

Waste4ME: Sustainable Development Goals (SDGs)

Introduction

The United Nations have set out a vision for a future global society based on sustainability principles. The 17 goals and 169 targets of the SDG agenda cover the ecological, economic and social dimensions of sustainability. These goals and targets provide principles and a reference for national and local policy. Companies are encouraged to commit for an improvement of the production processes' sustainability and policy makers at all levels are asked to align their strategies to the sustainable development principles of the agenda.

SUSTAINABLE DEVELOPMENT GOALS



Our goals

At Waste4ME we understand how important the SDG's are, which is why we chose 5 goals for our company wherein we can really make a difference and contribute to these goals. The goals Waste4ME focusses on are explained below.



Each of these goals was considered on the basis of following criteria that may be met by using of our WER unit and taking into account benefits of its deployment: natural resources preservation, transport costs and logistic, impact on human health and eco-system, energy savings.

Waste to Energy Recovery unit

The WER unit is a core technology of Waste4ME and our innovative solution to convert waste in to energy (oil, gas, electricity). As mentioned above SDGs were considered under the prism of using our unit and we analyzed the pros and cons of its deployment for each chosen goal.

The WER is based on mobile waste management pyrolysis technology that uses a chemical process to decompose input streams (various types of waste, incl. non-recyclable) by heating them at a high temperature without the presence of oxygen.

The WER is created as a turn-key solution, that is quick to install and easy to operate. Thanks to its mobile nature, WER allows to avoid transport, electricity and gas boiler costs. Overall, it tackles waste where recycling is not feasible and offers a green solution where waste disposal is an issue.



Goal 7. Affordable and clean energy

Ensure access to affordable, reliable, sustainable and modern energy for all

A part of our solution allows for generation of energy (electricity or heat) from waste, preventing the need for fossil fuels.

Nowadays the majority of energy is produced from raw materials (oil, gas, coal, ore). Their cost can be quite sufficient due to the complicated and expensive process of their extraction, manufacturing and transportation to particular places for further use (sometimes to another continent).

The process of energy recovery is also one of the most adverse to human health and our eco-system; taking into account high CO2 emissions and general pollution occurred both around mines, plants, refineries and on the way of extracted and processed energy resources to their destinations (e.g. sea

transportation accompanied by oil leakage into the ocean). The shipment itself is expensive and creates certain risks for the environment.

In many cases there is still lack of energy resources for municipal needs: energy shortages and disruptions, in particular in developing countries or areas with insufficient levels of social or economic development, are still common. The same can be applied to the remote areas where energy transportation is complicated or expensive.

That is why renewable energy should be developed as much as possible in order to at least partially substitute raw materials extraction and processing.

With our WER unit it is possible to:

1. Receive energy from waste, which is usually incinerated or landfilled (both options are harmful for human health and bio-diversity, produce high level of CO₂ emission into the atmosphere). Such waste can be treated to receive valuable materials from it (oil, gas) which later can be used as energy sources or as materials for manufacturing of new products (e.g. plastic based products, extracted aluminum for manufacturing of new aluminum products).
2. Receive energy on site without new raw materials and fossil fuels recovery and transportation, with sufficient energy cost reduction as a result. WER unit uses 10 kWh for recycling of 1 ton of waste and in return creates 100 kWh of electricity.
3. Such energy can be used right away at the site by local households and industries, that is why no energy transportation from outside is needed and principle of circularity is remained.

Thereby, the deployment of our WER unit serves two goals: it solves waste problem and ensures access to affordable renewable energy which can be used directly at the place where waste is located.



Goal 9. Industry, innovation and infrastructure

Build resilient infrastructure, promote inclusive and sustainable industrialization and fostering innovation

We foster innovation by introducing novel technology for waste management that among other reduces CO₂ emissions.

Since modern infrastructure and industry is not always sustainable, many attempts are being done to create more efficient solutions, but there are still problems with the insufficient level of their development. The same applies to waste management, as one of the crucial points of an environmentally friendly and healthy society. Proper rational waste management through innovative technologies can reduce the use of natural resources and hazardous materials in products and waste. This can help to develop new markets and job opportunities.

By doing researches and creating innovative solutions Waste4ME contributes to the quality of infrastructure. Waste is inevitable in any kind of industry as well as in social life. Its collection and treatment also has to be transformed to meet modern requirements, where waste represents a valuable substance. Such approach will increase resource-use efficiency and a wider adoption of clean and environmentally friendly technologies and industrial processes.

The use of our WER unit in this case will have its result in implementation of the green innovation and will provide high standards for the waste treatment. This is especially applicable for the developing countries and regions where the waste collecting system, infrastructure or waste handling companies are less developed.

Again, this also applies to remote areas and other places where infrastructure is not yet perfect. Besides abovementioned, Waste4ME has resources to provide consulting services regarding building of the sustainable infrastructure (energy-efficiency) and R&D issues.



Goal 11. Sustainable cities and communities

Make cities and human settlements inclusive, safe, resilient and sustainable

We provide waste management solution suitable for developing nations, improving the state of the environment and the living conditions.

A third of the world's urban population lives in slums. Many communities lack elementary conditions necessary for daily life. Especially developing countries experience such problems. The lack of energy and water efficiency, waste problems, air pollution influencing bio-diversity, human health and safety hazards.

This problem doubles in the places with high amount of industrial objects which are managed in the society adverse manner. Such places usually require better conditions for human settlements, higher level of sustainability for industrial objects themselves. Among others, disadvantaged regions often have problems with waste management. If not properly managed, waste disposal can create slums nearby and foster socio-economic imbalance and health problems.

Waste4ME research shows that using of WER unit can have a positive impact on developing sustainable cities and communities by decreasing waste amounts, transforming it in to valuable resources, and – as a result – creating more sustainable local community. Waste can be processed on site which will accelerate waste treatment process without necessity of its transportation, landfilling or incineration.

Another advantage is that using of WER unit decreases needs in energy, received from natural resources and raw materials. In this case energy can be extracted from waste instead of natural resources. The energy cost will be also much lower than by buying, partially because of avoidance of energy transportation.

Recycled waste will give energy to be used directly on site by households connected to the grid. In total, use of WER unit leads to the higher sustainability of location (city, community, island, military camp etc).



Goal 12. Responsible consumption and production

Ensure sustainable consumption and production patterns

Our technology reduces global resource extraction and contributes towards sustainable consumption.

It is expected that the generation of waste will grow from 1,3 billion tons per year to 2,2 billion tons per year by 2025, with high increases in developing countries. Hereby sustainable management and an efficient use of natural resources should be achieved. Chemicals innovations and non-chemical alternatives can contribute to the development of eco-design and circular economies and promote more sustainable production patterns and consumption.

The raw materials produce components for other end use sectors but the amount of natural resources used to extract such materials and produce final products can be optimized, or even reduced, by using innovative technologies. The reduction of raw material extraction will also lead to the reduction of the hazardous waste, generated by manufacturing activities.

Waste management and production of the secondary raw materials plays important role in improving the circularity and in the reducing of the environmental effect caused by raw material extraction. That is why sustainable consumption is tightly connected to the efficient use of resources. The main principle of sustainable consumption is its circularity. Waste4ME achieves this by ensuring that many types of generated waste can be recycled into useful resources. This also coincides with intentions to build circular and ecologically clean economies.

Our WER unit represents a new approach to the resources remanufacturing – products that become waste can receive second life after proper treatment. The output of such treatment is oil and gas which may be used for producing new goods (e.g. plastics). This approach will allow lower usage of natural resources and will have a positive effect on human health and the environment due to the reduction of potentially harmful processes of fossil fuels extraction, their manufacturing and appliance.

Saving on energy costs will contribute to the production pattern improvements, because WER unit can partially provide itself with energy needed for its operation. This energy will be received during the process of waste treatment and can be streamed directly for the use of the plant.



Goal 13. Climate action

Take urgent action to combat climate change and its impacts

WER reduces GHG emissions thanks to the oxygen poor process and by avoiding extraction of new materials.

Climate change is one of the greatest environmental problems of present days. 1,07 million square km of Arctic's sea ice is lost every decade due to the warming. The process is ongoing and the situation should be changed as soon as possible to prevent even worse consequences.

The growing of our worlds industry, uncontrolled destruction of natural resources, harmful emissions to the atmosphere, high level of greenhouse gases etc. have a negative impact on the Earth's climate. At the same time, power generation is one of the major contributors to climate change.

Extraction of fossil fuels also inevitably causes emissions and hazardous substances to be released to the environment. That is why: the less fossil fuels and other natural resources we extract the less harm to the climate we cause. The waste problem combined to the harmful ways of waste processing also cause high level of emissions and nature pollution. That is why rational waste management plays a significant role among climate actions.

At Waste4ME we pay close attention to the reduction of air pollution in the process of waste treatment, CO2 footprint reduction and following environmental regulations. We believe that reuse, recovery and recycling should become core principles of actions against climate change. We embody these principles in our work and designed the WER unit as emission-free as possible, ensuring as low as possible CO2 emissions.

It is proven that during its active phase the WER unit releases less emissions than allowed by Dutch standards. Comparative research of the consequences of waste treatment by means of landfilling, incineration and pyrolysis of domestic waste shows that pyrolysis was more environmentally friendly and favorable in regards to human health and bio-diversity than other the two manners.

A big advantage in the achievement of this UN goal is that the use of WER units may prevent or partially substitute the extraction of new raw materials and therefore avoids more emissions to the atmosphere.

The fact that waste can be processed directly on the site, where it was generated, provides good chances to avoid transportation of waste to other locations and all risks connected to such transportation (water and air pollution, leakage of harmful substances to nature).

Conclusion

Thus, the UN sustainable development goals cover different aspects of social life and focus on the improvement of life quality, establishing a rational and environmental friendly development of industry, the adoption of circularity economies etc. Waste management is one of the main components of these developments, therefore there should appear sustainable solutions to ensure efficient and clean waste collection and treatment.

Waste4ME works in the field of safely processing waste where waste is considered as a valuable object, a base for the extraction of materials for energy supply or for new product manufacturing. When we use already existing waste to benefit from this is how we protect natural resources from being extinguished and how we create affordable energy sources, contribute to building of resilient infrastructure, sustainable communities and climate actions.