LIFE CIRC-ELV

BOOSTING CIRCULAR ECONOMY OF PLASTICS FROM END-OF-LIFE VEHICLES THROUGH RECYCLING INTO HIGH ADDED-VALUE APPLICATIONS

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PU	Public	✓
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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1. Summary and Objectives

This deliverable shows how the Consortium worked to transfer the LIFE CIRC-ELV model to other areas in the EU and replicate it in other sectors. After all the work done during the project, it can be concluded that the implementation cannot be a turnkey model but instead, it must be done on a tailored solution that will depend on many different parameters and conditions.

2. Transferability guidelines

To be able to transfer the system and implement it in other areas in the EU 3 different initial actors should be differentiate, which are: Authorized Treatment Facilities (ATFs), Compounder/Recycler or Part Manufacturer.

2.1.1 ATFs

ATFs will always be needed when trying to implement the LIFE CIRC-ELV model because they are the ones that will extract the plastic parts following the processes developed during the project.

The project Consortium has done several actions to get ATFs from other areas involved.

With the dissemination activities carried out during the project (ATFs around Europe), ATFs can get to know about the project and then contact the Consortium asking for their support to implement the system in his area. This has already occurred in 3 occasions with ATFs in Spain and Portugal.

Also, INDRA organized a Workshop at their facilities to show the different lessons learned during the project when trying to implement the separation of valuable plastics at the ATF level.

As already stated, the system cannot be implemented as a turnkey project and in each case, needs a detailed study to determine if the system can be effectively implemented and which is the best way to do so. There are several aspects that need to be considered when an ATF wants to implement the LIFE CIRC-ELV model at their premises:

1.- **Volume of ELVs treated per year:** even if the project can be implemented in any ATF, only ATFs treating more than 1.000 ELVs/year will find an economic balance and will be able to invest in the equipment needed.

2.- **Equipment**: it is highly important to analyse the equipment that the ATF is already using to evaluate if it can be used and there is no need to acquire new equipment for extracting the bumpers. There are specific tools that have been developed for “cleaning” the bumpers that are highly recommendable to acquire.

3.- **Lay out**: The lay out of the ATF is very important to reduce the movements of the plastic parts around the facility and minimize the extraction and cleaning costs.

4.- **Plastic Recycling infrastructure**: it is highly important to have at least a plastic recycling facility in the surroundings (around 50 km distance). If the ATF does not install shredding equipment and washing equipment, the recycling facility must do this task. It is very important to know the requirements of the recycling facility for accepting the material, because it could determine the equipment needed at the ATF (baling press, shredder, etc.)

5- **Economic factors**: of course, to analyse the viability of implementing the model in another EU area, the market conditions are very important. The ATF will need to consider his labour costs as well as the transportation and other costs. The price of the materials is more or less the same all around the EU, but it could also be slightly different, so it will have to be considered.

If after having analysed all the aforementioned parameters the implementation is viable, the ATF would have implemented a big part of the LIFE CIRC-ELV system, because the recycler will sell the plastics coming from ELVs on the market and will finally be used in one or other application. The LIFE CIRC-ELV model goes beyond and to have the complete model implemented, the following parameters should be also considered:

6.- **Plastic Compounding infrastructure**: it is important to have at least a plastic compounding facility in the surroundings of the recycling plant (around 50 km distance). The compounder will have to be in close contact with the recycler and after receiving the first plastics coming from ELVs could require some additional requirements that will affect the activities of the ATF and/or the recycler. The compounder will also determine – in very close cooperation with the final destination – the maximum percentages of recycled content in the final plastic pellets to be produced.

6.- **Plastic Part manufacturer**: it is also very important to have a plastic part manufacturer that will incorporate the recycled plastics in their process. Their technical requirements must be clear from the very beginning, and they will have a big influence in the whole process but specially in the compounding phase. The plastic part producer will also set the quantities of recycled plastics he will need monthly and the whole chain must ensure that these quantities can be effectively produced with the quality requirements set for the materials.

2.1.2 Compounder/Recycler

The interest to implement the LIFE CIRC-ELV model from other areas of the EU could also come from a recycler/compounder and in this case the parameters that need to be analysed are somehow different.

With the dissemination activities carried out during the project compounders/recyclers around Europe will also get to know about the project and can contact the Consortium asking for their support to implement the system in his area.

As already stated, the system cannot be implemented as a turnkey project and in each case needs a detailed study to determine if the system can be effectively implemented and which is the best way to do so. There are several aspects that need to be considered when compounder/recycler wants to implement the LIFE CIRC-ELV model at their premises:

1.- **ATF infrastructure:** to have the possibility to transfer and implement the LIFE CIRC-ELV model it is needed to have around at least some ATFs treating more than 1.000 ELVs/year or an ATF treating a big number of ELVs/year so that the compounder/recycler makes sure that he can receive enough material to produce the recycled plastics.

2- **Economic factors**: of course, to analyse the viability of implementing the model in another EU area, the market conditions are very important. The compounder/recycler needs to consider the price of the virgin plastics and compare them with the price of the recycled plastics produced. In some cases, not only price is important but also there are some producers that voluntarily, or even pushed by the regulations, require a minimum recycled content.

3.- **Plastic Part manufacturer**: it is also very important to have a plastic part manufacturer that incorporates the recycled plastics in their process. Their technical requirements must be clear from the very beginning, and they have a big influence in the whole process but specially in the compounding phase. The plastic part producer set the quantities of recycled plastics he needs monthly and the whole chain must ensure that these quantities can be effectively produced with the quality requirements set for the materials.

2.1.3 Plastic part producer

The interest could also come from a plastic part producer. Again, with the dissemination activities carried out during the project plastic part producers around Europe will get to know about the project and can contact the Consortium asking for their support to implement the system in his area.

As already stated, the system cannot be implemented as a turnkey project and in each case, it needs a detailed study to determine if the system can be effectively implemented and which is the best way to do so. There are several aspects that need to be considered when a plastic part producer wants to implement the LIFE CIRC-ELV model at their premises:

1.- **ATF infrastructure:** To have the possibility to transfer and implement the LIFE CIRC-ELV model it is needed to have around at least some ATFs treating more than 1.000 ELVs/year or an ATF treating a big number of ELVs/year so that the compounder/recycler make sure that he can receive enough material to produce the recycled plastics.

2- **Economic factors**: of course, to analyse the viability of implementing the model in another EU area, the market conditions are very important. The plastic part producer needs to consider the price of the virgin plastics and compare them with the price of the recycled plastics he could receive from the compounder/recycler. In some cases, not only price is important, but also there are some producers that voluntarily, or even pushed by the regulations, require a minimum recycled content.

6.- **Plastic Compounding infrastructure**: it is important to have at least a plastic compounding facility not too far away of the plastic part producing plant (around 100 km distance). The plastic part producer will give the technical requirements of the recycles plastic and could also ask for a minimum recycled content to the compounder/recycler. They need to work in close cooperation to find the best formulation of the recycled plastics. The plastic part producer will also set the quantities of recycled plastics he will need monthly and the whole chain must ensure that these quantities can be effectively produced with the quality requirements set for the materials.

3. Replicability guidelines

To be able to replicate the system and implement it in other sectors in the EU the LIFE CIRC-ELV model, 3 different initial actors should be differentiated, which are: Authorized Treatment Facilities (ATFs), Compounder/Recycler or Part Manufacturer.

The only difference with the transferability guidelines are the requirements that the plastic part producer – in this case for a different sector than the two analysed already during the LIFE CIRC-ELV project i.e., automotive and construction sectors – will require for producing the part/product of the sector involved. One of the sectors that have already shown possibilities of replicating the model are the electric and electronic equipment.

4. Conclusions

The transferability and replicability of the LIFE CIRC-ELV needs to be analysed on an individual basis. The LIFE CIRC-ELV stakeholders at the different stages are in the disposition of offering consulting services to any ATF, compounder or part manufacturer in order to analyse which is the best way to implement the process at their facilities by looking at all the stages needed and providing not only technical guidelines for their process but also helping in finding the partners and providing them also with technical guidelines in order to have all the process covered.