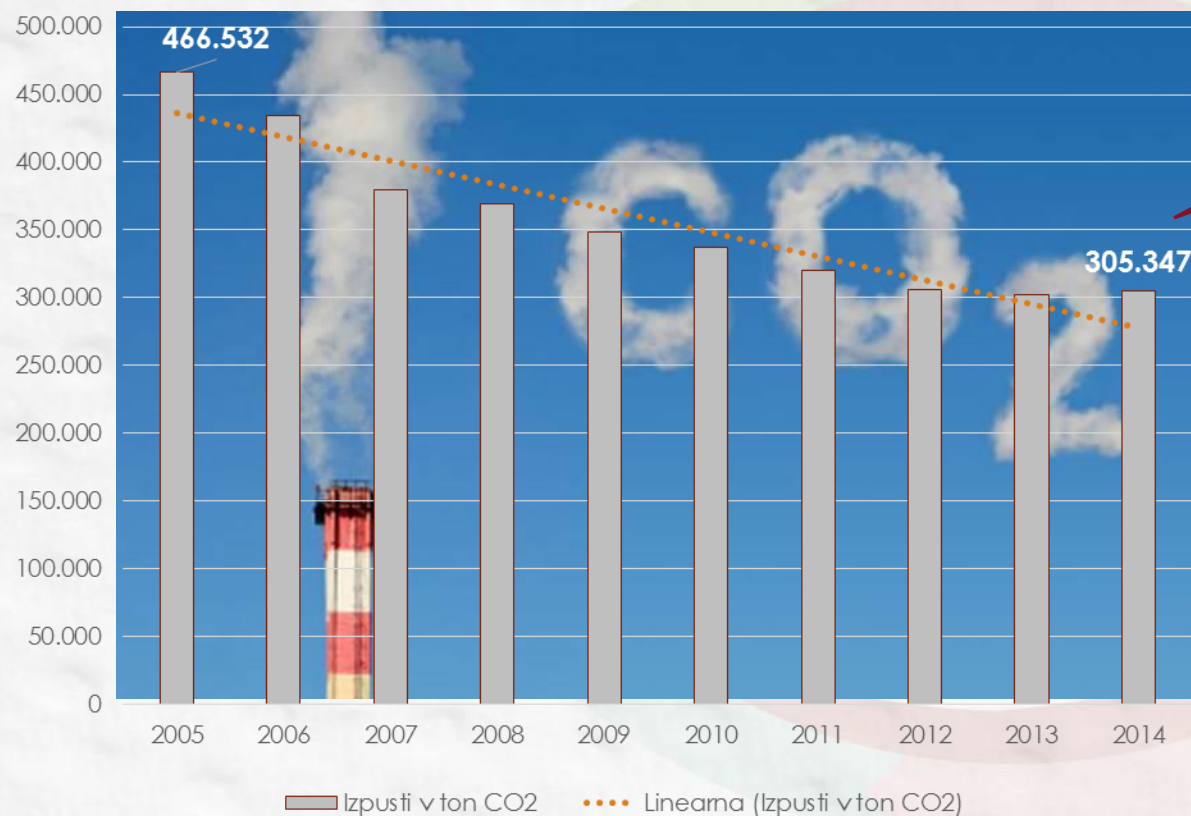
## Specific water consumption



93% of process water is treated and used many times in paper mills, and in some cases it is even cleaner when returned to nature in accordance with the European environmental standards

CHALLENGE:  
Environmental legislation  
New technologies?

# 6. GREENHOUSE GAS EMISSIONS

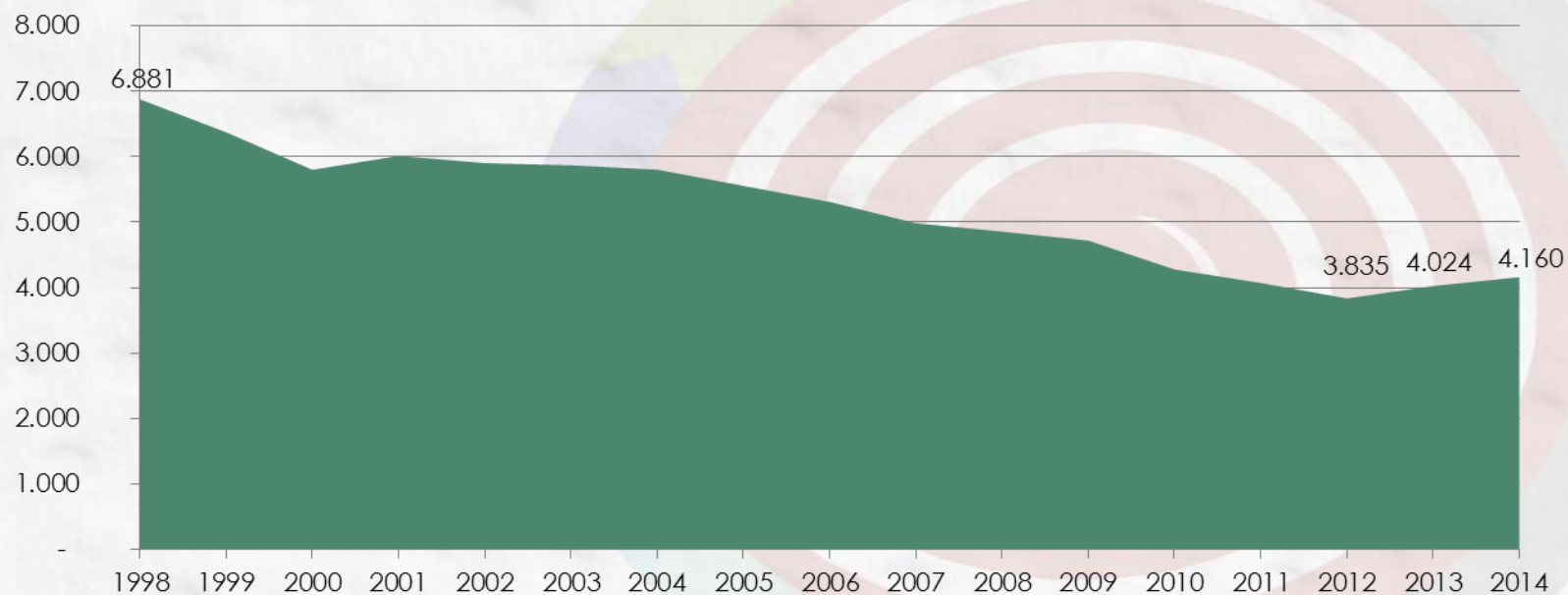


In 10 years, the Slovene paper industry reduced CO2 emissions by 34.6%

**CHALLENGE:**  
New ETS after 2020  
EU environmental goals >>> - 43% CO2 by 2030  
Where are the limits of current technology??  
**INVESTMENTS**

# 7. RELIABLE EMPLOYER?

## Number of employees in the paper and paper converting industry



**KOCPI**  
Kompetenčni center za razvoj  
kadro v papirni industriji

**CHALLENGES:**  
HOW TO PROCEED?  
Where to get personnel?  
How to provide appropriate  
training?  
...multifunctional skills

**TAX ON LABOUR**



The paper industry has environmental attributes, but that is not enough ....

- More active support from the state is required
- Investments, new knowledge
- Close cooperation among companies??



*Thank you for your attention*