



ECOTRAIN

CATALOGUE

OF BEST PRACTICE EXAMPLES



ABOUT THE PROJECT

The project ECOTRAIN aims to provide teachers, trainers and educators within the area of VET education in technical professional fields with continuing education in the area of environment and sustainability.

The project is implemented with three organisations from Austria (ÖJAB), Bulgaria (DRUMEV), and Greece (AKMI).

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**ECO|TRAIN**

INTRODUCTION

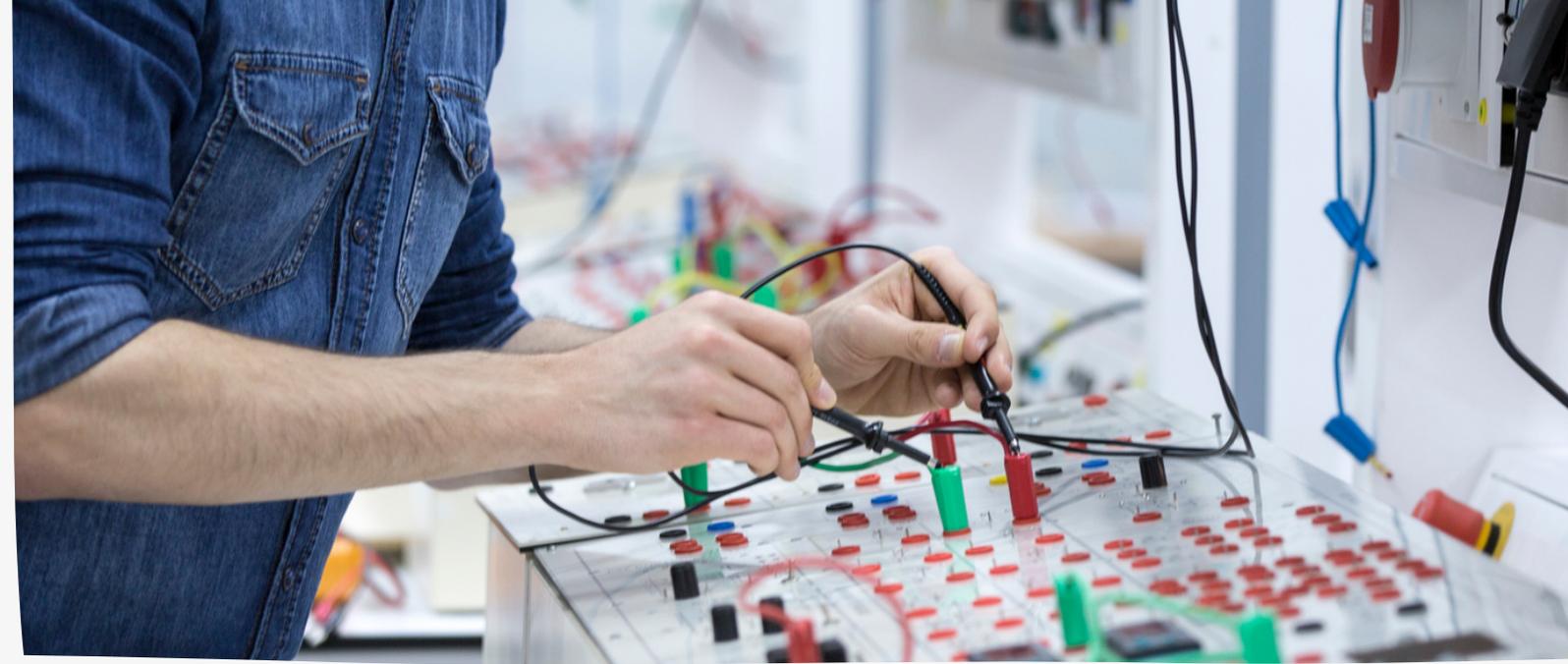
In a rapidly changing world, it is more important than ever to equip individuals with the skills and knowledge they need to succeed in their chosen careers. Vocational education and training (VET) centres play a critical role in providing individuals with the training and experience they need to build successful careers and contribute to society. However, the impact of VET centres on the environment should not be ignored.

This best practice examples catalogue was developed within the Erasmus+ project ECOTRAIN and is dedicated to promoting green practices in VET centres. It showcases a range of examples of successful, sustainable initiatives that VET centres in the partner countries Austria, Bulgaria and Greece have implemented to reduce their environmental impact and promote sustainability in vocational education.

From reducing waste and energy consumption to incorporating environmentally responsible teaching practices and promoting sustainability awareness among students, this catalogue provides concrete examples of best practices that can be adopted and adapted by VET centres to support the goals of sustainability and environmental responsibility.

We hope that this catalogue will serve as a valuable resource for VET centre administrators, instructors, and students alike.





ELECTRICAL ENGINEERING

The electrical engineering industry has a critical role to play in transitioning to a low-carbon future. To achieve this, the industry has begun incorporating sustainable practices such as energy-efficient design, renewable energy, and sustainable manufacturing. Incorporating these green practices into vocational education and training for electrical engineering can prepare students for sustainable careers, helping to build a more environmentally responsible industry.

Production of Renewable Energy through Wind

There is a need to abide by the European Union's Directive regarding the consumption of renewable resources, as well as by the National Action Plan, in order to continue satisfying the existing energy needs beyond 2020. Wind turbines are a sustainable energy source as they do not produce greenhouse gas emissions or contribute to air pollution, aiding in the fight against climate change. They help diversify the energy mix, reducing dependence on finite fossil fuels and enhancing energy security. Additionally, wind power creates local job opportunities and supports economic growth in the renewable energy sector.

Organisation/Institution and Location

Elpedison, Greece

Description of the practice

Electric power is generated through the use of wind turbines. The wind power is transformed into electric one. The use of blades produces electricity.

Impact of the practice

- Renewable & sustainable energy source
 - Environmentally friendly (zero emissions)
 - Cost-effective in the long run
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External Organisations/Institutions supporting the implementation of this practice

Local/National stakeholders for private, commercial and industrial uses

Battery Disposal

Batteries are considered hazardous waste: they contain substances such as sulphuric acid, mercury, nickel, cadmium, or lead, as well as other dangerous materials that can give batteries a variety of hazardous properties. These chemicals can leak into groundwater or harm ecosystems.

Another reason batteries should be recycled is for safety. If not disposed of properly, batteries can overheat and start a fire.

Organisation/Institution and Location

Bildungscampus Elektro Wien (Austria)

Description of the practice

Batteries are collected in designated containers throughout the week. It is not allowed to have them disposed along other (regular) waste.

Every week, the city's waste disposal company collects the hazardous waste which is later on recycled in a safe way.

The partially hazardous material is disposed or, when possible, reused. Besides the hazardous materials, batteries also contain valuable materials such as zinc, manganese and nickel, that might be recycled and reused by external recycling companies.

Impact of the practice

- No hazardous waste in workshops and the environment
- Reduced waste

External Organisations/Institutions supporting the implementation of this practice

MA48 - The City of Vienna's Waste Management Department

Copper Wire Stripping

Copper wire stripping can benefit workshops by providing a potential source of income from the recovery and sale of valuable copper, promoting sustainability and reducing waste, and conserving resources by extending the life of the material. Incorporating copper wire stripping into workshop practices can result in a more sustainable and financially responsible approach to dealing with copper wires, benefiting both the environment and the workshop's bottom line.

Organisation/Institution and Location

Bildungscampus Elektro Wien (Austria)

Description of the practice

Residue cables are collected after use in the workshops. After a certain amount of cables is collected, the inner copper wires are stripped and extracted.

The stripped wires are then brought to junkyards, where their value is estimated (by amount, weight, etc.) and then paid for.

Impact of the practice

With this practice, the waste of cables is reduced in the workshops. The copper wires are recycled by external companies and the workshops get part of the costs back for the residue material.

External Organisations/Institutions supporting the implementation of this practice

Local junkyards

Electronic Devices Recycling

Electronic devices often contain hazardous materials that can be harmful to the environment and human health if not disposed of properly. Recycling electronic devices in workshops can help prevent these toxic materials from polluting the environment, and provide a potential source of income through the recovery and sale of valuable resources. Additionally, recycling electronic devices in workshops can help conserve energy, reduce greenhouse gas emissions, and protect personal data from privacy breaches, promoting environmental sustainability and responsible business practices.

Organisation/Institution and Location

Bildungscampus Elektro Wien (Austria)

Description of the practice

In Austria it is not allowed to dispose electronic devices in residual waste and there are designated places to do it properly.

The workshops collect the non-functioning devices and bring them to the collecting spots, where they are disassembled to categorise the parts.

Materials such as silicon, plastic and chips are then reused and/or recycled, or sold by the external company.

Impact of the practice

- Clean workshops
- no waste in workshop and environment e pollution and local air contamination

External Organisations/Institutions supporting the implementation of this practice

MA48 - The City of Vienna's Waste Management Department

Metal Reuse

Metal is reused in workshops to conserve resources, provide financial benefits, promote environmental sustainability, and take advantage of the material's versatility. By reusing metal, workshops can reduce the amount of waste that goes to landfills, lower greenhouse gas emissions and energy consumption, and create new products without requiring additional resources. Ultimately, reusing metal in workshops is a sustainable and financially responsible approach that benefits both the workshop and the environment.

Organisation/Institution and Location

Bildungscampus Elektro Wien (Austria)

Description of the practice

After using big pieces of metal for certain projects, many smaller parts remain unused as they are not suitable for the bigger projects anymore. Disposing them to the external company would be the easiest option. However, the workshops use those smaller pieces for smaller projects.

This way, the material requirements, but also the costs are significantly reduced.

Impact of the practice

- Reduced waste
- Reduced costs
- Cleaner environment and workshop

External Organisations/Institutions supporting the implementation of this practice

Cable Reuse

Cables are often reused in workshops because they are typically made of valuable metals, such as copper and aluminium, that can be recovered and reused. Recycling cables in workshops can help conserve natural resources and reduce the amount of waste sent to landfills. Additionally, reusing cables in workshops can provide financial benefits by reducing the need to purchase new materials and creating a potential source of income through the sale of recovered metals. Finally, reusing cables in workshops supports environmental sustainability by reducing the need for new metal production, which in turn reduces greenhouse gas emissions and energy consumption. Overall, reusing cables in workshops is a sustainable and cost-effective way to deal with cable waste, while also promoting environmental responsibility.

Organisation/Institution and Location

Bildungscampus Elektro Wien (Austria)

Description of the practice

Leftover or slightly damaged cable pieces from projects (if not shorter than ca 10cm) are reused in the workshops for other, smaller projects.
Instead of disposing cables immediately or stripping the copper, they are used within the trainings.

NOTE: such leftover, damaged pieces should be used only in training, i.e. workshops, and not in real-life situations!

Impact of the practice

- Reduced waste
- Reduced material costs for the workshop

External Organisations/Institutions supporting the implementation of this practice /

Metal Separation – Shavings and Chips

Metal shavings and chips are separated in workshops to facilitate recycling and reuse of the metal. By separating the shavings and chips, the metal can be processed more efficiently, ensuring that as much of the metal as possible can be recovered and reused. Separating the shavings and chips also makes it easier to handle and transport the metal waste, reducing the risk of injury or damage during recycling. In addition, separating the shavings and chips can help reduce waste and support environmental sustainability by allowing the metal to be reused in new products rather than being discarded as scrap. Overall, separating metal shavings and chips is an important step in ensuring the efficient and sustainable use of metal resources in workshops.

Organisation/Institution and Location

Bildungscampus Elektro Wien (Austria)

Description of the practice

Metal shavings/chips are separated and disposed of by type (steel, aluminium, copper) in separate containers. The containers are then picked up by an external company, which modifies the metals for further use. They are usually melted by these companies, which then create new material of them.

Impact of the practice

- Reduced metal waste
- Clean environment
- Recycling
- Reduced costs

External Organisations/Institutions supporting the implementation of this practice

Local/regional melting companies

General Waste Separation

General waste management is important for vocational education workshops because it ensures a clean and safe working environment, reduces the environmental impact of the workshop, helps to comply with regulations, and provides valuable education and training on environmental responsibility and safety.

Organisation/Institution and Location

Bildungscampus Elektro Wien (Austria)

Description of the practice

Everyday waste (paper, plastic, residual) are collected in designated disposal bins. The MA48, external disposal company, collects the waste and transports it to respective departments for further processing.

FUN FACT: In Vienna, if e.g. a plastic bottle is disposed incorrectly (in the paper bin), the disposal company will not collect the said item. They leave the incorrectly disposed waste for the workshop to do it again, which helps to raise awareness among the workshop employees and trainees on the importance of proper waste disposal and teaches them how to do it right.

Impact of the practice

- Reduced waste
- Cleaner environment
- Recycled materials (locally)

External Organisations/Institutions supporting the implementation of this practice

MA48 - The City of Vienna's Waste Management Department



GLASS PRODUCTION

Glass production is an energy-intensive process that has traditionally been associated with high greenhouse gas emissions. However, in recent years, there has been a growing emphasis on incorporating sustainable practices in the glass production industry. This chapter outlines sustainable practices in VET centres contributing to not only the reduction of the environmental impact of glass production but also offer economic benefits through reduced energy costs and improved resource efficiency.

Glass Disposal

Glass disposal is important for workshops for several reasons. Firstly, glass is a non-biodegradable material that can take hundreds of years to decompose in landfills, leading to space constraints and environmental pollution. Proper disposal of glass waste in workshops can help reduce the amount of waste that ends up in landfills, thereby promoting environmental sustainability. Secondly, glass disposal can help prevent accidents and injuries in workshops by reducing the risk of broken glass causing harm to workers. Finally, glass waste can be recycled and reused, reducing the need for new glass production and conserving natural resources. Proper disposal of glass waste in workshops is, therefore, an important step in promoting environmental responsibility, workplace safety, and resource conservation.

Organisation/Institution and Location

**BPI of ÖJAB
VET Institute of ÖJAB (Austria)**

Description of the practice

After all reusable glass pieces have been used, the glass is disposed in designated glass containers. External companies, such as glass/melting companies, collect the glass and send it to further processing. The glass is separated by colour, type etc. and is then melted, after which new glass is produced and repurposed.

Impact of the practice

- Reduced waste
- Cleaner environment and workshop

External Organisations/Institutions supporting the implementation of this practice

Local/regional melting companies

Glass Reuse

Glass reuse is important for workshops because it promotes environmental sustainability and resource conservation. Reusing glass in workshops reduces the need for new glass production, conserves natural resources, and reduces the amount of waste that ends up in landfills. In addition, reusing glass can also save money for the workshop by reducing the need to purchase new glass products. Overall, glass reuse is an important step in promoting environmental responsibility and efficient resource management in workshops.

Organisation/Institution and Location

**BPI of ÖJAB
VET Institute of ÖJAB (Austria)**

Description of the practice

After using big pieces of glass for certain projects, many smaller parts remain unused as they are not suitable for the bigger projects anymore. Disposing them via the external company would be the easiest option. However, the workshops use those smaller pieces for smaller projects (e.g. mosaics and fusing). Also, ornament/patterned glass leftovers can be cut into pieces and be written over. It can then be used to learn about different types of glass.

This way, the material requirements, but also the costs are significantly reduced.

Impact of the practice

- Reduced waste
- Reduced costs of raw materials
- Cleaner environment and workshop

External Organisations/Institutions supporting the implementation of this practice

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ROAD TRANSPORT

The road transport industry is a significant contributor to greenhouse gas emissions and air pollution. To mitigate its environmental impact, the industry is adopting sustainable practices such as alternative fuels, electric vehicles, and eco-driving techniques. Integrating these practices into vocational education and training for road transport can prepare students for sustainable careers and contribute to building a more environmentally responsible industry.

Driving Skills

Transport managers expressed acute needs for training leading towards fuel-efficient manner of driving and preserving the environment through decreasing pollutions and smart use of resources. Improved driving skills raising efficiency of transportation in general and saving fleet fuel or insurance costs are vital for future drivers and other road machine operators. The views gathered among company experts were in line with the understanding of the teachers related to the main benefits of eco-driver training. The participants enlisted advantages such as: reducing fuel costs across the company, lowering expenses on fuel costs and spare parts, building safe and eco-friendly driving behaviours, significant contribution to avoiding incidents and vehicle damages.

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|---|---|
| Organisation/Institution and Location | <ul style="list-style-type: none"> ○ Petko Angelov Ltd. ○ PIMK Ltd. ○ AIT International Transport Ltd. ○ Union of International Haulers (Bulgaria) |
| Description of the practice | <p>The eco-driving method presumes combination of techniques in various fields:</p> <ul style="list-style-type: none"> ○ avoiding harsh braking ○ accelerating gently ○ splining the speed in the entire journey ○ dealing properly with gears ○ avoid idling ○ shifting upon respective revs |
| Impact of the practice | <ul style="list-style-type: none"> ○ Reduced fuel consumption and ameliorated climate protection ○ Reduced fuel consumption up to 25% in trucks and 15& 15% in road work machines. (additional 10% in long term) ○ Preserved local environment and health ○ Reduced noise pollution and local air contamination |
| External Organisations/Institutions supporting the implementation of this practice | <p>Executive Agency of Road Transport under the Ministry of Transport and Communications Plovdiv Municipality – South District</p> |

Organising Trips

Organising trips in a sustainable way is important for the sustainability of road transport as it helps to reduce emissions, optimize resource use, drive innovation, and save costs. This can benefit both individuals and businesses while also promoting environmental sustainability.

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|---|---|
| Organisation/Institution and Location | <ul style="list-style-type: none"> ○ Petko Angelov Ltd. ○ PIMK Ltd. ○ AIT International Transport Ltd. ○ Union of International Haulers (Bulgaria) |
| Description of the practice | <p>Reducing excess weight, removing unnecessary drag items, adjusting tyre pressure, warming up the engine.</p> |
| Impact of the practice | <ul style="list-style-type: none"> ○ Reduced fuel consumption and ameliorated climate protection ○ Reduced fuel consumption up to 25% in trucks and 15& 15% in road work machines. (additional 10% in long term) ○ Preserved local environment and health ○ Reduced noise pollution and local air contamination |
| External Organisations/Institutions supporting the implementation of this practice | <ul style="list-style-type: none"> ○ Executive Agency of Road Transport under the Ministry of Transport and Communications ○ Plovdiv Municipality – South District |

Planning the Route

Transport managers expressed acute needs for training leading towards fuel-efficient manner of driving and preserving the environment through decreasing pollutions and smart use of resources. Improved driving skills raising efficiency of transportation in general and saving fleet fuel or insurance costs are vital for future drivers and other road machine operators. The views gathered among company experts were in line with the understanding of the teachers related to the main benefits of eco-driver training. The participants enlisted advantages such as: reducing fuel costs across the company, lowering expenses on fuel costs and spare parts, building safe and eco-friendly driving behaviours, significant contribution to avoiding incidents and vehicle damages.

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|---|---|
| Organisation/Institution and Location | <ul style="list-style-type: none"> ○ Petko Angelov Ltd. ○ PIMK Ltd. ○ AIT International Transport Ltd. ○ Union of International Haulers (Bulgaria) |
| Description of the practice | Combining and optimising the trips, identifying deviations and road works, re-routing bottle-necks and traffic jams. |
| Impact of the practice | <ul style="list-style-type: none"> ○ Reduced fuel consumption and ameliorated climate protection ○ Reduced fuel consumption up to 25% in trucks and 15& 15% in road work machines. (additional 10% in long term) ○ Preserved local environment and health ○ Reduced noise pollution and local air contamination |
| External Organisations/Institutions supporting the implementation of this practice | <ul style="list-style-type: none"> ○ Executive Agency of Road Transport under the Ministry of Transport and Communications ○ Plovdiv Municipality – South District |

Managing Cabin Comfort

Transport managers expressed acute needs for training leading towards fuel-efficient manner of driving and preserving the environment through decreasing pollutions and smart use of resources. Improved driving skills raising efficiency of transportation in general and saving fleet fuel or insurance costs are vital for future drivers and other road machine operators. The views gathered among company experts were in line with the understanding of the teachers related to the main benefits of eco-driver training. The participants enlisted advantages such as: reducing fuel costs across the company, lowering expenses on fuel costs and spare parts, building safe and eco-friendly driving behaviours, significant contribution to avoiding incidents and vehicle damages.

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|---|---|
| Organisation/Institution and Location | <ul style="list-style-type: none"> ○ Petko Angelov Ltd. ○ PIMK Ltd. ○ AIT International Transport Ltd. ○ Union of International Haulers (Bulgaria) |
| Description of the practice | <p>Appropriate use of air conditioning, adjusting heating, dealing with open windows regarding temperature and drag.</p> |
| Impact of the practice | <ul style="list-style-type: none"> ○ Reduced fuel consumption and ameliorated climate protection ○ Reduced fuel consumption up to 25% in trucks and 15& 15% in road work machines. (additional 10% in long term) ○ Preserved local environment and health ○ Reduced noise pollution and local air contamination |
| External Organisations/Institutions supporting the implementation of this practice | <ul style="list-style-type: none"> ○ Executive Agency of Road Transport under the Ministry of Transport and Communications ○ Plovdiv Municipality – South District |

Maintaining the Vehicle

Transport managers expressed acute needs for training leading towards fuel-efficient manner of driving and preserving the environment through decreasing pollutions and smart use of resources. Improved driving skills raising efficiency of transportation in general and saving fleet fuel or insurance costs are vital for future drivers and other road machine operators. The views gathered among company experts were in line with the understanding of the teachers related to the main benefits of eco-driver training. The participants enlisted advantages such as: reducing fuel costs across the company, lowering expenses on fuel costs and spare parts, building safe and eco-friendly driving behaviours, significant contribution to avoiding incidents and vehicle damages.

| | |
|---|---|
| Organisation/Institution and Location | <ul style="list-style-type: none"> ○ Petko Angelov Ltd. ○ PIMK Ltd. ○ AIT International Transport Ltd. ○ Union of International Haulers (Bulgaria) |
| Description of the practice | <p>Monitoring reliability, changing defective components, wear control.</p> <p>These aspects require deep training approaches which should be adopted by the teachers and exercised by the students. Perfunctory training won't produce desired results.</p> |
| Impact of the practice | <ul style="list-style-type: none"> ○ Reduced fuel consumption and ameliorated climate protection ○ Reduced fuel consumption up to 25% in trucks and 15& 15% in road work machines. (additional 10% in long term) ○ Preserved local environment and health ○ Reduced noise pollution and local air contamination |
| External Organisations/Institutions supporting the implementation of this practice | <ul style="list-style-type: none"> ○ Executive Agency of Road Transport under the Ministry of Transport and Communications ○ Plovdiv Municipality – South District |



MEAT PROCESSING

Meat processing is a resource-intensive industry that has significant environmental impacts such as greenhouse gas emissions, water consumption, and waste generation. This chapter outlines best practice examples in the field of meat processing whose integration into vocational education and training prepares students for careers in sustainable meat processing, contributing to a more environmentally responsible industry.

Water Use Optimisation

Water is a crucial resource in meat processing, and optimizing its use is crucial for various reasons. Firstly, meat processing plants use vast amounts of water, which can strain local water resources and contribute to environmental degradation. By optimising water use, meat processors can reduce their environmental impact and promote sustainable practices. Secondly, water is often one of the highest costs for meat processing facilities, and optimizing its use can lead to significant cost savings. Additionally, optimizing water use can help meet regulatory requirements for water usage and wastewater discharge, promoting compliance with environmental regulations. Finally, clean water is essential for ensuring proper hygiene and sanitation in meat processing, improving the quality and safety of the final product. Therefore, water use optimization is a critical step in promoting sustainability, cost-effectiveness, regulatory compliance, and product quality in meat processing.

Organisation/Institution and Location

- **BONI Holding JSC.**
- **Association of meat processors (Bulgaria)**

Description of the practice

Water use is explained within various categories, such as sources of water (town water, bore water or dam water), temperature (cold, warm, hot), amounts used (variable or fixed), purpose (watering or washing). Promising saving techniques are use of improved spray nozzles and ways for operation by the workers in washing, mechanical treatment of raw materials in advance and dry cleaning manure.

Impact of the practice

- Reduced consumption of water and subsequent disposal as waste
- Reduced water consumption decreases up to 20% for washing and about 10% for waste
- Reduced consumption of steam up to 15%
- Reduced consumption of electricity up to 10%
- Minimized waste of packaging materials
- Revision of existing technological steps forming respective packaging operations done by workers leads to decreasing such waste by around 12%

External Organisations/Institutions supporting the implementation of this practice

- Bulgarian Chamber of Commerce – branch Plovdiv
- Madzharov Ltd.

Decreasing Energy Consumption

Decreased energy consumption in meat processing is important because it can result in cost savings, reduce greenhouse gas emissions and environmental impact, and improve compliance with regulatory standards, as well as enhance the reputation and consumer trust of the company, leading to improved sustainability and competitiveness in the market.

Organisation/Institution and Location

- **BONI Holding JSC.**
- **Association of meat processors (Bulgaria)**

Description of the practice

The trainees should be acknowledged with specifics regarding main energy sources: Steam (used for rendering, hot water production, blood processing, tallow processing, etc.) and Electricity (used for refrigeration, motors of pumps, fans, conveyors, for lighting, for air compression, etc.)

Impact of the practice

- Reduced consumption of water and subsequent disposal as waste
- Reduced water consumption decreases up to 20% for washing and about 10% for waste
- Reduced consumption of steam up to 15%
- Reduced consumption of electricity up to 10%
- Minimized waste of packaging materials up to 12%

External Organisations/Institutions supporting the implementation of this practice

- Bulgarian Chamber of Commerce – branch Plovdiv
- Madzharov Ltd.

Livestock Utilisation

Livestock is a crucial raw resource for the meat processing industry. Proper utilisation of livestock can significantly contribute to the sustainability of the industry by reducing waste, improving efficiency, and minimizing environmental impact. By optimising livestock usage, meat processing workshops can ensure responsible resource management while also improving their bottom line.

Organisation/Institution and Location

- **BONI Holding JSC.**
- **Association of meat processors (Bulgaria)**

Description of the practice

Product yield is a key aspect of eco-efficiency in meat processing. Raw materials such as meat tissue, blood, fat, manure, etc. could be lost from the process and be thrown in the wastewater stream. These losses are actually wasting resources that could otherwise be recovered as products or ingredients. They also contribute to diminishing the pollutant load of the wastewater stream. Coping with the specifics of the directions above needs improved training focused on developing skills allowing maintaining the major indicators for eco-efficiency in a meat processing company.

Impact of the practice

- Reduced the environmental impact of livestock farming by minimising waste and reducing the need for additional resources like water and energy
- Reduced greenhouse emissions

External Organisations/Institutions supporting the implementation of this practice

Bulgarian Chamber of Commerce – branch Plovdiv
Madzharov Ltd.

Use of Support Materials

Optimising the use of support materials in meat processing, including packaging, chemicals, and oils, is important for reducing waste and promoting sustainability in the industry. By minimizing the use of these materials and ensuring their proper disposal, meat processing operations can decrease their environmental impact and contribute to a more sustainable future. Additionally, reducing waste can also lead to cost savings for the business. Proper handling and disposal of chemicals and oils can also prevent contamination of waterways and soil, protecting the health of local ecosystems.

Organisation/Institution and Location

- **BONI Holding JSC.**
 - **Association of meat processors (Bulgaria)**
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Description of the practice

Material inputs used at meat factories include packaging and a huge variety of chemicals, oils and lubricants. Packaging materials in use are cardboard, vacuum bags, polyethylene plastic, polypropylene plastic, strapping, paper, etc. Chemicals are necessary for cleaning, sanitising, hook cleaning, and in some cases water and wastewater treatment. Using eco-friendly and recyclable packaging materials and non-toxic cleaning chemicals can contribute to sustainability and promote a healthier working environment.

Impact of the practice

- Minimised waste of packaging materials up to 12%
 - Reduced chemical and water waste
 - Reduced carbon footprint
-

External Organisations/Institutions supporting the implementation of this practice

Bulgarian Chamber of Commerce – branch Plovdiv
Madzharov Ltd.



WASTE MANAGEMENT

Waste management plays a pivotal role in the pursuit of sustainability by addressing the pressing challenges of resource depletion, environmental degradation, and climate change. Through effective waste management practices, valuable resources are conserved, reducing the strain on finite raw materials and minimizing the need for environmentally harmful extraction processes. Proper waste management also curtails the release of pollutants and greenhouse gases, mitigating the negative impact on ecosystems, human health, and the planet's overall well-being.

A Collective System for the Alternative Management of WEEE

The removal of environmentally harmful substances and the reuse of recoverable materials as raw material in the production of new products is crucial for the environment as well as the sustainability of industry. Electronic devices contain valuable and scarce resources like precious metals, which can be recovered and reused, reducing the need for mining and conserving natural resources.

Organisation/Institution and Location

Appliances Recycling S.A., Greece

Description of the practice

Appliances Recycling has created and is developing the necessary infrastructure and partnerships for the collection and treatment of **Waste of Electrical and Electronic Equipment (WEEE)**. The company ensures that the collection, transportation, temporary storage and treatment of this waste takes place in an environmentally sound manner within the system's institutional network. Appliances Recycling also carries out educational activities to strengthen the environmental conscience of citizens and raise their awareness so that recycling becomes widespread.

Impact of the practice

- Reduced electronic waste on landfills
- Prevention of hazardous substances from ending up in landfills
- Promotes circular economy
- Cost-effective in the long run

External Organisations/Institutions supporting the implementation of this practice

Local/National stakeholders for private, commercial and industrial uses

Recycling Aggregates

There is a need to find a more sustainable way for exploiting aggregate materials, based on the framework of the circular economy. Recycling aggregates is important because it conserves natural resources by reusing materials from demolished structures, reducing the need for new quarrying. It helps minimise landfill waste, promoting a more sustainable waste management approach. Recycling aggregates also contributes to lower energy consumption and greenhouse gas emissions associated with the production of new construction materials.

Organisation/Institution and Location

Ntimar aekk, Greece

Description of the practice

As a fully licensed facility, Ntimar aekk work at all stages of material processing, from Collection and Transport to separation - crushing, screening, temporary storage, etc. until they have manufactured finished products, tested and certified for safe disposal. Through their recycling initiatives, Ntimar aekk collects construction and demolition waste, such as concrete, bricks, and asphalt, and processes it to produce recycled aggregates. These recycled aggregates can then be used in various construction projects, reducing the need for virgin materials and minimizing environmental impact.

Impact of the practice

- Reduced waste disposed to landfills
- Reduced need for primary aggregates
- Lower energy consumption
- Cost-effective in the long run

External Organisations/Institutions supporting the implementation of this practice

Local/National stakeholders for private, commercial and industrial uses

Alternative Waste Management

There is a need to find a sustainable method for the collection, transport, temporary storage, reuse, treatment and recovery of excavation, construction and demolition waste (AEKK). AEKK is non-hazardous waste that does not undergo any significant physical, chemical or biological transformation. Inert waste does not dissolve, burn or participate in other physical or chemical reactions, does not biodegrade, nor does it adversely affect other materials with which it comes into contact in a way capable of causing environmental pollution or harming human health.

Organisation/Institution and Location

- **Kronos Eco, Greece**
- **Siakandraris Group, Greece**
- **IONIOS Recycling, Greece**

Description of the practice

The practice is implemented through the organisation on an individual or collective basis, in any legal form, of the collection, transport, temporary storage, reuse, processing and recovery of waste from excavation, construction and demolition

Impact of the practice

- production of secondary materials through recycling requires less energy, therefore causing lower greenhouse gas emissions
- Conservation of natural resources
- Environmental awareness
- Cost-effective in the long run

External Organisations/Institutions supporting the implementation of this practice

Local/National stakeholders for private, commercial and industrial uses

Glass Recycling

Glass package is beloved globally by the food & beverage industries, besides the fact that is considered the healthiest way of packaging. At the same time, it is one the most difficult materials to decompose, and this fact poses a serious environmental issue.

Glass fragments may end up in the food chain, causing serious problems to living beings. Furthermore, glass fragments are to blame in several cases for starting fires, especially if disposed in forestry areas.

Organisation/Institution and Location

NEILOS, Greece

Description of the practice

NEILOS RECYCLING S.A undertakes the collection, sorting & separation and transfer of any type of glass. The recycled glass is eventually resold to glass production companies and other parties.

Impact of the practice

- production of secondary materials through recycling requires less energy, therefore causing lower greenhouse gas emissions
- Conservation of natural resources
- Environmental awareness
- Cost-effective in the long run

External Organisations/Institutions supporting the implementation of this practice

Local/National stakeholders for private, commercial and industrial uses

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