*For teacher*

*Guidelines for two assignments:*

*Assignment 1. Waste and emissions in various industries*

*Assignment 2. Collecting and recycling*

*Soile Kallinen from Haaga-Helia UAS has created this assignment and it has been piloted among multinational student group during fall 2020*.

*The following assignments 1 and 2 can be implemented as a team assignment or as an individual assignment. The outcome can be for example a report or a power point slide presentation*.

*The Senior Lecturer Soile Kallinen from Haaga-Helia UAS has created this assignment. The assignment has been piloted among multinational student group during fall 2020.*

**ASSIGNMENT 1. BUSINESS SECTOR´S CHALLENGES FROM WASTE AND LEGAL PERSPECTIVE**

**Type of the assignment**

*This assignment can be implemented as a team assignment or as an individual assignment. The outcome can be for example a report or a power point slide presentation*.

**Learning objective**

The student will get familiar to various environmental problems of waste in various industries. Student also knows some legal issues related to environmental targets. Reduction and use of waste in those industries are important to change their operations towards principles of circular economy.

**Selection of the industry**

Select one industry for further analysis:

* textiles
* electronics
* packages (specify packaging material)
* food industry
* construction sector
* other, propose your industry

**Information search and tasks to be completed**

Search information about general problems of waste and legal issues putting the pressure for the companies to implement more and more principles of circular economy in operations. Answer to following questions:

1. What kind of problem the industry has in regard to product waste?
2. Which legal issues (about environmental aspects) relate to your chosen industry?
3. What kind of environmental targets of reducing the waste or increasing the recycling you found about the industry?
4. Propose some solutions for reducing the waste. You can give examples of various companies or industry related solutions.

**Sources**

Use your own sources. European Union has payed attention to these industries mentioned above, you might find surveys and legal issues from EU. Sitra and Ellen McArthur Foundation might have information too. Remember to mark properly sources into your assignment.

**ASSIGNMENT 2: COLLECTING AND RECYCLING**

**For teacher** This assignment can be implemented individually or in small teams. Soile Kallinen from Haaga-Helia UAS has created the assignment and it has been piloted in a multinational SCM student group as a team assignment in fall 2020. The outcome was power point slides, but the outcome can also be a report. Teacher can also modify the guidelines by picking and combining subtasks of these guidelines.

**Learning objectives**

The objective of this assignment is to understand recycling of packaging materials within EU countries and their environmental impacts. You will also study collecting and recycling practices of products or packages after the usage stage. There might be also some legal issues related to manufacturer´s or importer´s or packer´s responsibilities of recycling

**Your task**

*1. Analyse recycling of packaging materials*

a. Go to EU statistics of packaging waste. The link is:

**https://ec.europa.eu/eurostat/databrowser/view/ten00063/default/bar?lang=en**

b. Get familiar with various waste categories (glass, plastics, paper and cardboard and metallic packages). Choose one packaging material for further analysis.

c. Select three countries in EU based on criteria created by you. Then analyse how well those countries recycle that particular packaging material during the years 2012-2017? Give your conclusions.

d. Study, what is the environmental impact of that packaging material. Explain also, if that particular packaging material is involved in the producer´s extended responsibility for collecting the material. Read:

**https://rinkiin.fi/for-firms/producer-responsibility/**

**https://verkkolehti.rinkiin.fi/producer-responsibility-expanded-to-collection-of-consumer-packaging?lang=en**

*2. Analyse product collection and recycling*

Select one product or one package that has been collected from the market or elsewhere in the supply chain back to the closed loop system. If you find a recycling campaign or program, you can have many details. Then analyse:

1. Explain the recycling system and introduce the product or the package involved. Try to illustrate all the partners of the supply chain connected involved in the recycling process. You can draw a flowchart of those and show each partner´s role (who is responsible for what) in the process.
2. Consider how challenging it is to collect materials from the market. How the customer is encouraged to return the product or package? Is there some incentive to boost customers to return the product or the package to the closed loop system?
3. Consider if your product or package belongs to the category described below **(https://www.epa.gov/recycle/recycling-basics)**
* **Recycled-content product** - The product was manufactured with recycled materials either collected from a recycling program or from waste recovered during the normal manufacturing process. The label will sometimes include how much of the content was from recycled materials.
* **Post-consumer content** - Very similar to recycled content, but the material comes only from recyclables collected from consumers or businesses through a recycling program.
* **Recyclable product** - Products that can be collected, processed and manufactured into new products after they have been used. These products do not necessarily contain recycled materials. Remember not all kinds of recyclables may be collected in your community so be sure to check with your local recycling program before you buy.

3. Read Sitra´s *Circular economy business models for the manufacturing industry*

*Circular Economy Playbook for Finnish SMEs* and apply to your assignment. The guidebook consists of information about recycling as one business model for circular economy. Read especially pages 23-30 and apply to your product or package. Download it from :

**https://www.sitra.fi/en/publications/circular-economy-business-models-manufacturing-industry/**

4.Introduce one recycling company and explain its services. You find some recycling companies listed in the end of lecturing material (power point slides of Collecting and recycling)

**Outcome** Prepare **power point slides** and present them to the whole class.