

CO₂ EMISSION REDUCTION: AN EUROPEAN APPROACH FOR ROMANIAN TANNERIES

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The paper presents the objectives and results of the project IEE/11/949/SI2 615946 IND-ECO developed under the Intelligent Energy Europe - Executive Agency for Competitiveness and Innovation EACI umbrella, by a consortium of 16 participants with reference to Romanian tanneries in order to obtain a CO₂ emission reduction.

Keywords: tannery, energy efficiency, investment direction.

CO₂ EMISSIONS

Industrial activity, transports and also daily existence generate CO₂ directly or indirectly, by using energy, fuels or by its emanation, as a result of the technological process. CO₂ is the main generator of greenhouse gas, producing climate changes at planetary scale. It is estimated that, since the beginning of the industrial revolution, mankind has produced and pumped in the atmosphere 30% more carbon dioxide than there was naturally on Earth 200 years ago.

The Kyoto Protocol of December 1997 provides reduction of polluting emissions at global scale. In October 2004, EU state members, together with Romania, Bulgaria and the Republic of Moldova ratified the Kyoto agreement.

IND-ECO PROJECT

According to EU action plan of 2011 regarding energy saving, under Intelligent Energy Agency for Competitiveness and Innovation - EACI, a number of 16 entities representing European and national owners' associations from the footwear and leather industries, producers, research institutes from Italy, UK, Spain, Portugal, Romania and Bulgaria formed a consortium which started the project Industry Alliance for reducing energy consumption and CO₂ emission IND-ECO (2012-2015) with the following main targets:

- to obtain initial primary energy savings by its end;
- to create favourable conditions for much more investments by 2020.

SPECIFIC OBJECTIVES OF THE PROJECT

The objectives are as follows:

- Inventory of energy consumption. Development of benchmarks at the levels of footwear and leather industries.
- Verification of energy consumption. Identifying vulnerable areas requiring improvements.
- Identifying providers of financial solutions - bank credits for energy investments.
- Developing a database with technical and technological solutions for reducing energy consumption.

- Drawing up investment plans.
- Dissemination of results and access to databases created in the project.

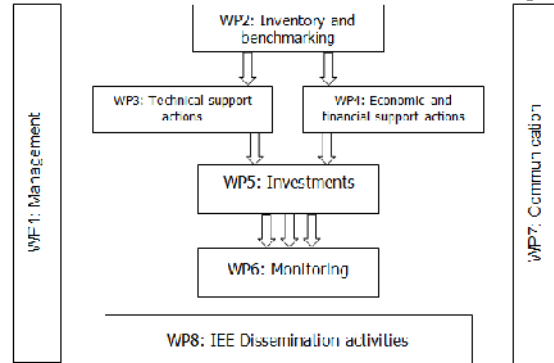


Figure 1. The structure of the IND-ECO work programme (WP)

CO₂ EMISSION REDUCTION APPROACH

The algorithm of CO₂ emission reduction is outlined in the following draft:

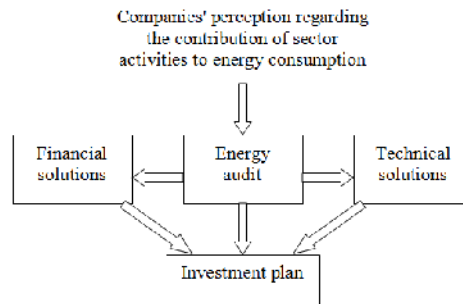


Figure 2. Algorithm of CO₂ emission reduction

EU TANNING SECTOR BENCHMARK

In the project a number of 85 inventories were collected from six EU countries regarding energy consumption. Tanneries surveyed used conventional, manual, semi-automatic, as well as in certain cases fully automated equipment and installations as demonstrated by the analysis of the relative data collected with the tool inventories. The output products regarding animal origin are mainly focused on: cattle, sheep, goat.

Main product groups are as follows:

Products sold by m²:

Finished leathers	Semi-processed leathers
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Products sold by kg:

Finished (full veg tanned leathers)	Semi-processed leathers
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Table 1. Energy consumption and CO₂ equivalent resulted mainly from start population

Input processing Material subgroups	Energy consumption Kwh/m ² average	CO ₂ equivalent Kg/m ² average
Finished leathers sold by m ²		
Raw to finished	7.3	2.9
Semi-processed to finished	7.0	2.7
Products sold by kg		
Full veg tanned starting from raw	1.86	0.79
Semi-processed pelts	0.65	0.46

TANNERIES. ACTION DIRECTIONS

For CO₂ reductions, based on project evaluation, the main directions for action seem to be the following:

- systems and lighting sources with economic consumption;
- checking electrical engines and replacement of underperforming ones;
- building insulation. Seals of access areas to reduce energy losses;
- extension of drying system using residual heat from working spaces;
- preparation of water process in centralized system and temperature steps;
- rehabilitation of distribution system for compressed air;
- checking and rehabilitation of steam boilers.

COMMUNICATION / DISSEMINATION

Communication / dissemination was mainly directed to: website set-up, flyers and other documents containing the basic information in a format that provides instructions at first sight.

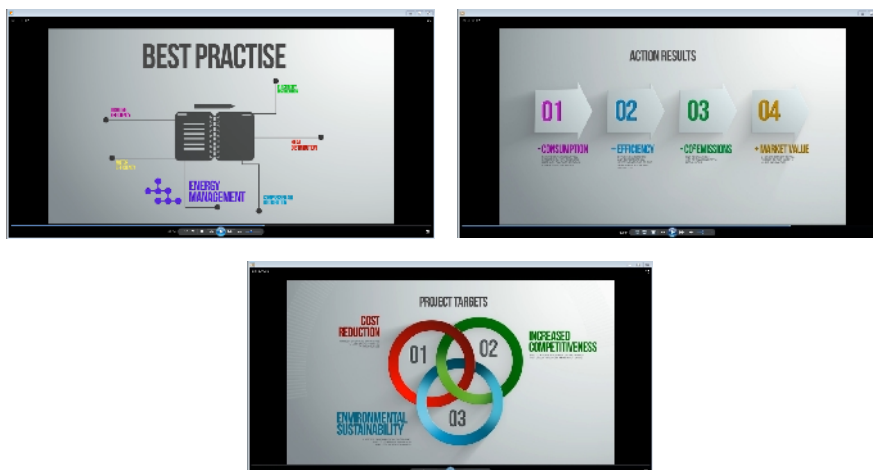


Figure 3. Communication components

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Figure 4. Dissemination material: a) newsletter, b) website (<http://www.ind-ecoefficiency.eu>), c) flyer, d) film

CONCLUSIONS

CO₂ emission reduction on technological processes, but not only, is a priority at planetary scale.

For this reason, the paper, after defining the notion of CO₂ emission, presents the European project IND-ECO and also its objectives that respond to announced desideratum in the leather production field.

The benchmark was conducted based on a number of 85 tanneries inventories at EU level. The directions of action to achieve goals as well as communication and dissemination activities of project results are inventoried.

REFERENCES

***, <http://www.ind-ecoefficiency.eu/index.php>