POSITION PAPER – EVALUATION and RECOMMENDATIONS related to Photovoltaic Panels

Brussels, May 2023

Photovoltaic panels versus EEE:
8 years' experience under WEEE regulations across Europe

In view of the evaluation of the Waste Electrical and Electronic Equipment (WEEE) Directive 2012/19/EU, its transposition in 27 national WEEE laws and the UK experience, PV CYCLE – represented with several Producer Responsibility Organizations in several countries of the European Union – would like to express its evaluation of the presence of photovoltaic (PV) panels under the scope of the WEEE Directive 2012/19/EU and its transposition across the Member States.

During the past eight (8) years, PV CYCLE as the first voluntary collective take-back system (2007-2013) and the first and only fully dedicated to photovoltaic panels collective take-back system with WEEE Compliance services across multiple countries in the European Union, has observed that photovoltaic panels and WEEE legislation do not match with each other for multiple reasons:

Photovoltaic panels	**Any other Electrical and Electronic Equipment**
GENERATE electricity	CONSUMES electricity
LONG LIFETIME	RELATIVELY SHORT LIFETIME
INVESTMENT PRODUCT	CONSUMABLE PRODUCT
LONG REPLACEMENT CYCLES	SHORT REPLACEMENT CYCLES
EQUAL FINANCING for FUTURE COSTS required	ROLLING (PAYG) FINANCING is sufficient due to short lifecycle with in some countries building up a limited number of provisions
VOLATILE Market	STABLE Market
IMPACTED by ENERGY POLICY	No impact from Energy policy
IMPACTED by GEOPOLITICAL decisions	No impact from geopolitical decisions
IMPACTED by SUBSIDY MECHANISMS	No Subsidy mechanisms
NOT IN EACH MEMBER STATE PV SOLAR ENERGY is present	Is PRESENT in EACH MEMBER STATE from North to South and East to West

This paper with our evaluation of the WEEE Directive 2012/19/EU mainly focuses on photovoltaic panels and offers also solutions for any further legislative proposal in relation to Extended Producer Responsibility for products and equipment from the Renewable Energy sector.

As this paper is evaluating the current WEEE Directive, we offer during this evaluation also suggestions and solutions within the mindset that photovoltaic panels would continue being under the scope of the revised WEEE Directive. However, the discussion is no longer if Extended Producer Responsibility is required or not.
THE discussion is to outline and draft a framework for Extended Producer Responsibility for all equipment and for all products which are investment products generating electricity and which have a long lifetime and an investor behavior instead of a household consumer behavior, having a short lifetime, being fast consumable electronics and which consume electricity. Therefore, we insist on developing a separate Extended Producer Responsibility legislative framework for ALL Renewable Energy Equipment (REE).

EXECUTIVE SUMMARY – OVERVIEW OF PV CYCLE RECOMMENDATIONS

In this section, we present an overview of the PV CYCLE recommendations on several provisions arising from the evaluation of WEEE Directive 2012/19/EU. Detailed explanations one can find after this summary.

1. GENERAL RECOMMENDATION

Renewable Energy products and equipment **do not fit** under the WEEE Directive. We invite the European Commission to exclude photovoltaic panels from the scope of WEEE and **to start up an impact assessment** of an Extended Producer Responsibility (EPR) legislation **for ALL Renewable Energy products and equipment** whereby the core of the discussion must be to define an EPR framework for **Investment products generating electricity** and having a **complete different business environment** than fast-consuming EEE consuming electricity and at the same time **creating a level playing field for ALL Renewable Energy Equipment (REE)**.

2. DEFINITION OF PRODUCER

PV CYCLE recommends to take into account the supply chain of investment products which are also installed on a (very) large scale in big photovoltaic power plants owned by investors or utilities or Single Purpose Vehicles (dedicated legal entities only set up for the exploitation of an energy generating (solar) power plant) and whereby the equipment is delivered not through online sales activity. In the current definition of Producer, there is a loophole which can best be solved by having a separate Extended Producer Responsibility legislation for all Renewable Energy products or equipment.

3. DEFINITION OF PHOTOVOLTAIC PANELS

PV CYCLE recommends to clearly define what a photovoltaic panel is in the legislation and insert in the FAQ's accompanying the legislation a non-exhaustive list of what is considered as being a photovoltaic panel. Now, the FAQ's only contain what is not considered as a photovoltaic panel.

4. PHOTOVOLTAIC PANELS – HOUSEHOLD WEEE OR OTHER THAN HOUSEHOLD WEEE AND CONSEQUENCES

PV CYCLE recommends on defining photovoltaic panels as 'Household EEE' in each Member State in order to secure proper financing with a limited period to build up provisions for these products with a very long lifetime and fickle market trends triggered by geopolitical and energy policy decisions.

5. SEPARATE COLLECTION

The notion of a separate collection of PV panels must remain.
However, collection of photovoltaic panels through municipal collection network must be forbidden towards the Member States.
PV CYCLE supports the notion that Producers are allowed to set up and to operate individual and/or collective take-back systems provided that these are in line with the objectives of this directive ànd that in each Member State the Individual option is available ànd that the assessment of an Individual plan is equal as for a Collective Producer Responsibility Organization.

6. COLLECTION RATE

PV CYCLE recommends to abandon immediately collection rates or targets for photovoltaic panels.
PV CYCLE proposes to introduce Key Performance Indicators which considers the very long lifetime and the extended lifetime of photovoltaic panels as part of a photovoltaic power installation and which takes into account photovoltaic panels are an investment product with a complete different behavior than short life consumable electrical and electronic equipment.

7. PROPER TREATMENT

PV CYCLE proposes to define minimum waste treatment requirements for all Renewable Energy products and equipment under a dedicated Extended Producer Responsibility legislation based upon an in-depth assessment of which materials are used in all Renewable Energy products and then define objectives which considers that RE products do not contain the classical components of classical EEE, such as plastics and metals.

8. RECOVERY TARGETS

PV CYCLE recommends to implement reasonable and realistic recycling and recovery targets for flat glass laminated products which have nothing in common with classical e-waste which is composed of only metals and plastics.

PV CYCLE proposes to introduce Key Performance Indicators for the recovery targets.

PV CYCLE recommends to harmonize a common European Union understanding and interpretation of what is understood by 'recycling', 'recovery' or 'other material recovery'. Therefore, we call upon the European Commission to strive for harmonization regarding the interpretations of definitions from the Waste Framework Directive which affect the WEEE Directive and any other Directive regarding Extended Producer Responsibility because today there are Member States where recycling has a complete different (narrow) interpretation compared to other Member States where the large interpretation prevails. One of the best examples is what the activity of using recovered materials in infrastructure works: recycling or landfilling. These multiple interpretations have a huge impact when comparing the recovery target WEEE from one Member State to another Member State.

PV CYCLE recommends to first have in place a Norm or Standard or Technical Specification regarding the reuse of photovoltaic panels and – in a second stage – to call upon the European Union to invite IMPEL to enforce much more the shipments of photovoltaic panels and used photovoltaic panels entering and leaving the European Union.

9. FINANCING OF EEE IN RELATION TO THE DISTINCTION DATE BETWEEN HISTORICAL WASTE AND NEW WASTE

PV CYCLE recommends to assess carefully if the distinction between financing 'Household WEEE' versus financing 'WEEE from users other than private households' still makes sense for equipment with a long lifetime and which is in fact an investment equipment installed by professionals, even on a household rooftop.

PV CYCLE recommends two options.
Or remove the 'dual use' notion for photovoltaic panels and re-introduce or the distribution channel as criterion or even abolish the idea that equipment or products are only used in a household or only used in a commercial, industrial or other source environment because the society has drastically changed and today one notices that households also purchase products, equipment and services at retail shops which were once only accessible for professionals and which are now open for the broad public and the like.
Or impose that in each Member State photovoltaic panels are considered as 'dual use' equipment and thus 'household equipment' in order that at least a proper financing for this equipment with a very long lifetime is ring-fenced and guaranteed.

10. HISTORICAL WASTE: DISTINCTION DATE OF 13 AUGUST 2005

PV CYCLE invites the European Commission to remove the distinction date of 13 August 2005 for photovoltaic panels because before that that date barely a few photovoltaic panels were placed in the territory of one of the 27 Member States. PV CYCLE recommends to set the distinction date for photovoltaic panels on 1 January 2014 in order to set a clear cut off between so-called historical and new (W)EEE.

11. AUTHORIZED REPRESENTATIVE

PV CYCLE fully supports the notion of authorized representative and insists on harmonized and equal implementation of this requirement with a clear set of instructions on how to implement this in each Member State.

1. GENERAL EVALUATION

We understand that Extended Producer Responsibility more and more applies to products or equipment, which are of recent date and which were put for the first time under the scope of the recast WEEE Directive of 2012.

After eight years' experience, it is for all the Producer Responsibility Organizations we represent[1] quite clear that photovoltaic panels do **not** fit under the WEEE Directive because of the following:

- The definition of "Producer" misses one big case, which represents the majority of PV Panels placed on the market in the large European countries, i.e. the Single Purpose Vehicle legal entities;
- Photovoltaic panels **generate electricity**, whilst all other electrical and electronic equipment (EEE) **consumes electricity;**
- Photovoltaic panels are an **investment product**, whilst the large majority of other electrical and electronic equipment are rather 'fast-consuming' products;
- Photovoltaic panels have a **very long lifetime**, supported by a manufacturer' product guarantee of ten (10) years and a performance guarantee of twenty+(20+) years;
- Placing on the market of photovoltaic panels are (very) **strongly influenced by national energy policy and geopolitical decisions ànd by financial incentives** (e.g. feed-in tariffs, subsidies for renewable energy projects, investment subsidies for large utility-scaled PV power plants, etc.), whilst the sales of other electrical and electronic equipment is not influenced by energy policies or subsidies and the like;
- Extended Producer Responsibility legislation such as the WEEE Directive are driven by achieving targets, the higher the better because the assumption is that the short lifetime of other EEE only generates more and more, faster and faster huge amounts of waste or amounts of reusable products. Photovoltaic panels, on the contrary, are investment products **constructed to avoid waste**, to operate in outside weather conditions for a very long time, whilst the fast technological evolution (more efficient photovoltaic panels now than ten years ago) results in a situation that even when the current installed photovoltaic capacity would become tomorrow all potential reusable photovoltaic panels, their usage is less certain or not secured because the current technology is more advanced and many times cheaper than the photovoltaic panels of ten to fifteen years ago;
- The **collection target** based upon the sales numbers of the preceding three years is one of the clear examples where the conflict between fast-consuming EEE/E-waste and long lifetime investment products such as photovoltaic panels are in huge and constant conflict;
- **Treatment targets** which still refer to EEE which is made of mainly metals and plastics is in a big and constant conflict with a laminated flat glass sheet product such as a photovoltaic panel, which is mainly composed of lots of flat glass (not even comparable with car glass or building glass), a bit of aluminum and very small amounts of metals (copper) and silicon, which is in fact a by-product of sand.
- Treatment targets which are influenced by the **definition of recycling and recovery**. Despite the definitions of recycling and recovery from the Waste Framework Directive, we notice that each Member State has a different interpretation of 'recycling' and 'recovery' which results in different recycling yields towards photovoltaic panels and - in general – all kind of waste and WEEE Treatment activities in the EU-27;
- The **'dual use' notion** results in an everlasting discussion if photovoltaic panels installed in large scale photovoltaic power installations are household EEE as the dual-use definition points out or – in fact – in non-household equipment. However, as the original WEEE Directive of 2002 has been drafted with a focus on 'household EEE' and its accompanying Producer Responsibility and the recast version 2012 has barely improved the distinction between household and 'other than', we notice that the vast majority of photovoltaic panels installed in the EU-27 are installed in commercial, industrial and large-scaled PV Power plants operated by investment companies or financial organizations;
- Regarding **the financing**, we have warned during the years 2010-2012 (draft stages of Directive 2012/19EU) on numerous occasions that not allowing EEE for the first time under the scope of WEEE, to benefit from the visible fee during a limited number of years, shall create a enormous risk regarding the financing of waste PV Panels for the future. After eight years, except for Belgium and France where the visible fee is in place for PV Panels, there are in the other EU-27 countries barely or no provisions in place for a product with a very long lifetime, being photovoltaic panels; this is a ticking time bomb and financial risk.
- Towards the Authorized Representative notion, the implementation went also in several directions whereby some countries at the beginning had no idea how to implement and monitor this whilst other countries provided clear of guidelines.

[1] We refer to 'About PV CYCLE' at the last page.

2. DEFINITION OF PRODUCER (article 3, WEEE Directive 2012/19/EU)

The definition of *Producer* in the WEEE Directive currently disregards and misses a huge allocation of how photovoltaic panels are placed into the market.

The current definition – similar as with many other articles and notions in the WEEE Directive – only takes into account the 'classical' electrical and electronic equipment which includes mainly fast consuming EEE (TV sets, IT, washing machines, etcetera) which are placed on the market through large wholesales companies, large and small retailers and through online sales shops with the majority of clients being normal households or natural persons.

The photovoltaic supply chain works completely different.
With exception of a few photovoltaic panel manufacturers in the European Union, the vast majority of PV Panels is manufactured outside the EU-27, enters each country of the EU-27 through one or more importers – mainly wholesales or distributing companies – where the national or local installer (a 'professional') purchases PV Panels which are then installed and sold to household rooftop owners or owners of commercial or industrial rooftops or to Single Purpose Vehicles (SPV), legal entities which are set up for the sole purpose of large scale generating and selling photovoltaic electricity.
The latter SPV - and in size the biggest one – are utilities or financial organizations which are investing in large scaled ground mounted photovoltaic power installations of at minimum 1 Megawatt (MW) and tending to sometimes 100 MW or more and thus representing easily 3.000 photovoltaic panels (~ 1 MW).
The PV panels installed in these large scaled power plants are directly purchased at the foreign manufacturer and are 'as such' not placed on the market by a local distributor or wholesales company, neither by an installer and thus in some Member States we have noticed that the Member State has no idea on who to define as "Producer" (the foreign manufacturer or the local legal entity representing the large PV power plant, also known as the SPV) or defines – by lack of clear insight – then the foreign manufacturer (!), even though this is not even an online sales operation !
This is the biggest maze in the 'consumer EEE oriented' WEEE Directive.

Recommendations:

- PV CYCLE believes that the challenge on who to define as "*Producer"* cannot be covered with the current definition. Renewable Energy products and equipment do not fit under the WEEE Directive. We invite the European Commission to exclude photovoltaic panels from the scope of WEEE and to start up an impact assessment of an Extended Producer Responsibility (EPR) legislation for ALL Renewable Energy products and equipment whereby the core of the discussion must be to define an EPR framework for Investment products generating electricity and having a complete different business environment than fast-consuming EEE consuming electricity and at the same time creating a level playing field for ALL Renewable Energy Equipment (REE).
- PV CYCLE recommends to take into account the supply chain of investment products which are also installed on a (very) large scale in big photovoltaic power plants and owned by investors or utilities or Single Purpose Vehicles (dedicated legal entities only set up for the exploitation of an energy generating (solar) power plant) and whereby the equipment is delivered not through online sales activity. In the current definition of Producer, there is a loophole which can best be solved by having a separate Extended Producer Responsibility legislation for all Renewable Energy products or equipment.

3. DEFINITION OF PHOTOVOLTAIC PANELS (no article in the WEEE Directive)

The WEEE Directive does not include a definition of photovoltaic panels. However, being a new product not only under the scope of the Directive but also on the market, PV CYCLE believes there is a need to define *photovoltaic panel* for the sake of a common understanding.

The past eight years, we have witnessed that some Member States consider all photovoltaic panels as being photovoltaic panels under the scope of WEEE and being 'household EEE' including the accompanying financing requirements, whilst some other Member States exclude BIPV (Building Integrated Photovoltaics) or some other Member States have no understanding of the different photovoltaic technologies.
Having a FAQ related to what is not a photovoltaic panel, is not enough.

Recommendations:

- PV CYCLE recommends to clearly define what a photovoltaic panel is in the legislation and insert in the FAQ's accompanying the legislation a non-exhaustive list of what is considered as being a photovoltaic panel.
- PV CYCLE believes that the current Question in the FAQ's related to what is not defined as a photovoltaic panel must remain in the FAQ' list.
- Renewable Energy products and equipment do not fit under the WEEE Directive. We invite the European Commission to exclude photovoltaic panels from the scope of WEEE and to start up an impact assessment of an Extended Producer Responsibility (EPR) legislation for ALL Renewable Energy products and equipment whereby the core of the discussion must be to define an EPR framework for Investment products generating electricity and having a complete different business environment than fast-consuming EEE consuming electricity and at the same time creating a level playing field for ALL Renewable Energy Equipment (REE).

4. PV PANELS – HOUSEHOLD OR OTHER THAN HOUSEHOLD EEE AND CONSEQUENCES

The definition of WEEE from private households in the WEEE Directive states:

"WEEE which comes from private households and from commercial, industrial, institutional and other sources which, because of its nature and quantity, is similar to that from private households. Waste from EEE likely to be used by both private households and users other than private households shall in any case be considered to be WEEE from private households".
The latter sentence contains the 'dual-use' notion.

The past eight years, we have witnessed that some Member States consider all photovoltaic panels as being photovoltaic panels under the scope of WEEE and being 'household WEEE' including the accompanying financing requirements for Household WEEE.
Other Member States distinguished a part of PV panels as being 'household WEEE' and another part as being "other than household WEEE' (for example Italy) or classify all photovoltaic panels as 'other than household WEEE' (Austria and Spain).
These decisions have only generated huge challenges, confusion for international and European operating companies in the solar value chain; moreover, these differences amongst the Member States avoid a level playing field, create competitive disadvantage across their European operations and the like.

Moreover, not in each Member State there is a deployment of photovoltaic solar equipment or in some Member States there is barely photovoltaic installations installed on household rooftops or in some Member States the vast majority of installed photovoltaic capacity is only on household rooftops.

Nevertheless, each natural or legal person willing to purchase a photovoltaic system must rely on a professional installer to install the photovoltaic panels and the Balance Of System (BOS) elements. Purchasing photovoltaic panels

is thus a complete different activity than purchasing a TV set, mobile phone, laptop or washing machine where the purchaser itself installs and enables this equipment without external professional help.

Additionally, the definition of 'WEEE from private households' is for PV panels a contradiction in terms because the definition not only states that it is about WEEE which comes from private households but also states "and from commercial, industrial, institutional and other sources which, ***because of its nature and quantity, is similar to that from*** private households".
However, a photovoltaic installation on the rooftop of a commercial, industrial, institutional and other sources infrastructure (house, warehouse, etcetera) has a **different nature and quantity** than a photovoltaic installation on the rooftop of a house(hold) !

The number of photovoltaic panels that a home (household) needs varies between 4 and 18 photovoltaic panels.
Although the consumption one makes, is essential to be able to determine the size of the photovoltaic installation for a house rooftop, there are other factors,which must be taken into account when calculating the number of photovoltaic panels: annual consumption for the house, quality and performance of the PV panels, type of PV panels, installed capacity, orientation of the roof and geographical location.
Purchasing other EEE than photovoltaic panels, does not need to take into account these complex considerations because purchasing one washing machine or one TV set or one vacuum cleaner is in a normal household the maximum amount.

To summarize what the number of photovoltaic panels placed on a home (household) rooftop maximum could be in general in Europe:

Annual consumption	Number of photovoltaic panels	Consumption profile
< 2000 kWh	2-4	Low
2000 – 4000 kWh	4-6	Medium - Low
4000 – 6000 kWh	7-9	Medium
6000 – 8000 kWh	10-15	Medium - High
8000 – 10000 kWh	16-20	High

Based upon this explanation on what a 'household rooftop in PV' means, it is obvious that even a household rooftop in one town can contain 4 panels and another household rooftop in the same town can contain 16 panels.
One can question if 16 pieces are a normal quantity for a household compared with other Electrical and Electronic Equipment because we cannot imagine that an average household uses on a daily basis more than one washing machine or more than 3 computers or more than 5 smartphones. In a PV installation the ultimate minimum is already 4 PV panels and is in general rather 10 to 20 PV panels.

Hence, a photovoltaic installation on the rooftop of a commercial, industrial, institutional and other sources infrastructure (house, warehouse, etcetera) contains far more than 20 pieces and consists of PV panels of a different power output than the ones installed on household rooftops. Thus, there is no nature nor quantity similar to that from private households !
For example, a 10,000m2 warehouse with the entire roof being covered with photovoltaic panels and with a capacity of 13.1 megawatts is an amount of roughly 42.500 (forty two thousand five hundred) photovoltaic panels and this is considered according to the current definition of "WEEE from private households" as being
"from commercial, industrial, institutional and other sources" but – in our opinion - **not similar** in nature nor quantity.
Then the remaining question is what to do with these 42.500 pieces ?
Are these 'Household WEEE' ? When they are not Household WEEE, what are these PV Panels then taking into account the dual use notion embedded in the definition of 'WEEE from private households' ?

Based upon our eight years' experience, we recommend that the European Commission obliges through a Regulation that in each Member State each photovoltaic panel is defined as a 'household EEE' in order that the accompanying financing is also secured.
Moreover, must the financing requirements for photovoltaic panels and any other equipment for the first time under the scope of the WEEE Directive – reference date is today 13 August 2005 – even oblige that each Member State

must foresee the creation of provisions during a limited period of time (e.g. five (5) years) in order that equipment with a very long lifetime is able to plot a fund though a mandatory visible compliance fee.

Defining photovoltaic panels as Household WEEE is only for this financing challenge a must.

However, regarding the operations of organizing the collection and take-back of discarded PV panels, the best way forward is to organize this as the photovoltaic panels are “other than household WEEE”.
The past eight years, we have seen partly collection in municipal collection points in Germany and Italy, which have only created headaches, lots of costs for the Producers, inefficient management and no added value for the Producer nor the Climate (emissions).

Recommendations:

- PV CYCLE recommends defining photovoltaic panels as ‘Household EEE’ in each Member State in order to secure proper financing with a limited period to build upon a security fund for these products with a very long lifetime and fickle market trends triggered by geopolitical and energy policy decisions.
- Renewable Energy products and equipment do not fit under the WEEE Directive. We invite the European Commission to exclude photovoltaic panels from the scope of WEEE and to start up an impact assessment of an Extended Producer Responsibility (EPR) legislation for ALL Renewable Energy products and equipment whereby the core of the discussion must be to define an EPR framework for Investment products generating electricity and having a complete different business environment than fast-consuming EEE consuming electricity and at the same time creating a level playing field for ALL Renewable Energy Equipment (REE).

5. SEPARATE COLLECTION (article 5 WEEE Directive 2012/19/EU)

Member States shall adopt appropriate measures to minimize the disposal of WEEE in the form of unsorted municipal waste, to ensure the correct treatment of all collected WEEE and to achieve a high level of separate collection of WEEE, notably, and as a matter of priority, for temperature exchange equipment containing ozone-depleting substances and fluorinated greenhouse gases, fluorescent lamps containing mercury, **photovoltaic panels** and small equipment as referred to in categories 5 and 6 of Annex III. (Article 5,1. WEEE Directive)

In the case of WEEE other than WEEE from private households, and without prejudice to Article 13, Member States shall ensure that producers or third parties acting on their behalf provide for the collection of such waste. (Article 5,5. WEEE Directive)

Despite the requirement of Article 5,1. of Directive 2012/19/EU towards the Member States, we have experienced the past eight years many measures at Member State level, and all show that photovoltaic panels under the scope of WEEE is not recommendable.

In Belgium and France – also the only two countries where a visible fee is in place and where all photovoltaic panels are defined as ‘Household EEE’ – there is no collection through the municipal collection network. This results in a smooth and efficient collection and take-back of photovoltaic panels through the Business-2-Business value chain of the photovoltaic industry itself. One of the reasons of the success is that the dismantling , the removal of photovoltaic panels from an installation is executed by a professional installer, which groups the PV Panels at his premises on receptacles or brings in these PV Panels to his supplier, the wholesales company or the distributor.

In Germany, we have witnessed and still witness an inefficient modus operandi – despite the fact that there exists a separate collection group for photovoltaic panels – by allowing the take-back through municipal collection points. For example, there is no sorting between the different photovoltaic technologies which hampers an efficient treatment because additional sorting and thus costs are generated.

There is an inefficient allocation of which receptacles must be used in the municipal collection points, whereby even a receptacle where barely two PV Panels can be stored in, is allowed. Collecting a receptacle which contains only two (2) PV Panels is an example of very costly and not climate-friendly collection of waste.
Last example of this uncontrolled municipal approach is that there is as such no limit on which amount of photovoltaic panels can be brought in to a municipal collection point.
This means that an photovoltaic installation of 1 MW (roughly 60 tonnes) can be dropped off at a municipal collection point and that all the costs related to this are borne by the Producer.

In Italy, where also a separate collection group for photovoltaic panels exists, the costs for collecting photovoltaic panels within municipal collection points are very high. The vast majority of this cost is due to an agreement between the Coordination Center WEEE and the Association of Cities and Towns whereby not only an 'efficiency bonus' is foreseen but also the race to the 65% Collection Target of the WEEE Directive.
Especially on this last point, photovoltaic panels are literally paying a high price due to the fact that photovoltaic panels have a very long lifetime and are thus 'unable' to contribute to the collection target of 65% POM/OOM of the preceding three (3) years !

The notion of a separate collection of PV panels is not the point of discussion.
However, collection of photovoltaic panels through municipal collection network must be forbidden by an upcoming EPR legislation, preferably in a Regulation.

Extended Producer Responsibility in relation to photovoltaic panels is today in most Member States more a pure 'high costs and continuous increasing costs generating item' instead of a true and cost-effective policy instrument which also takes into account that there is also equipment or products with a very long lifetime which avoid waste and costs for the society for many years compared to the rather short lifetime of consumable electrical and electronic equipment, which were and are still the vast majority of what is under the scope of the 'household oriented' WEEE Directive.

Finally, PV panels, being always part of a PV system, are installed and de-installed by professionals for technical and safety reasons and ensure at the end the appropriate handling of PV panels.
Therefore, it is extremely important that discarded PV Panels are collected in a Business-to-Business (B2B) environment.

Unlike typical EEE, PV panels are still not distributed evenly among the population nor are a commodity or replacement product such as the typical consumer EEE. There is in every country also a regional discrepancy in quantity of PV rooftop installations (concentration in a part of the territory) and, in several cases, numerous large-scale PV installations (ground-mounted PV parks).

A Producer-owned take-back system can adapt much better to this unbalanced distribution across a country and will, therefore, be much more cost-efficient since it is close to where the future waste will arise.

Recommendations:

- The notion of a separate collection of PV panels must remain.
- However, collection of photovoltaic panels through municipal collection network must be forbidden towards the Member States.
- PV CYCLE supports the notion that Producers are allowed to set up and to operate individual and/or collective take-back systems provided that these are in line with the objectives of this directive ànd that in each Member State the Individual option is available ànd that the assessment of an Individual plan is done at the same level as for a Collective Producer Responsibility Organization.
- Renewable Energy products and equipment do not fit under the WEEE Directive. We invite the European Commission to exclude photovoltaic panels from the scope of WEEE and to start up an impact assessment of an Extended Producer Responsibility (EPR) legislation for ALL Renewable Energy products and equipment whereby the core of the discussion must be to define an EPR framework for Investment products generating electricity and having a complete different business environment than fast-consuming EEE consuming electricity and at the same time creating a level playing field for ALL Renewable Energy Equipment (REE).

6. COLLECTION RATE (article 7 WEEE Directive 2012/19/EU)

The minimum annual collection rate of 65% of the average weight of EEE placed on the market in the three preceding years in the Member State concerned, is for photovoltaic panels a nightmare!

Firstly, an annual collection rate based upon the placed on the market of the three preceding years, is an embedded conflict for photovoltaic panels because:

- Not in each Member State photovoltaic solar energy is deployed;
- Once solar is deployed in a Member State it is often a massive placing on the market – supported by subsidy mechanisms such as feed-in-tariffs – and no 'out of market' during at least the first ten (10) years. As side comment: for the classical EEE, we do not witness subsidized instruments which are pushing EEE into the market nor we see geopolitical situations which generate huge increasing gas and electricity prices which result in citizens and entreprises running towards Renewable Energy solutions;
- The WEEE Directive and most of the EPR-legislation is written and is construed as obligations which must be ambitious and more ambitious because the reasoning behind is that 'products under EPR' are mostly 'fast consuming products' (vast majority of all EEE, packaging, lubricants oil, vegetable oil and fats, portable batteries, tyres), whilst Renewable Energy Products such as photovoltaic panels are investment products, are often part of an infrastructure and are guaranteed with a ten (10) year product guarantee and a twenty (20) year performance guarantee;
- The very high placing on the market tonnage of photovoltaic panels and the less than 0,5% annual return rate (Out Of Market – OOM) of photovoltaic panels results in a situation that in each Member State where photovoltaic solar energy is (very) good deployed, the 65% target for all WEEE is not reached because:
  ** photovoltaic panels contribute massively in the denominator (POM),
  ** photovoltaic panels do not contribute to the numerator during the first fifteen years (OOM).
  Since the 65% target is in place, we notice that in those Member States where photovoltaic energy is massively deployed the percentage with PV or without PV in the 65% target result is in those Member States easily 5 or more percent and shall only become more;
- The race to the 65% target has very perverse consequences for photovoltaic panels in almost all Member States because photovoltaic panels are forced to financially bear the costs of the search for tonnage to achieve this target whilst photovoltaic panels are manufactured to prevent waste for many years. Examples of some Member States where this happens: Poland, Greece, Spain;
- The race to the 65% target has very perverse consequences for photovoltaic panels because in a Member State such as Poland, the 65% target is even imposed on each individual Producer and when the Producer fails to achieve the 65% target, the Producer must pay a (financial) penalty ! ;
- The race to the 65% target has very perverse consequences for photovoltaic panels because in Member States such as United Kingdom or Spain, there is even a specific collection target imposed for photovoltaic panels which is never reached with the consequence of paying a financial penalty or which has been reached by any means and any cost ;
- The perverse consequence of the 65% collection target means in general that for photovoltaic panels this is no longer an Extended Producer Responsibility and more and only a money machine where financial penalties rule and where tonnage is traded and 'Producers and Importers of photovoltaic panels' are paying this bill without added value related to 'Producer Responsibility' and ignoring that photovoltaic panels are a product contributing much more than any other product to the 'prevention of waste', which is still the first objective in any waste hierarchy instead of reuse, recycling or recovery.
- Large Photovoltaic installations have an economical lifetime – as a reminder, they are investment products – of ten (10) years, which means that a lot of these installations are repowered or revamped.
  Revamping is the replacement of malfunctioning components of distressed PV power plants that are no longer performing according to their original specifications and are not covered under product warranties. These replaced components are better performing, yet they do not alter the fixed power of the system.

By contrast, **repowering** aims to increase the power rating of the system within the surface boundaries of the existing plant. Solar PV plant repowering is mainly used **to extend the life of photovoltaic power plants** at the end of their initial 20 to 25 year design life spans.

Revamping can mean the partial replacement, removal, or reinstallation of modules or inverters, so the system can be redistributed, and the grid connection improved. Other balance of system (BOS) components might be totally or partially replaced, or there could be adjustments to PV system supporting structures or changes made to the electrical configuration of the plant.

The most common technical reason for repowering is the so-called degradation of the modules: over time, every photovoltaic panel loses a bit of performance. The output of crystalline PV panels drops by a maximum of 15% over 25 years – a drop in performance that is linear.

In relation to a Collection target under EPR Legislation, revamping and repowering mean that the lifetime of a photovoltaic power plant (and thus the photovoltaic panels) are more extended and will surpass the initial 20 to 25 years. The generation of PV panels waste shall thus even more delayed and shall continue having a huge negative impact on collection targets imposed by EPR legislation, such as the WEEE Directive.

Secondly, the alternative minimum annual collection rate of 85 % of WEEE generated on the territory of that Member State is an instrument which – as far as we know - none of the Member States have used since the European Commission has published the Commission Implementing Regulation (EU) 2017/699 of 18 April 2017 establishing a common methodology for the calculation of the weight of electrical and electronic equipment (EEE) placed on the market of each Member State and a common methodology for the calculation of the quantity of waste electrical and electronic equipment (WEEE) generated by weight in each Member State and its WEEE Calculation Tool.

We have even encountered that in four (4) Member States during the period 2019-2022, the national waste administration or Ministry of Environment was not aware that this Commission Implementing Regulation (EU) 2017/699 existed and was published !

Therefore, PV CYCLE proposes alternative solutions which include as well incentives to achieve something.
For example, together with the European Commission we are willing to discuss KPI's or quantifiable measures of performance over time for a specific objective instead of rigid collection rate or targets which do not reflect the very long lifetime of investment products, for example a prevention of waste target, a societal target (what does the product or equipment contributes to the society), etcetera.

Recommendations:

- PV CYCLE recommends to abandon immediately collection rates or targets for photovoltaic panels.
- PV CYCLE proposes to introduce Key Performance Indicators which take into account the very long lifetime and the extended lifetime of photovoltaic panels as part of a photovoltaic power installation and which takes into account that photovoltaic panels are an investment product with a complete different behavior than short life consumable electrical and electronic equipment.
- Renewable Energy products and equipment do not fit under the WEEE Directive. We invite the European Commission to exclude photovoltaic panels from the scope of WEEE and to start up an impact assessment of an Extended Producer Responsibility (EPR) legislation for ALL Renewable Energy products and equipment whereby the core of the discussion must be to define an EPR framework for Investment products generating electricity and having a complete different business environment than fast-consuming EEE consuming electricity and at the same time creating a level playing field for ALL Renewable Energy Equipment (REE).

7. PROPER TREATMENT (article 8 and Annex VII WEEE Directive 2012/19/EU)

The current requirements regarding 'proper treatment' completely neglects the composition and the nature of photovoltaic panels.

Silicon photovoltaic panels contain lots of flat glass, in most cases an aluminum frame, a bit of plastics or barely plastics with the latest bifacial PV Panels, and a few metals (copper, silicon).The current proper treatment only refer to classical electrical and electronic equipment and have today no added value for our products. Moreover, this is another example which shows that the European Commission must assess a dedicated Extended Producer Responsibility legislation for all Renewable Energy Products in order that then finally a true discussion can result in waste treatment requirements for wind blades, marine (with underwater wind turbine or tidal turbines), geothermal, solar thermal electricity, solar thermal heating and cooling, biomass equipment and small hydro equipment.

Recommendations:

- PV CYCLE proposes to define minimum waste treatment requirements for all Renewable Energy products and equipment under a dedicated Extended Producer Responsibility legislation based upon an in-depth assessment of which materials are used in all Renewable Energy products and then define objectives which take into account that RE products do not contain the classical components of classical EEE, such as plastics and metals.
- Renewable Energy products and equipment do not fit under the WEEE Directive. We invite the European Commission to exclude photovoltaic panels from the scope of WEEE and to start up an impact assessment of an Extended Producer Responsibility (EPR) legislation for ALL Renewable Energy products and equipment whereby the core of the discussion must be to define an EPR framework for Investment products generating electricity and having a complete different business environment than fast-consuming EEE consuming electricity and at the same time creating a level playing field for ALL Renewable Energy Equipment (REE).

8. RECOVERY TARGETS (article 11 and Annex V WEEE Directive 2012/19/EU)

The recovery targets for each category, i.e. Category 4 today has no added value for photovoltaic panels because our products are put together in a Category of EEE which has nothing in common with flat glass laminated solar products.

Category 4 today consists of household appliances, IT and telecommunication equipment, consumer equipment, luminaires, equipment reproducing sound or images, musical equipment; electrical and electronic tools; toys, leisure and sports equipment; medical devices; monitoring and control instruments; automatic dispensers; equipment for the generation of electric currents.

Moreover, today there is not a single waste treatment facility in the European Union licensed with the WEEELABEX certification for the waste treatment of photovoltaic panels.

Reasonable recycling and recovery targets must also take into account:

- the characteristics of photovoltaic panels whereby the vast majority of the weight of a photovoltaic panel is flat glass, a material which the classical e-waste treatment facilities do not like; and
- the technological evolutions of the photovoltaic panels; for example, today' panels are more and more bi-facial glass-glass products and do no longer contain a polymer back sheet (PET or PVF or PVDF or PA) as it was ten (10) years ago.

Regarding the preparation for re-use and re-use of photovoltaic panels, PV CYCLE has financed a Study about Reuse of photovoltaic panels in the year 2020.

The main conclusions of this study are the following:

a) Currently, PV panels potentially fit for re-use mostly originate from large commercial PV systems (10 kW_p to 1 MW_p) or utility-scale PV power plants (> 1 MW_p) in Europe, US and China and which are damaged by severe weather conditions and resulting in removing all PV panels despite the fact that a number of these PV Panels are still intact not broken and potentially functional.
Collecting PV panels from residential rooftop installations demand more manpower for very small volumes and is economically not viable.

b) The most cost-effective method is to collect re-usable PV panels at the decommissioning site where sorting, visual inspection, electrical testing and safety checks takes place and where all documentation is directly completed upon removal; this can even include small repairs of the external electrical components of the PV Panels (cables, connectors, diodes).

c) In certain cases, the re-usable PV Panels are directly shipped to the treatment facility for the above-mentioned handlings (sorting, visual inspection, electrical testing and safety checks) at a higher cost than doing this on site.

d) In general, technical guidelines and standards outlying the sorting and testing steps and, most importantly, setting the technical criteria to qualify which PV Panels are reusable, are a must to ensure a safe and technical qualitative second-hand PV Panel. It might be worthwhile to consider only PV Panels for re-use which still have a power above 70% of their initial value and to exclude PV panels with defects having an even minor concern for safety. The implementation of such requirements, which are currently completely absent, shall ensure homogenous product quality and build trust towards the purchasers of second-hand PV Panels and the Producers and manufacturers because there is also an important product liability because photovoltaic panels **generate electricity** instead of consuming electricity of the classical EEE of the WEEE Directive.

e) In principle, preparing PV panels for reuse has no negative environmental implications. Hence, it is a desirable step within the circular economy for photovoltaic panels. In the European Union, the upcoming Ecodesign requirements for PV Panels shall help in this perspective as well. However, an important note is that the environmental feasibility of the second-hand PV panels is at risk when their adequate waste treatment and recycling is not guaranteed after their second life phase. Today, the current practice of exporting second-hand or so-called reused PV panels to developing countries with insufficient waste regulations creates a major environmental concern. Currently, the top destinations for second-hand PV Panels are the Sahel countries, Afghanistan, Pakistan, the Palestinian territories and Turkey.

f) The WEEE Directive contains general rules to distinguish used electrical and electronic equipment versus waste electrical and electronic equipment in its Annex VI in relation to the shipment. For electrical and electronic equipment **consuming electricity**, there is an additional EN 50614 Standard “Requirements for the preparing for reuse of WEEE” of February 2020. Unfortunately, this Standard cannot be applied to equipment which ***generates electricity***.

In a nutshell, the Study on reuse of PV Panels concludes that PV panels are through their design and product and performance guarantee products with a very long lifetime. Under the condition that certified and monitored organizations do the technical inspection, - when applicable - the reparation, the technical and safety conformity is guaranteed and supported by a technical track and trace documentation, the report concludes that second-hand PV Panels and thus the preparation for reuse and the reuse of PV Panels are feasible and socially desirable.
The economic viability of the preparation for reuse and reuse sector for PV panels is currently achieved in low-income countries as clearly proven by the fact that today’ global and European actors export towards the Sahel countries, Afghanistan, Pakistan, the Palestinian territories and Turkey. Besides the question if this model is defendable towards its CO_2 footprint , the main item, i.e. the European Union’s comprehensive waste legislation is not circumvented by shipping waste (or used products which are in fact waste) to third countries where waste management standards and performance greatly differ from those in the European Union, is today not covered nor guaranteed at these destinations.
The European Union must enforce much more in order to ensure equal treatment and legal clarity for all economic actors in this sector, for example through the IMPEL Network.

As a result of the Study Reuse, PV CYCLE has taken the initiative to strive for a Standard or Norm regarding the “Requirements for the preparing for reuse of Photovoltaic panels”

PV CYCLE has been able to present this case in May 2021 to the IEC (International Electrotechnical Commission), Technical Committee 82 related to 'Solar Photovoltaic Energy Systems'. Experts of TC 82 currently draft a Technical Report (TR) regarding the reuse and decommissioning of photovoltaic panels.
Once this TR is finalized in 2023, TC 82 shall decide if a norm or standard or technical specification is required.
Anyway, when this could be achieved, then not only the European Union but the whole planet will benefit from this. Inspection authorities for used products, waste and the shipments of waste can then use in their assessment if repair centers perform environmentally, technically and safety sound or if shipments of used photovoltaic panels are done according to the standard. Finally, the actors involved in these activities can be hold accountable for what they do with potential reusable photovoltaic panels.

Recommendations:

- PV CYCLE recommends to implement reasonable recycling and recovery targets for flat glass laminated products which have nothing in common with classical e-waste which is composed of only metals and plastics.
- PV CYCLE proposes to introduce Key Performance Indicators for the recovery targets.
- PV CYCLE recommends to harmonize a common European Union understanding and interpretation of what is understood by 'recycling', 'recovery' or 'other material recovery'. Therefore, we call upon the European Commission to strive for harmonization regarding the interpretations of definitions from the Waste Framework Directive which affect the WEEE Directive and any other Directive regarding Extended Producer Responsibility because today there are Member States where recycling has a complete different (narrow) interpretation compared to other Member States where the large interpretation prevails. One of the best examples is what the activity of using recovered materials in infrastructure works: recycling or landfilling. These multiple interpretations have a huge impact when comparing the recovery target WEEE from one Member State to another Member State.
- PV CYCLE recommends to first have in place a Norm or Standard or Technical Specification regarding the reuse of photovoltaic panels and – in a second stage – to call upon the European Union to invite IMPEL to enforce much more the shipments of photovoltaic panels entering and leaving the European Union.
- Renewable Energy products and equipment do not fit under the WEEE Directive. We invite the European Commission to exclude photovoltaic panels from the scope of WEEE and to start up an impact assessment of an Extended Producer Responsibility (EPR) legislation for ALL Renewable Energy products and equipment whereby the core of the discussion must be to define an EPR framework for Investment products generating electricity and having a complete different business environment than fast-consuming EEE consuming electricity and at the same time creating a level playing field for ALL Renewable Energy Equipment (REE).

9. FINANCING OF EEE IN RELATION TO THE DISTINCTION DATE BETWEEN HISTORICAL WASTE AND NEW WASTE (articles 12 and 13 WEEE Directive 2012/19/EU)

The distinction between financing Household WEEE versus financing other than household WEEE is in relation to PV panels a failure.
When applying the dual-use notion of the WEEE Directive, each PV panel is Household (W)EEE but when the PV panel returns from the market, this PV panel returns through a Business-to-Business network of professional (de-) installers or Operations & Maintenance companies.
Thus removing the 'distribution channel' as a criterion to define if an (W)EEE is household or not in the WEEE Directive 2012 in comparison with the WEEE Directive of 2002, has made the situation for PV Panels very complex.

Secondly, when each Member State would have followed the consequence of the dual-use notion, then each PV panel was always a Household EEE. As stated before, some Member States did not follow this and only added complexity. The description under point 4. regarding the definition of "WEEE from private households" must be read together with this point.

Thirdly, due to the very long lifetime of photovoltaic panels, there is quite some resemblance with lamps.
Therefore a secured financing mechanism such as obliging that during a limited period of time each Member State must foresee that the individual and collective take-back systems must build up provisions for future costs ànd under the same conditions and through a visible fee. The level playing field must be monitored by the Member State in order that there is no race to the bottom regarding the compliance costs.
The past eight years, we only have seen a lack of level playing field and a race to offer the cheapest compliance fee whereby nothing is covered for the (near) future !

Therefore, it is a competitive disadvantage that for the equipment under the scope of WEEE Directive 2002/96/EC, the collective take-back systems in 2005 were allowed to apply a visible fee whilst equipment – such as photovoltaic panels – which came for the first time under the scope of WEEE Directive 2012/19/EU, the visible fee has been forbidden by all Member States, except France and Belgium.
The latter two countries are the only ones in 2022 where the collective take-back systems have provisions in place for photovoltaic panels based upon clear requirements from these Member States.
Besides France and Belgium, there is Germany, which is the only country where a financial guarantee in case the Producer becomes insolvent, is in place. Italy is an exceptional case and even more complex because in this Member State we have noticed that the State-owned energy service system operator, GSE Spa., which manages the feed-in-tariffs and subsidies for Renewable Energy for example, has developed themselves requirements related to the waste management of photovoltaic panels and the financing of these operations in relation to those photovoltaic panels which are installed in photovoltaic installations which have received subsidies under Conto Energia I, II,III, IV and V. The scrambled mix of the national Italian WEEE Law and “Instructions from an state-owned energy service operator” results in a very complex framework, which we have not witnessed in any other Member State (so far).

For all Member States – except Belgium and France -, there is not a single one where provisions for photovoltaic panels are in place at the collective take-back systems and where the end-user of WEEE from private households has the guarantee that the collection and treatment of photovoltaic panels is secured for the next year or for a certain period, especially taking into account the very long lifetime of photovoltaic panels, the volatile solar market, the geopolitical environment and/or the European or national energy policy impacting the numbers placed on the market and the like.

In the revision of the WEEE Directive, the distinction between before and after 13 August 2005 must be removed and a true and realistic financing mechanism must be put forward which takes into account that besides fast-consuming EEE collected through a municipal collection network, there is commercial and industrial EEE which has a different behavior when leaving the market and there is also Investment EEE which has a very long lifetime which follows the behavior of investors and which is collected in a Business-to-Business environment.

Recommendations:

- PV CYCLE recommends to assess carefully if the distinction between financing ‘Household WEEE’ versus financing ‘WEEE from users other than private households’ still makes sense for equipment with a long lifetime and which is in fact investment equipment installed by professionals, even on a household rooftop.
- PV CYCLE recommends two options.
  Or remove the ‘dual use’ notion for photovoltaic panels and re-introduce or the distribution channel as criterion or even abolish the idea that equipment or products are only used in a household or only used in a commercial, industrial or other source environment because the society has drastically changed and today one notices that households also purchase products, equipment and services at retail shops which were once only accessible for professionals and which are now open for the broad public and the like.
  Or impose that in each Member State photovoltaic panels are considered as ‘dual use’ equipment and thus ‘household equipment’ in order that at least a proper financing for this equipment with a very long lifetime is ring-fenced and guaranteed.

- Renewable Energy products and equipment do not fit under the WEEE Directive. We invite the European Commission to exclude photovoltaic panels from the scope of WEEE and to start up an impact assessment of

an Extended Producer Responsibility (EPR) legislation for ALL Renewable Energy products and equipment whereby the core of the discussion must be to define an EPR framework for Investment products generating electricity and having a complete different business environment than fast-consuming EEE consuming electricity and at the same time creating a level playing field for ALL Renewable Energy Equipment (REE).

10. HISTORICAL WASTE: DISTINCTION DATE OF 13 AUGUST 2005 (article 12 (4) WEEE Directive 2012/19/EU)

Similar as our comments under point 9. above, we have noticed the past eight (8) years a lack of transparent allocation of responsibilities in most of the Member States with regard to this so-called 'Historical waste' (< 13/08/2005).
Moreover, besides Germany there was before August 2005 barely photovoltaic energy deployed in other Member States and thus this item is mainly a non-issue for photovoltaic panels. Another point is that - again – the definition of 'WEEE from private households' pops up because article 12,4. refers to '**WEEE from products** placed on the market on or before 13 August 2005' and thus the distinction between WEEE from private households versus WEEE from users other than household WEEE does at one hand not exist for the financing of Historical WEEE, whilst article 13 foresees an one:one and an zero:one financing obligation for Producers respectively Users other than WEEE from private households. To explain this concisely to the photovoltaic value chain, one needs to have super powers.

Therefore we invite the European Commission to terminate this outdated distinction between placed on the market before and after 13 August 2005; moreover, we are today seventeen (17) years later.

Recommendations:

- PV CYCLE invites the European Commission to remove the distinction date of 13 August 2005 for photovoltaic panels because before that that date barely a few photovoltaic panels were placed in the territory of one of the 27 Member States.
- PV CYCLE recommends to set the distinction date for photovoltaic panels on 1 January 2014 in order to set a clear cut off between so-called historical and new (W)EEE. Setting the date on the first day of the year is more manageable than a legal reference of eighteen (18) months after the Directive entered into force towards the Member States because then an atypical date of 14 February 2014 appears.
- Renewable Energy products and equipment do not fit under the WEEE Directive and constantly conflict with the value chain within the photovoltaic industry. We invite the European Commission to exclude photovoltaic panels from the scope of WEEE and to start up an impact assessment of an Extended Producer Responsibility (EPR) legislation for ALL Renewable Energy products and equipment whereby the core of the discussion must be to define an EPR framework for Investment products generating electricity and having a complete different business environment than fast-consuming EEE consuming electricity and at the same time creating a level playing field for ALL Renewable Energy Equipment (REE).

11. AUTHORIZED REPRESENTATIVE (article 17 WEEE Directive 2012/19/EU)

The experience of the past eight (8) years shows that some Member States have a different interpretation on when and how the notion of Authorized Representative must be executed.
Having per Member State different requirements and obligations as Authorized Representative is unacceptable.

Moreover, some Member States allow that a Producer Responsibility Organization can act as Authorized Representative, other Member States forbid this and other Member States have barely an opinion related to this subject.

PV CYCLE supports the notion of *authorized representative* and encourages each Member State to ensure that this provision is timely implemented in the national law. This would allow existing third parties acting on behalf of producers to operate, thus, reducing administrative burdens.

Recommendations:

- PV CYCLE fully supports the notion of *authorized representative* and insists on harmonized and equal implementation of this requirement with a clear set of instructions on how to implement in each Member State.
- Renewable Energy products and equipment do not fit under the WEEE Directive. We invite the European Commission to exclude photovoltaic panels from the scope of WEEE and to start up an impact assessment of an Extended Producer Responsibility (EPR) legislation for ALL Renewable Energy products and equipment whereby the core of the discussion must be to define an EPR framework for Investment products generating electricity and having a complete different business environment than fast-consuming EEE consuming electricity and at the same time creating a level playing field for ALL Renewable Energy Equipment (REE).

About PV CYCLE

Founded in 2007 as a non-for-profit association, PV CYCLE ensures WEEE Compliance services for its participants throughout the European Union. In order to implement the PV industry's commitment to sustainable end-of-life management, PV CYCLE has started as a voluntary industry initiative. Since 2014, PV CYCLE operates with different Producer Responsibility Organizations in different countries of the European Union. This Position Paper about the evaluation of the WEEE Directive 2012/19/EU is supported by PV CYCLE BELGIUM, PV CYCLE NETHERLANDS, PV CYCLE GERMANY, PV CYCLE UNITED KINGDOM and PV CYCLE ITALY. For more information, visit www.pvcycle.org.