MODULE 2: Waste Management & Sustainability

“Green Job Growth”

Small-scale partnership in the field of youth

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GREEN JOB GROWTH

ABOUT THE PROJECT

"Green Job Growth" (GJG), a project co-funded by the Erasmus+ Programme, is a 18-month initiative committed to fostering sustainable development and youth employment across Europe.

Coordinated by Bridging Europe in Germany and in collaboration with Amici di Puck (Italy) and Go Green (Spain), this project addresses the urgent need for promoting green skills among young people and facilitating their entry into the green economy.

PROJECT CONSORTIUM

ASSOCIAZIONE Gli Amici di PUCK

GO GREEN

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I. Introduction

A major global challenge is to integrate environmental sustainability with economic growth and welfare by decoupling environmental degradation from economic growth and doing more with less.

In September 2018, the World Bank announced that our global waste production is predicted to rise by 70 per cent by 2050 unless we take urgent action. Humankind currently produces two billion tons of waste per year between 7.6 billion people. Population increase may be part of the problem, but it's levels of consumption within a handful of developed nations, and their gross mismanagement of waste, that have led to this environmental catastrophe. (https://sensoneo.com/global-waste-index-2019/)

In today's world we are facing a situation, where the amount of waste is already dangerously large, but at the same time steadily continues to grow. The tendency is, that humanity consumes more and more products, while the Earth is overwhelmed with the amount of waste we constantly produce. Waste filling our lands, taking space from the harvest to grow, killing whole ecosystems, poisoning water.

According to a report, about 2.01 billion tons of municipal solid waste is generated globally each year. The amount is projected to increase to 3.40 billion tons by 2050. (https://www.upperinc.com/blog/top-waste-management-statistics/). It is not something we can ignore any longer, since waste management is a worldwide problem that has an impact on all nations in all corners of the world. Today is exactly the time to ask yourself: "What can be done, to reduce the amount of waste that floods our ecosystem? What can I do to make a change?"

These are the questions we are encouraging you to ask yourself, but we are also here for you to help to find answers. This Module is aiming to equip youth workers with knowledge and skills related to effective waste management techniques and their environmental significance. Starting from the understanding of the problem and relating terms, we will explore effective strategies of effective waste management. But what we first need to emphasize and clarify is the urgency of the problem.

II. The State of Waste around the World

The increasing volume and complexity of waste associated with the modern economy is posing a serious risk to ecosystems and human health. Every year, an estimated 11.2 billion tons of solid waste is collected worldwide and decay of the organic proportion of solid waste is contributing about 5 per cent of global greenhouse gas emissions. (https://www.unep.org/explore-topics/resource-efficiency/what-we-do/cities/solid-waste-management .) Less than 20% of waste is recycled each year, with huge quantities still sent to landfill sites

Understandably, the statistics of the amount of waste will vary greatly from country to country, based on the density of the population and manufactures.

The 2022's Global Waste Index from Sensoneo, the leading provider of smart, enterprise-grade waste management solutions operating in 60 countries worldwide, shows there are still major differences in the amount of waste generated in the world, and how it is disposed of. The Global Waste Index 2022 analyses the waste management efficiency of 38 countries worldwide and results in a ranking of the biggest waste polluters worldwide. The study was first conducted in 2019. (https://sensoneo.com/global-waste-index/).

No other country is drowning in waste as much as the USA

Most waste is generated in the United States. Each US citizen currently produces 811kg of waste, and around half of that ends up in landfill. Meanwhile just 95kg of that are incinerated. US citizens produce two kilograms more waste today than they did in 2019.

Every year 2.2 billion tons of waste is generated in the EU. More than a quarter of it (27%) is municipal waste: everyday waste collected and treated by municipalities, which is mainly generated by households. Data shows that the amount of waste and the way it is managed varies a lot across EU countries, but there has been a shift to more recycling and less landfilling. The EU also exports part of its waste. In 2021, EU exports of waste to non-EU countries reached 33 million tons. This is an increase of 77% compared to 2004. In 2021, 45% of EU waste went to Turkey (14.7 million tons), followed by India (2,4 million tons), Egypt (1,9 million tons), Switzerland (1,7 million tons) and the UK (1,5 million tons).

The question may arise - what is meant by "municipal waste" and how is the amount calculated?

Although definitions of MSM vary by country, the term municipal waste refers to waste collected by or on behalf of municipalities.

This category includes households' household wastes and that generated by:

- Small commercial enterprises
- Offices
- Schools
- Government buildings
- Small companies that dispose of waste at the same facilities as municipally collected waste.

With all these statistics in mind, the following logical question arises:

III. How does all this waste affect our environment & societies?

Waste produces greenhouse gas emissions which can trap heat, raise temperatures, and cause air pollution, smog, and respiratory diseases. Since the ecosystem is a global phenomenon, we are affected by the consequences of climate change and global warming, and we all will feel the impact, that waste has on our environment. But with a closer look, the problem becomes even more complicated, if we start to ask ourselves: are we all affected equally? Because the answer is not. We may all live in one ecosystem, but the consequences of climate change are not equal for different parts of the Earth. And while one country is producing waste, another country is drowning in it and losing its life quality due to the harmful impact. The question of climate justice is inseparable from our topic. To understand the situation fully means to understand all the aspects of the problem.

"As an integral part of social justice, environmental justice addresses discrimination: waste disposal, resource extraction, and other activities that result in environmental degradation and impact the most vulnerable communities. The overwhelming majority of incinerators,

dumps, landfills, and burn facilities are located near low-income communities, communities of color, and marginalized communities. On a daily basis, residents deal with inadequate levels of noise, litter, increased vehicle traffic, smells, and air pollution. Emissions from incinerators lead to health-related issues due to overexposure to particles and dangerous pollutants, which also increase the risk of cardiac and respiratory disease, having the most impact on children and the elderly.

In some countries, wastepickers are the only form of solid waste collection, providing countless benefits such as high recycling rates, public health and safety, and environmental sustainability. Yet, wastepickers continue to be highly unprotected, working in unsafe and unhealthy conditions". (Article: https://zerowasteeurope.eu/2022/02/why-is-the-global-waste-crisis-a-social-justice-issue/).

We highly recommend reading the following National Geographic article to get a better understanding of the situation facing millions of people around the world. Who are the wastepickers, what is their contribution to the waste management, do states protect their rights? Once again, social issues are intertwined with the effects of environmental problems. https://www.nationalgeographic.com/premium/article/who-owns-our-trash-why-does-it-matter-waste-pickers

As it was already mentioned above, In Europe today, a high percentage of waste is still incinerated or thrown in landfills; and in 2019, the EU exported a monthly average of 150,000 tons of plastic waste beyond its borders. However, there is a high discrepancy between the sheer scale of plastic waste trade and the ability of importing countries to deal with the waste responsibly. As an example, Malaysia has an installed recycling capacity of 515,009 tones but now imports on average 835,000 tons of plastic waste each year. In Indonesia, less than half of the country's waste is adequately processed, while the rest is thrown in open-dumping landfills.

According the statistic provided in the article "Here's what everyone should know about waste" by The World Bank - In low-income countries, over 90% of waste is mismanaged – it is either openly dumped or burned. Upper-middle and high-income countries provide nearly universal waste collection. In high-income countries, more than one-third of waste is recovered through recycling and composting. Low-income countries only collect about half of waste in cities, and only about one quarter in rural areas. There is much to be done in collecting waste in low-income countries. (https://blogs.worldbank.org/sustainablecities/here-s-what-everyone-should-know-about-waste)

We are coming to the point, where it is clear, that the volume of produce waste is not only a local problem of each concrete country. This is a responsibility we are having towards each other globally. Waste produced in the high-developed countries will end up in landfills on the opposite side of the planet, broadening the existing gap between developed and developing countries, causing more suffering and struggles first of all for those who are already exposed to the most intense and destructive effects of climate change. Waste is an ecological problem, but also a social one. And this is not the issue that can be solved locally, but a global challenge, each of us contributes to and faces. What is the answer to this challenge?

IV. Waste management

Materials have environmental impacts throughout their lifecycles. The major stages in a material's lifecycle are raw material acquisition, materials manufacture, production, use/reuse/maintenance, and waste management.

And what is a "Waste management"?

Waste management refers to the various schemes to manage and dispose of wastes. It can be by discarding, destroying, processing, recycling, reusing, or controlling wastes. The prime objective of waste management is to reduce the amount of unusable materials and to avert potential health and environmental hazards.

What are the benefits of the waste management and why we should put our time and efforts to implement it? According to the following article (https://www.conserve-energy-

future.com/waste-management-and-waste-disposal-methods.php .) we can see positive consequences of implementing the waste management, such as:

- Better Environment

Probably the biggest advantage of managing waste is that it eventually leads to a better and fresher environment. Waste disposal units also contribute to the well-being of people by helping them become disease-free. The best part: all of this happens while the unnecessary is duly disposed of in a proper and sanitary manner. Multiple waste disposal units should be placed in tier-1 and tier-2 cities in a bid to prep up the process of waste disposal. This will also help implement remarkable safety measures in the long run.

- Reduces Pollution

When waste is managed the right way, it doesn't merely eliminate the subsequent waste but also reduces the impact and the intensity of harmful greenhouse gases like carbon-di-oxide, carbon mono-oxide, and methane that are often exuded from accumulated wastes in landfills. Managing waste reduces our reliance on landfills while also significantly cutting down the many factors that adversely impact our environment.

- Conserves Energy

Recycling is one of the biggest aspects of waste management, and over time, it helps conserve energy. One of the biggest instances of this advantage can be traced to the practice of recycling paper. All of us are probably aware that thousands of trees are cut to produce paper. When a used paper is recycled to create new paper, the need of cutting trees is significantly minimized. This helps conserve energy while also reducing your carbon footprints.

- Creates Employment

The recycling industry alone creates hundreds of jobs. As more people adopt this eco-friendly practice, organizations creating and selling recycled products come to the forefront. This helps boost their business while also creating hundreds of jobs.

- Helps Make a Difference

By managing waste, you are also making a difference to the society and the world in general. While none of us can completely get rid of garbage, we can always adopt eco-friendly practices of reducing and reusing waste. This way, you create an example for the people around you, who in turn are now motivated to embrace a sustainable approach.

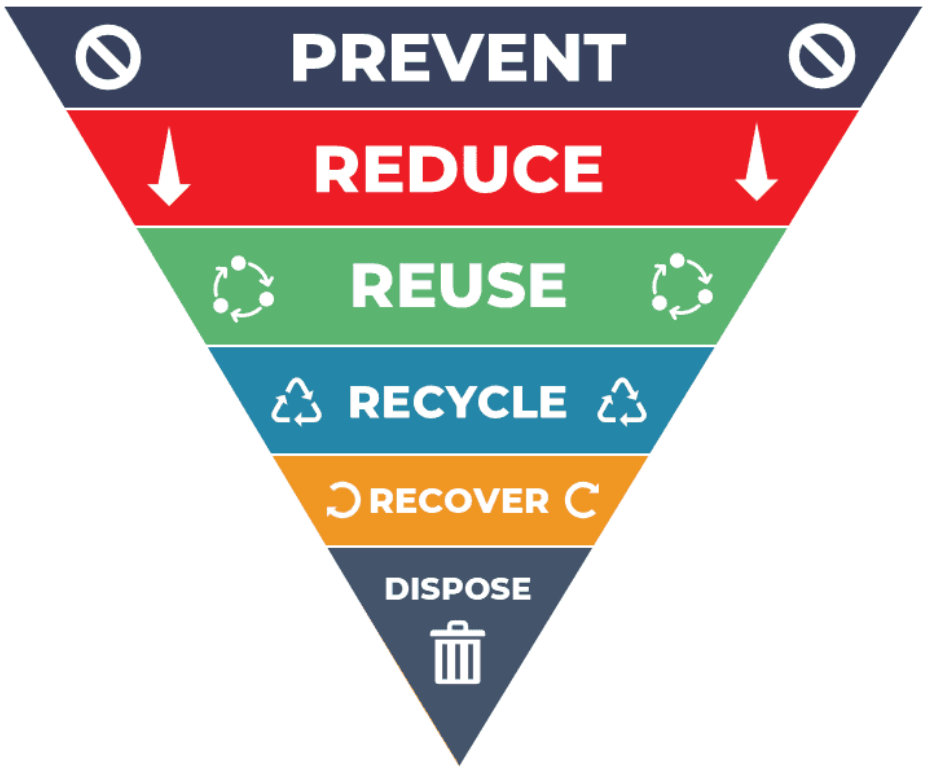
Waste management hierarchy

To make the term "Waste management" more understandable, let's explore the Waste Management Hierarchy. Instead of just a collection of strategies, waste management is viewed as an organized system with a clear hierarchy. This approach guides and prioritizes decisions regarding waste management on personal and organizational levels. It is important to prioritize actions that reduce waste generation and improve overall waste management processes and programs.

According to Wikipedia:

“Waste hierarchy is a tool used in the evaluation of processes that protect the environment alongside resource and energy consumption from most favorable to least favorable actions. The hierarchy establishes preferred program priorities based on sustainability.”

We can represent this concept through a pyramid that displays the order of importance in waste management. Thus, waste prevention is our top priority, followed by reusing, recycling, recovering, and finally, disposal. This hierarchy helps us rethink our relationship with waste based on six priorities ranked in terms of what's best for the environment.



Source – https://axil-is.com/blogs-articles/waste-management-hierarchy/

By adhering to the waste management hierarchy, organizations can maximize the benefits of their products and services while minimizing waste output. Likewise, individuals can make more conscious and thoughtful everyday choices. But what exactly does each level of the hierarchy entail?

- Prevent + Reduce

Top priority in the waste management hierarchy is placed on reducing and preventing waste generation as much as possible. Current technologies, processes, and policies cannot adequately handle the daily, monthly, and yearly amounts of waste produced. Moreover, more land continues to be occupied and contaminated by waste production. Therefore, searching for more efficient ways to recycle already existing waste is not enough if we keep producing waste at an uncontrollable rate. This stage promotes the reduction of virgin raw material usage among industries, communities, and governments for the production of goods and services.

- Reuse

"Preparing materials for reuse in their original form is the second-best approach to waste management. Aside from reducing your landfill impact, reusing business waste also allows your business to avoid spending on new goods or virgin materials or paying a provider to dispose of your waste for you".

(https://axil-is.com/blogs-articles/waste-management-hierarchy/)

- Recycle

Recycling processes materials that would otherwise be sent to landfills and turns them into new products. It is important to note that recycling is only on the 4th stage of the waste management hierarchy because it requires additional energy and resources to create new products. For example, recycling paper requires water and electricity to transform it into high-quality paper products.

- Recover

When further recycling is not practical or possible, businesses can recover energy or materials from waste through processes such as:

  - Incineration
  - Anaerobic digestion
  - Gasification
  - Pyrolysis.

The recovered energy can be made available for the organization's use or fed back into the electricity grid.

- Dispose

Only when all else fails, materials that cannot be reused, recycled or recovered for energy will be landfilled and incinerated (without energy recovery). This is an unsustainable method of waste management because waste that sits in landfills can continue to have a damaging environmental impact.

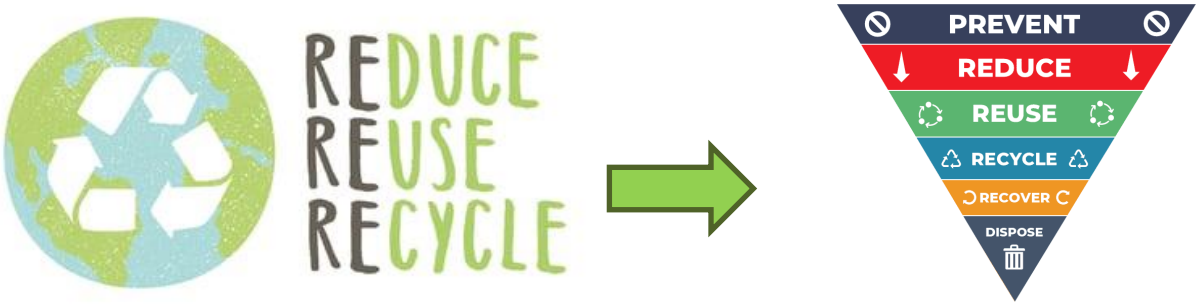
The waste treatment policy is based on sustainable materials management (SMM)

Sustainable materials management (SMM) is a systematic approach to using and reusing materials more productively over their entire life cycles. It represents a change in how our society thinks about the use of natural resources and environmental protection. By examining how materials are used throughout their life cycle, an SMM approach seeks to:

- Use materials in the most productive way with an emphasis on using less.
- Reduce toxic chemicals and environmental impacts throughout the material life cycle.
- Assure we have sufficient resources to meet today's needs and those of the future.

How our society uses materials is fundamental to our economic and environmental future. Global competition for finite resources will intensify as world population and economies grow. More productive and less impactful use of materials helps our society remain economically competitive, contributes to our prosperity and protects the environment in a resource-constrained future.

Very likely, you are already familiar with another popular and almost classic approach called "the three Rs" (reduce, reuse, and recycle) and may have recognized its elements integrated into the waste management hierarchy pyramid. The waste management hierarchy replaces the traditional approach of "the three Rs" (reduce, reuse, and recycle) with a six-step process. The most preferred actions are at the top, while the least preferred are at the bottom of the inverted pyramid.



Waste management involves more than the six steps outlined in the waste management hierarchy pyramid. Other methods, such as Composting, Plasma gasification, or Incineration/Combustion, exist. We encourage you to explore these approaches and learn

about their environmental advantages and disadvantages in the following article. https://www.conserve-energy-future.com/waste-management-and-waste-disposal-methods.php

The primary objective of this module is to equip youth workers with knowledge and skills regarding efficient waste management techniques and their environmental impact. We trust that, by now, we have presented sufficient statistics and sources for additional personal research, enabling a comprehensive grasp of the urgency and consequences of the issue. But with all the statistics and information presented, the logical question arises: "What can I personally do to contribute to the solution?" We would like to bring this aspect into focus by providing practical tips and strategies that youth workers can implement in their daily lives and disseminate through their work.

V. Waste management techniques

After examining waste management statistics from various countries and recognizing our global responsibility, it's essential to ask yourself: "What is my personal responsibility?" Understanding current government waste management policies, analyzing the current situation in one's own country, and comparing and contrasting with other nations can help identify areas for improvement. But we cannot simply hope and wait for our government or local municipalities to adopt better waste management policies. Each of us produces waste daily, whether or not we are aware of the consequences, and we make decisions every day that add to the growing amount. That is why we are now providing practical tips and specific steps that each person can take to minimize and optimize their contribution to the amount of waste produced.

The same waste management hierarchy we provided earlier can be utilized not just by local municipalities or manufacturers, but by each individual. Let's focus on the well-known "3 R's" approach and how you can incorporate it into your daily life.

Taking about the first two steps: 1) Reduce and 2) Reuse. They demand the same approach, as was already shown above. The first and main point is to produce less waste, rather than just managing it more effectively. There are many initiatives to get inspired with and explore tips and techniques, to make one's life more sustainable, while producing less waste. Highly likely you already heard about the "Zero waste" approach. Lifestyle, mindset, and movement – more and more people changing their lives, aiming to reach the "Zero waste" point. On the website of the Zero Waste Europe (ZWE) you can find tons of information regarding local and global activities, get access to researches and data, get inspired and even support/become a part of the movement! Based in Brussels

(Belgium), the ZWE staff works to support the zero waste movement and to drive ambitious policies at the European level.

"Zero waste is the conservation of all resources by means of responsible production, consumption, reuse and recovery of products, packaging and materials without burning, and with no discharges to land, water, or air that threaten the environment or human health" – Definition of Zero Waste as adopted by the Zero Waste International Alliance". (https://zerowasteeurope.eu/)

We live in an age of overconsumption, producing goods at a rate that far exceeds our actual needs or usage. Talking about the waste problem, one cannot overlook the impact that fast fashion and the ideology of constant consumption have on the environment.

In the article created by the Earth.Org Movement "10 Concerning Fast Fashion Waste Statistics" (https://earth.org/statistics-about-fast-fashion-waste/) the author draws out attention to the huge issue, we are all a part of. Besides being responsible for nearly 10% of global carbon emissions, the industry is also infamously known for the amount of resources it wastes and the millions of clothes ending up in landfills every day. Next time you'll need to make a decision, to buy or not one more T-shirt, to go with the lower price (=lower quality, sooner the item will not be usable and thrown), or invest in the clothes, that will last longer, to repair, rather then immediately replace, do it from the position of awareness. Knowing that:

1. 92 million tons of textiles waste is produced every year
2. In America alone, an estimated 11.3 million tons of textile waste – equivalent to 85% of all textiles – end up in landfills on a yearly basis. That's equivalent to approximately 81.5 pounds (37 kilograms) per person per year and around 2,150 pieces per second countrywide.
3. The number of times a garment is worn has declined by around 36% in 15 years
   The throwaway culture has worsened progressively over the years. At present, many items are worn only seven to ten times before being tossed.
4. The fashion industry is responsible for 20% of global waste water.
5. 2.6 million tons of returned clothes ended up in landfills in 2020 in the US alone.

What will be your choice next time you buy new clothing?

On a personal level, we all make decisions every day that require varying levels of effort and time with inevitable consequences, even if they are not immediately visible. As a youth worker, you have the opportunity to not only make a personal contribution but also to positively impact your community and network. Supporting sustainable local businesses and initiatives, educating the community about the impact of one's everyday

actions and choices, and advocating for sustainable living and conscious waste management all contribute significantly to positive change.

Becoming a vocal and passionate advocate among friends and family (without being pushy) for the need for climate action is a step that each of us can take. It doesn't require overcomplicating the issue.

3) Recycle

It seems that we all already know, that we have to separate our waste. But unfortunately, many people taking this information as a buzz word, without paying attention, how they contribute to create more waste that ends up in the landfills, rather than being recycled and reused. Why? We would love to quote an article by Sensoneo. Founded in 2017, Sensoneo has undergone an impressive journey from a startup into a global leader in smart waste solutions.

The great recycling myth according to Sensoneo:

“Many countries like to boast about their progressive waste management and high recycling rates. Sweden, South Korea and Germany are among them, and Germany is often celebrated as a world champion for recycling.

However, the high recycling rates for plastic waste could be misleading. This number is taken from the volume of waste that arrives at the recycling plants, but not everything is actually recycled. This number is the amount of waste at the beginning of the lengthy sorting process, at the end only a fraction of that waste is actually reused. What remains is incinerated.

Environmental organizations such as the Friends of the Earth Germany estimate that less than 16% of the recyclable waste earmarked for recycling in Germany can actually be reused. The biggest problem is caused by mixtures of recyclable materials in items such as a yogurt pot with a cardboard sleeve and aluminum lid. If these are not separated before arrival, there is a high probability it will be registered at the recycling plant but will still end up being incinerated. Small, very thin materials and some food packaging are difficult to recycle, as their reprocessing needs sophisticated technologies that are not easily available. Their usability on the market and the price of the recycled materials also reflect on the recycling process”.

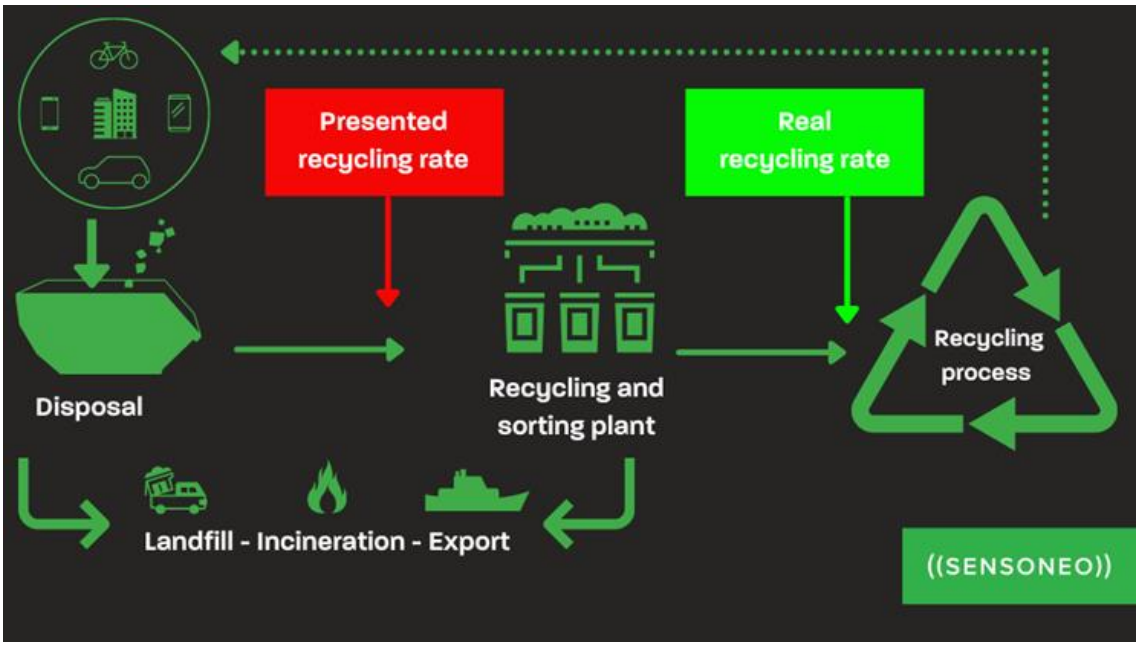


image by https://sensoneo.com/global-waste-index/

Which conclusion can we make from this abstract? That waste sorting is crucially important for the recycling to happen and happen properly. And that this step lays exactly within our responsibility. This is something we need to practice and also educate about. Youth workers need to increase awareness in their community and network on this topic, underlying the importance, urgency and impact.

"When we segregate waste, there is reduction of waste that gets landfilled and occupies space, air and water pollution rates are considerably lowered. Segregating waste also makes it easier to apply different processes - composting, recycling and incineration can be applied to different kinds of waste" – goes the article "5 SIMPLE WAYS TO PRACTISE WASTE SEGREGATION". (https://www.jaagore.com/current-issues/5-simple-ways-to-practise-waste-segregation).

In addition to the practical and easy steps mentioned in this article, it also approaches one more important aspect: community. Waste management is a personal responsibility, which doesn't turn it into a lonely journey. "The best way to practice waste management is to form a group of likeminded people. The process of waste segregation should be thoroughly explained to family/neighbors in your apartment building or neighborhood". We would love to once again underline the importance of the Youth Workers in making a contribution to a so needed change. We need to educate ourselves but also educate others.

We should also learn from each other. It can be very helpful to analyze the situation and existing policies in different countries. In the following article you can learn more about 4 countries from different parts of the world and 4 different strategies, they implemented to

take a better care about the environment. https://brightly.eco/blog/global-waste-management-initiatives

How waste management works in Switzerland, were the landfills have been banned in since 2000? How South Korea provides easily accessible information on how to dispose of trash, and detailed explanations exist to help and guide through the process? And how interactive maps to navigate and easily use the system of beautifying water fountains scattered throughout the Paris significantly decreases the usage of the single-use water bottles? And more importantly – what can we learn and implement from already existing solutions?

We would love to encourage you to keep deeper your knowledge by continuing with your personal research. Fortunately, the topic of sustainable leaving and efficient waste management drives more and more attention today, which means, more and more data, researches, initiatives, articles, blogs and TED talks are available to educate and inspire yourself, find people, who are also passionate about making positive changes for the environment and exchange experience.

For example, if you feel that in your country there is no clear explanation regarding the rules of recycling and separating the waste, you can find more information on the following website ruled by the How2Recycle. (https://how2recycle.info/guide)

How2Recycle is a standardized labeling system that clearly communicates recycling instructions to the public. It involves a coalition of forward thinking brands who want their packaging to be recycled and are empowering consumers through smart packaging labels.

On their website they provide a detailed explanation regarding the labels and what do the signs on them mean, so you will not get confused next time you are separating your garbage.

Image: https://how2recycle.info/guide

They also prepared a "Guide to Recyclability" (https://how2recycle.info/guide) that covers aspects as:

- Why the How2Recycle program exists and how it works
- What does 'recyclable' mean?
- What the law says about recyclability claims
- How does How2Recycle assess recyclability for each package under that definition?
- Currently under study for How2Recycle

Also some easy but efficient suggestions and tips can be found in the following article: "How to reduce and re-use". (https://www.recyclenow.com/how-to-recycle/how-to-reduce-waste#Ways-to-reduce-the-amount-of-waste-you-create). From buying second hand clothing to repurposing glass, plastic and cardboard containers to give them another life, the author of the article shares easy to follow tips.

VI. Conclusion

To summarize everything that was said above, we would love to once again draw your attention to the fact, that waste management is way more than just separating your garbage before throwing it (which is of course also an important step). The issue with waste management process is rooted at the same time in the policies and laws adopted in the state, as well as in the consciousness of the community. We need to be aware of the actions out government is making to decries the amount of the produced waste while also insuring effective waste management process. Being an active citizen means being informed, if the government provides the promised changes in the sphere of the environmental sustainability. It also means taking your part of responsibility at work, insuring that your business/company you are working in is taking efficient measures to run its business sustainably. But it also means raising awareness regarding urgent environmental issues. Waste pollution is a huge and urgent problem that can lead to irreversible consequences very soon, if no actions will be taken. It not just a problem of the country where waste was produced – our ecosystem is globally interconnected and consequences are spread all around the world. But don't forget, that some countries suffer more from the consequence of the actions done from the other countries. It wider the gap between the countries, making waste management policies a part of a big social phenomenon called climate justice. We need to approach the problem on all levels: personal, local, national and global. With the information provided in this module Youth Workers can not only educate themselves and gain a deep and detailed understanding of the issue, but also find resources for further research and specific steps to implement right now, as well as educate your community about them.

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