REPORT AST-19-195-EN/3
Modify and cancel AST-19-195-EN/2

AIMPLAS
PLASTICS TECHNOLOGY CENTRE

REPORT AST-19-195-EN/3
AST-19-195

COMPANY

BARIQ FOR TECHNO & ADVANCED INDUSTRIES
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PETITIONER

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SUBJECT

Carbon Footprint assessment of the process for recycling PET from bottles coming from sorted domestic waste and its comparison to available data on virgin PET production

Electronic signature of the authorized personnel

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Reason for cancellation:
The current report modifies and cancels the report AST-19-195-EN/2 due to a transcription error in the conclusions.

TITLE

Carbon Footprint assessment of the process for recycling PET from bottles coming from sorted domestic waste and its comparison to available data on virgin PET production.

Description of the organization and its activity

BariQ is the first manufacturer of recycled polyethylene terephthalate (rPET) pellets in Egypt, the Middle East & North Africa (MENA). BariQ, the first "bottle-to-bottle" firm in MENA which is backed by world-class technology providers, are processed post-consumer plastic PET bottles, that would otherwise become part of the landfill or burned. BariQ is importing sorted bales of PET bottles from several locations around the world to pre-treat, wash, clean, process and refine them into rPET pellets ready to be used in the injection-blowing industry for bottle fabrication. Indeed, BariQ adopts state-of-the-art green technology backed by world class machinery suppliers and is the first non-Spanish PET recycler to be registered in ECOEMBES allowing BariQ to purchase PET bottle bales through the established periodic tendering system that shall finally be recycled at our plant in Egypt.

Period

The Carbon Footprint analysis of the present report corresponds to the period of a month as the data was provided within this period by the company**. New data was provided by the company on energy consumption and geographical distribution of sources for PET waste (ANNEX 3). New calculated values and results appear in *italics* along the report.**

Methology

To perform the carbon footprint calculation of the process of recycling PET from bottles into rPET pellets, the following task were carried out:

- Gathering information for the production process, the facilities and the inflows and outflows (raw and auxiliary materials, energy, fuel and water consumption, emissions, etc.).
- Reviewing the information provided by the company and requiring additional relevant information
- Complementing the lack of data
- Modelling the collected data by means of and environmental assessment software (SimaPro) to obtain the total carbon footprint of the process and their breakdown according to the different stages of the life cycle.
- Allocating of carbon footprint values to the products and by-products
- Searching for available data on carbon footprint for virgin products
- Analysing of the results and reporting.

Carbon Footprint Assessment

The carbon footprint is an environmental indicator related to the totality of greenhouse gases emitted by direct or indirect effect of an individual, organization, event or product. Indeed, the environmental impact category it relates is the Global Warming Potential (GWP). This is one of the categories obtained when performing a Life Cycle Assessment (LCA) over a product or process. For that reason, same LCA considerations will be followed for calculating the carbon footprint. Values of a carbon footprint are referred to the emission of CO_2 equivalent, i.e., all greenhouse gases emitted are referred to the global warming potential of CO_2, then summed.

The environmental assessment performed within this report will follow the international standards of application for Life Cycle Assessment:
- ISO 14040 Environmental management - Life cycle assessment - Principles and framework; and
- ISO 14044 Environmental management - Life cycle assessment - Requirements and guidelines.

The environmental assessment for the process for recycling PET from bottles coming from sorted domestic waste can be considered as a service for recycling plastic waste. This consideration allows for this service to be categorised within the International EPD® System[a] as an Environmental Product Declaration.

Environmental Product Declarations (EPDs) are ecolabels as defined by ISO 14025 Environmental labels and declarations - Type III environmental declarations - Principles and procedures. These are based on Product Category Rules (PCRs), which are documents that provide rules, requirements, and guidelines for developing an EPD for a specific product category.

For the recycling services for plastics, these EPDs are based on the Product Category Rule PCR 2013:08 Plastic waste and waste recovery (recycling) services (Version 2.12)[b].

This PCR and the EPD methodology are considered as a reference for calculating the environmental impacts of the different scenarios of the process for recycling PET from bottles coming from sorted domestic waste. However, only the global warming potential impact category will be assessed as it is related to the carbon footprint.

On the other hand, the recycling process of PET waste conducted by BariQ, produces rPET pellets able to be used as feedstock replacing virgin PET. In that sense, the obtained carbon footprint shall be compared against the production of virgin PET for the same application.
This is deeply assessed by PlasticsEurope in their eco-profiles[c] for different virgin polymers. These calculations follow the EPD structure and they also present results of environmental impacts of assessed plants and processes[d] including the Global Warming Potential category.

For that reason, results presented within this report can be used for assessing the environmental impacts of the recycling process or for the production of rPET pellets.

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[a] https://www.environdec.com/
[b] https://www.environdec.com/PCR/Detail/?Pcr=8655
[c] https://www.plasticseurope.org/en/resources/eco-profiles
[d] It states "Confidential input and output data for the PET production processes including on-site energy production was provided by 7 European PET producers for 12 production plants (primary data)"

The Life Cycle Assessment methodology defined on the ISO standards of reference comprises four steps: (1) Definition of Goal and Scope; (2) Inventory Data collection; (3) Environmental Impacts Assessment; and (4) Interpretation of results.
These will be detailed below separately.

Step 1. Definition of the objective and scope

Objective

The objective of this assistance is to perform the environmental assessment of the process of recycling PET from bottles into rPET pellets for obtaining the carbon footprint and to compare these results to the available data on virgin PET.

Then, the values for the carbon footprint of the process of recycling PET from bottles into rPET pellets will be compared against those to produce virgin PET for the same application, based on available general data for this process, i.e. PlasticsEurope or environmental impacts databases. Comparison will be done under the same approach for both rPET and virgin PET, then covering only the processes for producing ready to use PET materials.
In addition, the values for the global PET recycling system will be also presented. This assessment for the overall recycling process will provide future implementation measures to improve the carbon footprint of the system, if any.

Scope

The Carbon Footprint will be calculated under a "cradle to gate" approach, which means that the scope of the study will cover all processes from the obtention of raw materials (the cradle) to the delivery of the product to the customer at the factory gate. In that sense, this approach means that the PET from waste bottles belong to the raw materials, while rPET pellets obtained through the BariQ's recycling process are part of the products at the gate stage.

Therefore, carbon footprint corresponding to other downstream stages, such as transporting recycled PET to a distributor or converter of final products, subsequent processing stages, use of the product and its treatment after its service life, are out of the scope of this study. Moreover, this study would not serve to make an EPD (Environmental Product Declarations) neither a carbon footprint certification, but a comparison of the BariQ's process against reference PET production.

The carbon footprint analysis was executed based on the methodology of IPCC 2013 developed by the International Panel on Climate Change[e]. The used method lists the climate change factors of IPCC with a timeframe 100 years. The environmental impact category evaluated within this report is the Global Warming Potential (GWP) considering a timeframe of 100 years. Units for this impact category are kilograms carbon dioxide equivalent emitted (kg CO_2 eq).

Functional unit

The results of the carbon footprint will refer to 1,000 kilograms of residues of post-consumer PET bottles (inputs) as defined by the PCR for plastics recycling. Furthermore, the results will refer also to 1 kg of r-PET treated at the BariQ plant, as they to be compared against the state-of-the-art values from PlasticsEurope.

Flowchart

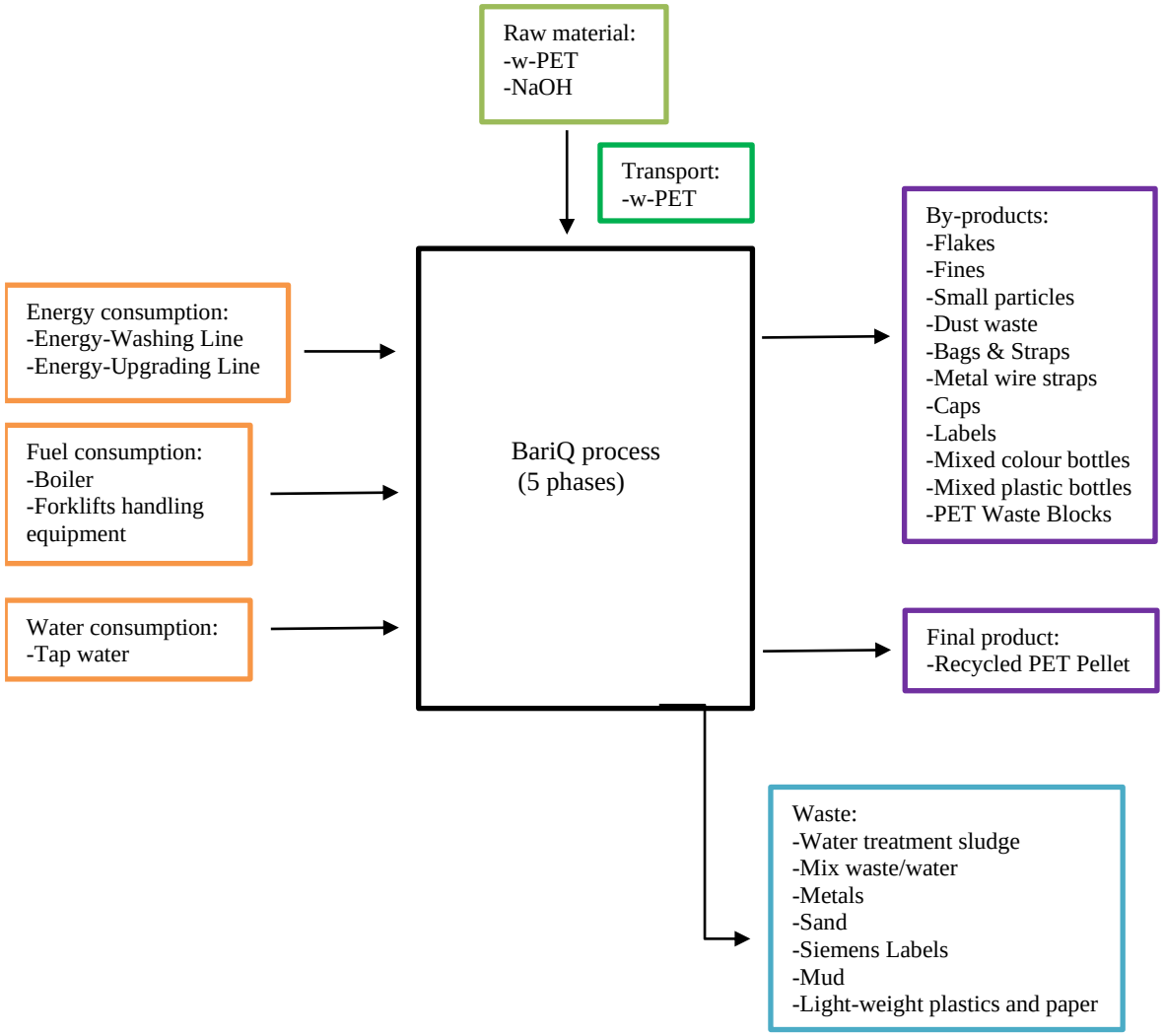
The scope of the analysis has been established until the recycled PET pellets are obtained from PET waste, i.e. “cradle to gate” approach. The flowchart provided by the company is showed in Annex 1 where the different processes conducted to perform the BariQ’s process under assessment is shown.

According to this flowchart and the data collected and the information exchanged within the company, the complete system boundary for the process to be assessed is detailed in

[e] https://www.ipcc.ch/report/ar5/wg1/

Figure 1.

Figure 1. System boundaries for the carbon footprint calculation



Step 2. Inventory Analysis

For the realization of this analysis, primary data were supplied by the company once they filled in a template (see Annex 2), and after further consultation by direct mails. To this end, the company was provided with a template for the collection of data related to process, such as quantities and types of auxiliary materials, electricity and fuel consumption, emissions and data relating to output materials, such as the recycled PET flake obtained and waste and co-products generated. The company provided the values on a month basis.

The secondary data (not directly provided by the company), are those corresponding to the transportation and waste treatment scenarios.

These values have been taken to the database ecoinvent 3.5, which is an accurate source, it accomplishes quality, accuracy, integrity and representativeness of the data.

As for the data collected, the following exclusions were followed for performing the calculation:

- Anti-yellow (as an input material) represents around 0.002% of the total inputs. The contribution of this material to the overall carbon footprint of the process can be then neglected.
- Emissions to the air are included within the impacts for boilers and other combustion processes, then they are not specifically assessed. In addition, not all these described gases are affecting the global warming potential[f].
- Some items initially described as by-products were moved to waste as defined by the company. This is explained below as for the allocation procedure.

Allocation rules for environmental impacts followed the recommendations from ISO 14040-44 standards. Allocation is used for burdening the overall impacts over the different products produced at the same time according to the process. As they cannot be avoided neither assessed separately within the recycling process, they must be weighted. Better than in a mass basis, the economic ponderation is preferred. For that aspect, the information was asked to the company.
Values are referred to the selling price of rPET pellets. Those with 0 value are then considered as waste.

Table 1. Economic ratio from all by-products with regards to the price for rPET pellets (data provided by the company)

Item	% to rPET pellets
PO Flakes	17%
Big Flakes	6%
Fines	7%
Metal Flakes	0%
Small Particles	22%
Dust Waste	19%
Mixed Flakes	1%
Bags & Straps	4%
Metal Wire Straps	7%
Sand	0%
Caps	1%
Labels	1%
Metals	0%
Siemens Label	0%
Mud	0%
Light weight plastics and paper	0%
Mixed Color Bottles	1%
Mixed Plastic Bottles	1%
Metal Flakes	0%
PET Waste Blocks	22%

[f] https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf

Complementary to all these primary data, it has been assumed that transportation of waste PET bottles occurred mainly by ship, from Spain to Egypt. Mean distances are assumed. Other transportations are considered within the ecoinvent 3.5 database average values for each of the item assessed.

For the waste treatment scenarios, for the initially described as waste and those coming from the 0% value in Table 1, these are considered:

- Water-based residues are treated as wastewater or sludge where it applies.
- Sand, mud and metals end of life is considered as for sanitary landfilling.
- Plastic-based wastes are treated as averaged plastic mixed waste is managed.

Step 3. Carbon footprint calculation

According to the EPD details for the plastics recycling service, two main stages are considered along the Product Category Rule (PCR):

- UPSTREAM PROCESSES, including collection and pre-treatment of plastic waste and raw and ancillary materials production
- CORE PROCESSES considering transportation of materials to the plant, recycling processes and waste management

This PCR defines the functional unit as 1,000 kg of plastic waste.
Once all data is compiled and referred this functional unit, they were modelled by means of the SimaPro 9.0 software. The calculation method EPD(2018) was used. This method is suitable for the generation of impacts categories as both defined by EPDs and eco-profiles. Results include global warming potential impact category, i.e., carbon footprint.

Carbon footprint results are compiled and presented in

Table 2. All the information related to mass quantity, energy and others, used for the assessment of the carbon footprint analysis to the process of recycling PET from bottles into r-PET pellets, will be referred by a functional unit, which is 1 ton (1,000 kg) of PET from bottles. Moreover, the results will be mentioned according on the output unit: 1 kg of r-PET.

Table 2. Carbon footprint for recycling 1.000 kg of PET waste from bottles through the BariQ's process

TOTAL CARBON FOOTPRINT	
	kg CO_2 eq/1,000 kg PET waste
BariQ's recycling process	***1.73E+02***

UPSTREAM PROCESS	*63%* of total carbon footprint	
	kg CO_2 eq/1,000 kg PET waste	% UPSTREAM
PET waste	9.34E+01	85.89
NaOH	1.53E+01	14.11
TOTAL UPSTREAM	**1.09E+02**	**100.00**
CORE	*37%* of total carbon footprint	
	kg CO_2 eq/1,000 kg PET waste	% CORE
Transport (truck)	*6.75E+00*	*10.52*
Transport (ship)	*2.38E+01*	*37.02*
Washing electricity consumption	*1.00E-01*	*0.16*
Upgrading electricity upgrading	*1.95E-01*	*0.30*
Boiler diesel consumption	2.91E+01	*45.30*
Forklift diesel consumption	2.80E+00	*4.36*
Water consumption	1.35E+00	*2.11*
Water waste treatment	1.23E-01	*0.19*
Solid waste treatment	2.36E-02	*0.04*
TOTAL CORE	**4.58E+02**	**100.00**

Thus, *173* kg CO_2 eq are emitted when 1,000 kg of PET waste are processed following the process defined in the plant of BariQ.

For the aim to compare the carbon footprint of the produced rPET pellets, it has more sense to refer these results to the output better than the input of the plant. However, as there are many by-products generated together with the rPET (see Table 1), it is not straightforward to allocate the carbon footprint only to the rPET.

Allocation process is not avoidable within this process. Besides, it has more sense to use the economic weighting better than a mass ratio. This is because there is not a direct physical relationship between by-products since it depends on the quality of input PET waste.

Thus, the following allocation (Table 3) can be done for the by-products obtained when processing the 1,000 kg of PET waste:

Table 3. Carbon footprint allocation for the products and by-products (outputs reclassified as wastes are excluded).

Product		Output production (kg/1,000 kg PET waste)	Economic allocation ratio* (%)	Carbon footprint allocation (kg CO_2 eq/output production)
Recycled PET Pellets		590.00	97.13	*1.68E+02*
By products	PO Flakes	29.66	0.83	*4.84E-02*
	Big Flakes	9.89	0.10	*1.71E-02*
	Fines	9.86	0.11	*1.99E-02*
	Small Particles	11.63	0.42	*6.26E-02*
	Dust Waste	12.74	0.40	*5.41E-02*
	Mixed Flakes	13.67	0.02	*2.85E-03*
	Bags & Straps	0.04	0.00	*1.14E-02*
	Metal Wire Straps	3.42	0.04	*1.99E-02*
	Caps	17.29	0.03	*2.85E-03*
	Labels	3.19	0.01	*2.85E-03*
	Mixed Color Bottles	14.70	0.02	*2.85E-03*
	Mixed Plastic Bottles	176.25	0.29	*2.85E-03*
	PET Waste Blocks	16.58	0.60	*6.26E-02*

* This ratio represents the economic gain of each product related to the total gain if all products and by-products are sold when obtained after processing 1,000 kg PET waste, at the economic price defined in Table 1

It shall be noticed that the Table 3 presents the distribution of the overall carbon footprint for the BariQ's process for processing 1,000 kg of PET waste (*173* kg CO_2 eq) among the products and by-products obtained for the processing of these 1,000 kg of PET waste. This means that the *168* kg CO_2 eq allocated for the rPET are referred to the 590 kg of rPET obtained after processing 1,000 kg of PET waste.

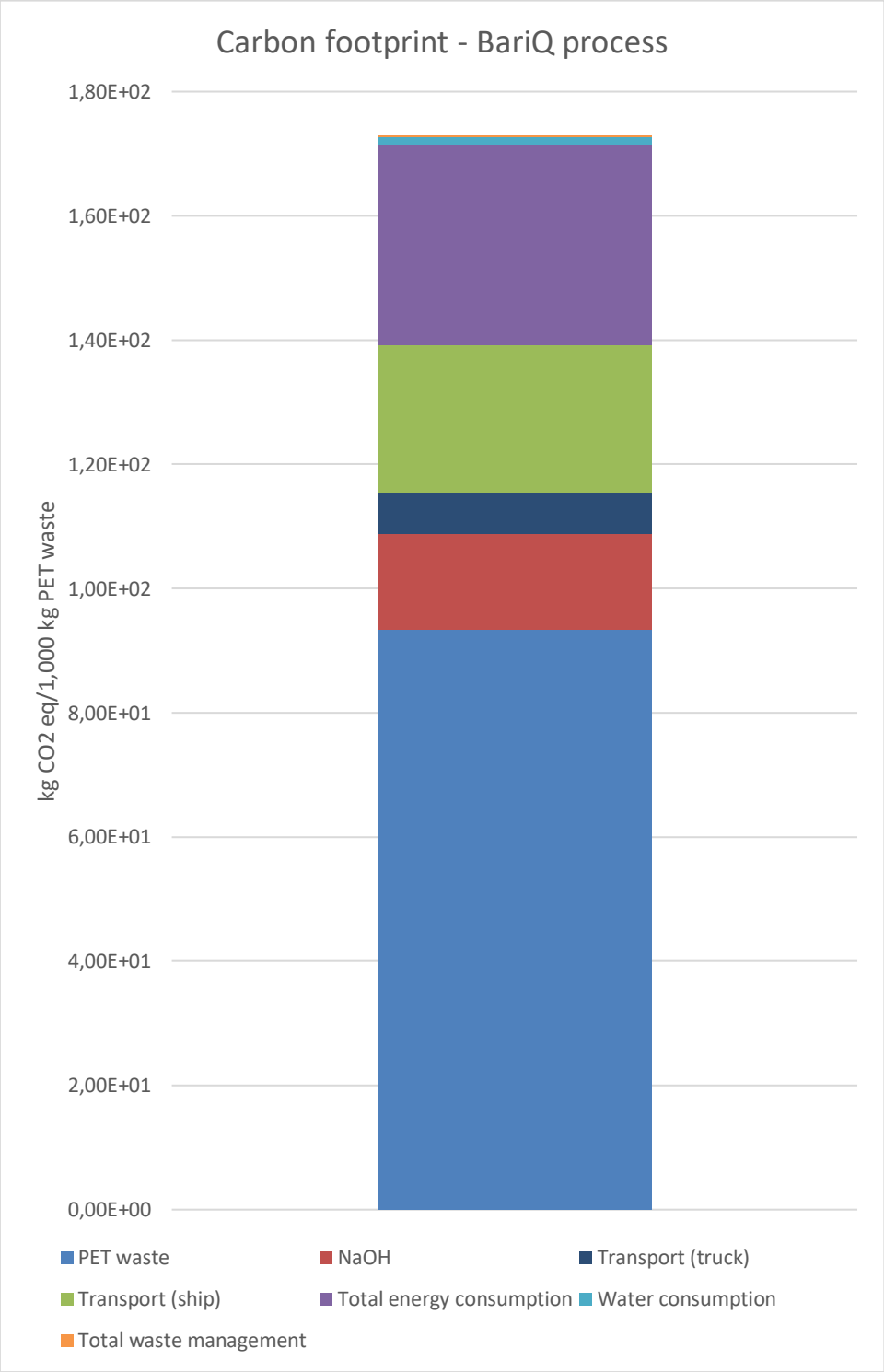
Thus, **the corresponding carbon footprint for rPET obtained along the BariQ's recycling process is *0.29* kg CO_2 eq/kg rPET pellets**.

Step 4. Interpretation of results

As detailed previously (

Table 2), main greenhouse gases emission for the BariQ process of recycling PET waste came from *the collecting, sorting and baling of PET waste occurring at the upstream phase*. This is graphically presented in Figure 2:

Figure 2. Contribution of different processes to the carbon footprint of the BariQ's process



The other processes contributing to the carbon footprint of the recycling process are:

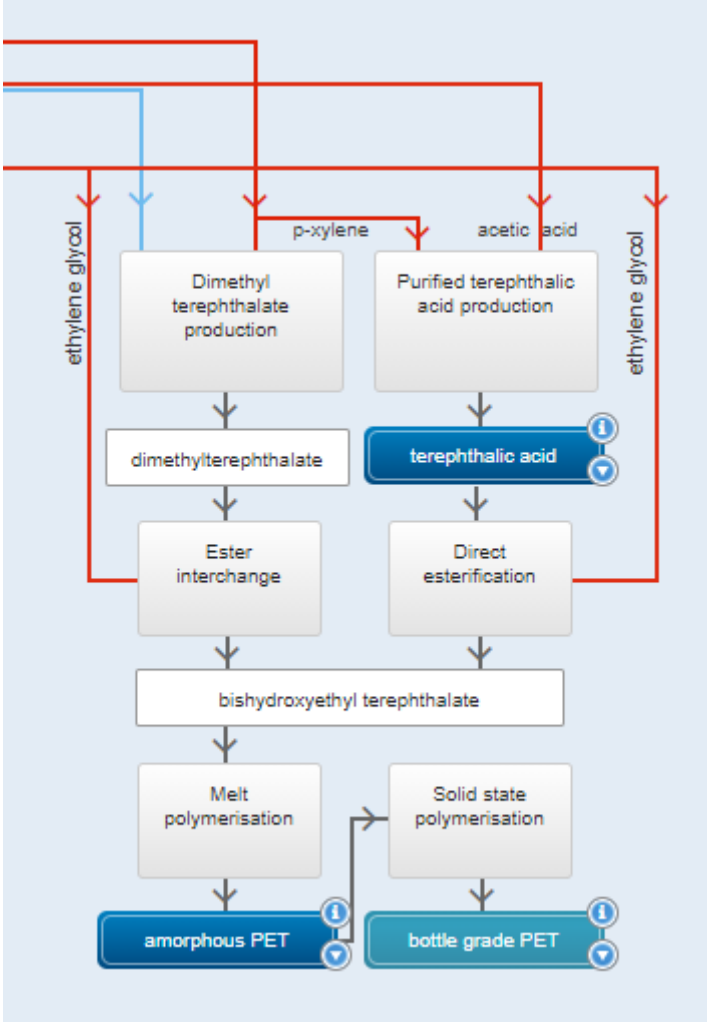
- *The energy consumption (mainly electricity) occurring at the core phase*
- The greenhouse gases emitted along *the transportation by ship of this PET waste from different sources (EU/UK and UAE)* to Egypt, and
- The production of caustic soda
- *The greenhouse gases emitted along the transportation by truck of this PET waste from local sources*

Waste management (water, solid and plastic) and water consumption have a small impact on the total carbon footprint of the recycling process.

In that sense, a deep analysis of other environmental impacts along the whole life cycle is recommended for widening the view of the overall environmental performance of the recycling process, i.e., water scarcity, land use and acidification categories should be analysed, among others.

As one of the targets of the assistance is to compare the carbon footprint of the rPET pellets obtained through the BariQ's recycling process against the virgin PET production, reference data for the last were consulted.
PlasticsEurope is used as the reference for this data by means of using the eco-profiles they produce for different kinds of polymers.
By browsing its web, it is possible to obtain the eco-profiles for virgin PET at botte grade:

Figure 3. Snapshoot of the PlasticsEurope webpage for ecoprofiles where bottle grade PET is presented



As previously explained, this eco-profile contains also an EPD report to produce virgin PET. Data were collected from different plants and different processes, so it is representative of the global production of PET.

As an EPD, it contains other impact categories than global warming potential (Figure 4).

Figure 4. Snapshoot of the EPD for the production of virgin PET published by PlasticsEurope

Output Parameters

Indicator	Unit	Value
Global Warming Potential (GWP)	kg CO_2 eq	2.19
Ozone Depletion Potential (ODP)	g CFC-11 eq	0.018
Acidification Potential (AP)	g SO_2 eq	6.47
Photochemical Ozone Creation Potential (POCP)	g Ethene eq	2.31[3)]
Eutrophication Potential (EP)	g PO_4 eq	1.49
Dust/particulate matter (≤ 10 µm)[2)]	g PM10	5.64
Total particulate matter[2)]	g	5.94
Waste	g	9.1
• Non-hazardous	g	8.8
• Hazardous	g	0.3
• Unspecified	g	0.0

[2)] Including secondary PM10
[3)] Including NMVOC (1.80 g Ethene eq./kg PET)

These environmental impact values are associated with the production of 1 kg of (virgin) PET. Inventory data was provided by 7 European PET producers for 12 production plants. Confidentially applies so there is no way to determine which ones are involved.

According to the data reported by PlasticsEurope, the production of virgin PET emits 2.19 kg CO_2 eq/kg of virgin PET (Figure 4). The values obtained from the BariQ's process is *0.29* kg CO_2 eq/ kg rPET (see Step 3). By comparing both values, it means an overall reduction reduction of *1.9* kg CO_2 eq emission when producing rPET through the BariQ's process, implying an *87%* reduction of the carbon footprint compared to the virgin production of PET.

CONCLUSIONS

Carbon footprint calculation was performed for the recycling process for PET waste following the process defined by BariQ. Primary data was collected from the company and complemented with secondary data when needed. Estimations, exclusions and calculations were detailed.

The overall recycling process that BariQ perform for PET waste has a carbon footprint of *173* kg CO_2 eq/1,000 of input PET waste. *The process contributing the most to this carbon footprint is the PET bottle waste processing (collection, sorting and baling) as the new data provided by the company for the energy consumption of the recycling process is highly reduced.*

Besides, allocation of these overall carbon footprint was done for referring to the production of recycled PET pellet through this process.
Thus, **the carbon footprint is *0.29* kg CO_2 eq/kg rPET pellets**.

This value is lower than the corresponding carbon footprint value to produce virgin PET, as detailed by PlasticsEurope on its eco-profiles and Environmental Product Declarations.

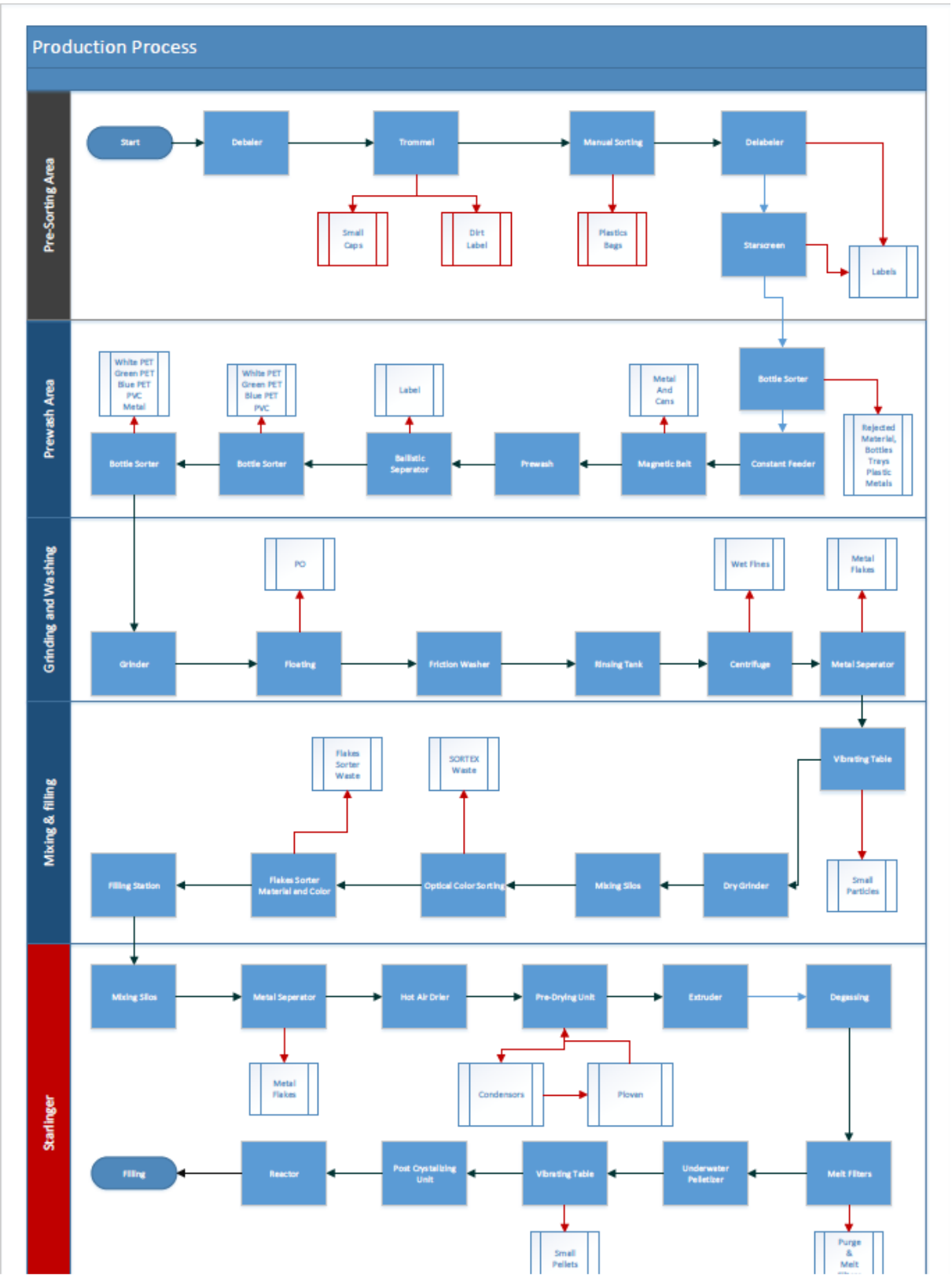
Indeed, the carbon footprint of rPET pellets obtained through the BariQ's recycling process is *87%* lower than the corresponding value for virgin PET production.

SUMMARY TABLES

CARBON FOOTPRINT	Value	Units
Overall BariQ's recycling process	*173*	kg CO_2 eq/1,000 kg PET waste
BariQ's recycled PET pellets	*0.29*	kg CO_2 eq/kg rPET

Just for comparison to the previous report with initial data provided, values were 567 kg CO_2 eq/1,000 kg PET waste and 0.93 kg CO_2 eq/kg rPET, and the production of rPET pellets accounted for 42% lower values than the corresponding production of virgin PET from publicly available database.

ANNEX 1 – flowchart of the BariQ's process



ANNEX 2 – data collected on the template

AIMPLAS INSTITUTO TECNOLÓGICO DEL PLÁSTICO	Carbon Footprint (CF) Life Cycle Inventory (LCI)

Process	Recycling PET from bottles coming from sorted domestic waste
Product	Recycled Polyethyelene Teraphthlate
Period	Month

Period (if it applies): a

Manufacturing Process Flow Diagram
Please describe the global manufacturing process and draw a flow chart of all sub-processes, including recovery, recycling and pollution treatments, within the global process. Please identify the inputs (raw materials and all other input materials) and outputs (product, by-product, air emissions, solid waste, residual water and other liquid effluent) in each sub-process. Please quantify the flows of materials, check the balance of masses (Inputs = Outputs), and record the inventory data in the tables below

It could be attached in

NOTE: Please quantify the flows of materials, check the balance of masses (Σ Inputs = Σ Outputs), and record the inventory data in the tables here below.
Please, explain any assumptions and hypotheses that you have had to do, when quantifying materials and energy consumption, and for relating these quantities to the functional unit.

PRODUCT	Recycled Polyethyelene Teraphthlate	PRODUCTION AMOUNT BASIS	1 Kilogram

SYSTEM INPUTS

(*) All quantities should refer to the production amount basis of final product = ...

RAW MATERIALS & ANCIALLIRIES. Units: kg, g, m3, litres, etc.	**Quantity** *	**Units**
Plastic Bottles	**Kg**	**2,074,576**
Caustic Soda (NaOH)	**Kg**	**25,804**
Anti-Yellow	**Kg**	**51**

ENERGY CONSUMPTION [by sub-process or total]	**Quantity** * **(kWh)**
Washing Line	873,724
Upgrading Line	603,750

FUEL CONSUMPTION [by sub-process or total]. Units: kg, m3, litres, etc.	**Quantity** *	**Units**
....Diesel..... gas ☐ / propane ☐ / diesel ☐ / gasoline ☐ / others	Liters	20,957

WATER CONSUMPTION [by process or total]. Units: kg, m3, litres, etc.	**Quantity** *	**Units**
Tap Water	m3	6,340

OTHERS [by process or total]. Units: kg, m3, litres, etc.	**Quantity** *	**Units**

SYSTEM OUTPUTS		
(*) All quantities should refer to the functional unit of the final product = ...		
FINAL PRODUCT [total]. Units: mg, g, kg, m3, etc.	**Quantity** *	**Units**
Recycled PET Pellets	**KG**	**1,224,000**
BY-PRODUCTS [by sub-process or total]. Units: mg, g, kg, m3, etc.	**Quantity** *	**Units**
PO Flakes	**KG**	**61,540**
Big Flakes	**KG**	**20,514**
Fines	**KG**	**20,461**
Metal Flakes	**KG**	**370**
Small Particles	**KG**	**24,120**
Dust Waste	**KG**	**26,430**
Mixed Flakes	**KG**	**28,350**
Bags & Straps	**KG**	**90**
Metal Wire Straps	**KG**	**7,090**
Sand	**KG**	**7,620**
Caps	**KG**	**35,870**
Labels	**KG**	**6,610**
Metals	**KG**	**6,770**
Siemens Label	**KG**	**28,450**
Mud	**KG**	**19,090**
Light weight plastics and paper	**KG**	**6,220**
Mixed Color Bottles	**KG**	**30,501**
Mixed Plastic Bottles	**KG**	**365,640**
Metal Flakes	**KG**	**4,500**
PET Waste Blocks	**KG**	**34,400**
AIR EMISSIONS. Units: mg, g, kg, m3, etc.	**Quantity** *	**Units**
CO2	**ppm**	**1385**
CO	**ppm**	**254.25**
NO2	**ppm**	**2.63**
SO2	**ppm**	**1300.84**
Nox	**ppm**	**500**
WATER EMISSIONS / WASTEWATER. Type or composition and amount. Units: mg, g, kg, m3, etc.	**Quantity** *	**Units**

SOLID WASTE [by sub-process or total]. Units: mg, g, kg, m3, etc.

Waste description	**Type**: inert, hazardous, toxic, etc.	**Quantity** *	**Units**	**Disposal:** recovery, recycle, incineration, landfill, others…
Water Treatment Sludge	Hazardous	kg	5,000	Landfill
Mix Wastes/ Water	Non-Hazardous	kg	80,000	Landfill

ANNEX 3 – new input data provided by the company

It was pleasure to talk with you on Thursday, below are the data required by BariQ for the different material sources and updated electricity:

Source	Transportation method	Mix %
EU/ UK Source	Ocean Freight	50 percent
Local Source	Trucks with diesel engines	25 percent
UAE Source	Ocean Freight	25 percent

As for electricity:

ENERGY CONSUMPTION [by sub-process or total]	**Quantity *(kWh)**
Washing Line	373
Upgrading Line	724
Total Energy	**1,098**

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9.- The test Reports or Certificates are not an expert opinion to be used before a judicial body and therefore they may not be used as such before a court of law.

10.- When the Reports or Certificates are requested for use in judicial proceedings. AIMPLAS will participate preferably by videoconference. In case this would not be possible. the costs of travel expenses. subsistence allowance or other additional costs that may be generated during the service. will be borne by the client. AIMPLAS will previously prepare a quotation that will be sent to the client for his knowledge and approval.

11.- This electronically signed document is valid for legal purposes and should be retained. Any printing or graphic representation that is made of it will be a copy and is only valid in the terms that determine the recipient of the signature.

12.- This report has been issued with the information available and provided by the client in the acceptance of the corresponding offer. so that in no case may a subsequent report be issued with information different from the one included in this report. and that has been contributed previously.