

- ORAL PRESENTATION -

**ROMANIAN-NORWEGIAN COOPERATION FOR IMPROVEMENT
OF ROMANIAN SME'S ENVIRONMENTAL PERFORMANCE**

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ABSTRACT

A special program of the Norwegian Government, namely INNOVATION NORWAY, tries to transfer know-how and create cooperation and partnerships in various domains (social assistance, resource valuation, environmental protection, industrial competence, etc.). The paper details the results obtained in a specific project dedicated to Environmental Solutions Development (ESD). The Project joined SINTEF-Trondheim, INCD-ECOIND Bucharest and four SME from around Romania: ProAirClean – Timisoara, RITMIC – Suceava, DIREX-Bucharest, PRODINCOM – Suceava. The Project included support of the four partners to acquire state of the art equipment needed in their activities. ProAirClean Timisoara acquired a GC-MS system enabling monitoring of PCBs, DIREX-Bucharest bought a state-of-the-art car painting workshop together with other smaller equipment (lifting, oil-extracting, wheel removal), RITMIC-Suceava bought a greiffer for collecting wooden waste from remote forested areas, a splitter for large wooden logs, a press for plastic waste and a station for domestic waste sorting in view of recycling, PRODINCOM acquired a state of art heat recovery incinerator for animal waste. SINTEF and INCD-ECOIND provided assistance to all SME partners: help in identifying and deciding upon the correct equipment needed chemical analysis of water, ash generated, material and energy balance derivations, economic, social and environmental benefits assessment, etc. INCD-ECOIND and SINTEF assisted the partners in aligning their strategies to the sustainability paradigm and recommended future actions to keep the momentum.

Keywords: Environmental solutions, sustainable development, Norwegian-Romanian co-operation, resources from waste

FOREWORD

In the mainframe of the Norwegian Programme managed by the Innovation Norway Agency and directed to Romania and Bulgaria, a new Project started in late 2009, named Environmental Solutions Development.

The Project reunited:

- SINTEF – the Norwegian partner
- INCD-ECOIND – the Romanian partner

- Four Romanian SMEs as focal points:
 - o ProAirClean – Timisoara - which has an incinerator for hazardous waste and intended to expand its activity and safely process PCB residues from the western part of Romania
 - o SC RITMIC – Suceava that has developed several area of business: briquetting sawdust, SPA, collecting, sorting and recycling domestic (municipal) waste
 - o SC DIREX-Bucharest, a SME that has a car-service facility
 - o PRODINCOM – Suceava, a meat processing company.

The project overall goal is to deliver customized state-of-the-art Norwegian and Romanian environmental R&D based technologies, specifically aiming at improving the environmental footprint at the focal points.

More specifically, the ESD Project intentions were to:

- 1 Optimize use of natural resources
- 2 Offer a cleaner or less wasteful alternative to traditional products and services
- 3 Develop innovative or novel technology or application, where possible
- 4 Add economic value compared to traditional alternatives

HOW THE ESD PROJECT HELPED ROMANIAN SMES

An initial assessment of the technologies existing at the four Romanian partners was carried out in the first phase of the Project. Norwegian and Romanian expertise was then transferred to local people in order to help them choose the right development direction that would meet the objectives of the ESD framework. Details of the equipment bought via the ESD Project by the 4 Romanian partners are given below:

- *ProAirClean Timisoara* acquired a *GC-MS system* enabling monitoring of PCBs. ProAirClean example could be seen from economic side as providing the best technology to minimise side effects and reduce cost from the Life Cycle Assessment perspective of PCB containing oils.
- *SC DIREX-Bucharest* bought a *state-of-the-art car painting workshop*, with high environmental efficiency together with *other smaller equipment* (a lifting, equipment for cars, an oil-extracting device that enables safe oil removal from car engines and collection of this exhaust lubricant in view of recycling, a wheel removal press). DIREX is an example of addressing environmental issues in the proper time and in proper way. At the stage of preparing new investment environmental issues were taken in to account with the same importance as business aspects of the investment. DIREX is also an example how and when environment regulations and condition should be address to avoid potential problems. In DIREX case new investment is based on business oriented perspective and will bring income with the smallest possible impact on the environment.

- SC RITMIC-Suceava bought a *greiffer* for collecting wooden waste form remote forested areas, a *splitter* for large wooden logs, a *baler* for plastic waste and a *station for domestic waste sorting* in view of recycling. RITMIC is an example of making business on environmental protection. The business concept is built on solving environmental problems: wooden waste, waste management, energy consumption. Using simple methods and investment, RITMIC was able to increase and cover new, profitable business areas. At the same time the other parties which benefit from RITMIC activities was local society, local authorities and the environment itself. RITMIC example shows in a very straight and convincing manner how to earn money on environmental protection.
- SC PRODINCOM acquired a *state-of-the-art incinerator* helping get rid of animal waste, in the same time recovering and using the thermal energy generated (as hot water used in the technology or to heat the premises). Prodincom is an example of what could happen if environmental issues are not address in proper way. Lack of waste management system in the company leads Prodincom to the situation of threat of closing down the production. Thanks good cooperation with local authorities and environmental inspectorate, the solution was found. What more new solution for incinerate waste brings also are economic effects of savings on heating process water. Prodincom from economic perspective is a case of how much business could be affected of environmental issues, if company is not treating environment and environmental regulations in proper way. A situation of the benefits created at PRODINCOM is illustrated in the following table.

Table 1. The PRODINCOM case study

Characteristics	Details
Incinerator capacity	1000 kg/day
Heat recovery parameters	Hot water: 60°C; 0.5 m ³ /hour. All needs for hot water in the PRODINCOM premises are fully covered
Ash	Potential fertilizer
Economic Benefits	150-200 lei /ton for waste transport to a different incinerator, saved; 1000 lei/ton for incinerating the waste at other location, saved Cost of LPG saved =15000 Lei/an
Environmental Benefits	No waste to landfill! 15 tons CO ₂ less emitted from LPG replaced
Social Benefits	3 new jobs

SOCIAL ASPECTS

The most important impact of DIREX case are new jobs in the new facility, in a geographic area (a remote edge of Bucharest) where the services offered are scarce and of poorer quality. In this sense, DIREX sets new business standards for that part of Romania.

RITMIC impact on social aspects is more complex. Some calculations connected to the valuation of municipal waste by RITMIC are presented below.

Table 2. The RITMIC waste management case study

Collecting waste from 6 communes = 13 villages	2000 m ³ /month at 150kg/m ³ = 300 tons/month = 3600 tons/yr
Local Administration manage to sort 15% of domestic waste generated and sent to landfill	45 tons/month = 300 m ³ /month = 540 t/yr = 3600 m ³ /yr
Otherwise, pays landfill taxes	40 Lei/m ³ unsorted = 12000 lei/month = 144000 Lei/yr = 36000 Euro/yr
If 15% sorted, the Administration earns	min 400 lei/ton sorted = 216000 Lei/yr – 54000 Euro/yr
Net gain for Local Administration	144000 Lei taxes saved + 216000 Lei for selling sorted waste = 360000 Lei/yr (87600 EURO/yr)
The BALER, adds value to sorted waste	540 tons/yr x (1200 Lei/ton – 400 Lei/ton) = 432000 Lei/yr (104000 EURO/yr)
The PET SHREDDER adds extra value	540t/yr x 600Euro/ton x 4.15 Lei/Euro = 1344600 Lei/yr = 324000 EURO/yr
Economic Benefits	87600 EURO/yr for Communities 324000 EURO for the Waste Collecting Company
Environmental Benefits	540 tons diverted from landfill, reinserted in the economic value chain
Social Benefits	37 new jobs

New jobs are very important for the local society as well as increase of work safety and better working conditions. In the period June 2010 – Sep 2011, 37 new jobs were created at RITMIC. RITMIC currently achieves a 35% recycling rate for municipal waste from 12 communes in the Suceava County. This should be compared to 1% recycling rate at Romania level. Other aspects is environmental education through normal company activities like: recycling implementation, jobs in waste management.

ProAirClean activities social impacts are connected with close cooperation with science. New technology implementation gives new opportunities for researchers to develop new and better understand processes.

In Prodincom case the most important social impact was find the way to solve the problem and to continue production. Three new jobs were created. The employment in the company is relatively high for Suceava region and is important for the local society.

As for the services provided by SINTEF and INCD-ECOIND to the 4 focal points, they are summarized below:

- Helping local managers to rationally evaluate the state of their technologies
- Providing training and support for implementing advanced equipment in their current business environment
- Supporting local managers in the decision-making process
- Developing future business strategy in a sustainable manner.
- Evaluating and monitoring the business progress of the companies in a coherent way that enabled comparison among the 4 focal points and eased the reporting activities connected to the ESD Project.

CONCLUSION

The ESD Project illustrates the benefits of scientific and technological cooperation between 2 states, for sorting out specific problems confronting local business.

It may be seen as a model for future business approach, for integrated environmental and social aspects in companies' strategy.

REFERENCES

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