POSITION PAPER – EVALUATION and RECOMMENDATIONS related to Photovoltaic Panels (UK)

Sheffield, 17 November 2023

Photovoltaic panels versus EEE:
8 years experience under UK WEEE regulations
(and WEEE Directive 2012/19/EU experience across Europe)

PV CYCLE
Founded in 2007 as a not-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 has operated 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.

In view of the evaluation of the Waste Electrical and Electronic Equipment (WEEE) Regulations 2013 No.3113, and the experience PV CYCLE Headquarters has with the transposition of the WEEE Directive 2012/19/EU in 27 national WEEE laws, PV CYCLE UK PCS would like to express its evaluation of the presence of photovoltaic (PV) panels under the scope of the WEEE Regulations 2013. This document focuses specifically on the UK market where there are a number of differences and peculiarities which need highlighting outside the context of the wider EU WEEE regulations.

DEFINITIONS AND ABBREVIATIONS
AATF – Approved Authorized Treatment Facility
Authorized Representative – any person who is established in the United Kingdom and who has been appointed by a Producer under regulation 14(2) of WEEE Regs.
BoS - Balance of System – refers to all of the various components of a photovoltaic (PV) system beyond the actual modules themselves.
DCF – Designated Collection Facility - places where some household WEEE is collected before being sent for treatment, reuse and recycling[1].
EEE / WEEE – Electrical and Electronic Equipment / Waste Electrical and Electronic Equipment.
EPR – Extended Producer Responsibility - a policy tool that extends the producer's financial and/or operational responsibility for a product to include the management of the post-consumer stage, to help meet national or EU recycling and recovery targets.
Free-rider – refers to one firm benefits from the actions and efforts of another without paying or sharing the costs; in the area of EPR, 'free-riders' are market operators that circumvent extended producer responsibility and related obligations, such as registration and payment of fees.
LA – Local Authorities
MCS – Microgeneration Certification Scheme
PCS – Producer Compliance Scheme; other wording for the same is Producer Responsibility Organisation (PRO) [2]
PoM – Placed on the Market
PV – Photovoltaic (solar)
REE – Renewable Energy Equipment

[1] https://www.gov.uk/guidance/collecting-used-and-waste-electrical-and-electronic-equipment
[2] https://www.gov.uk/guidance/weee-producer-compliance-scheme-apply-for-approval

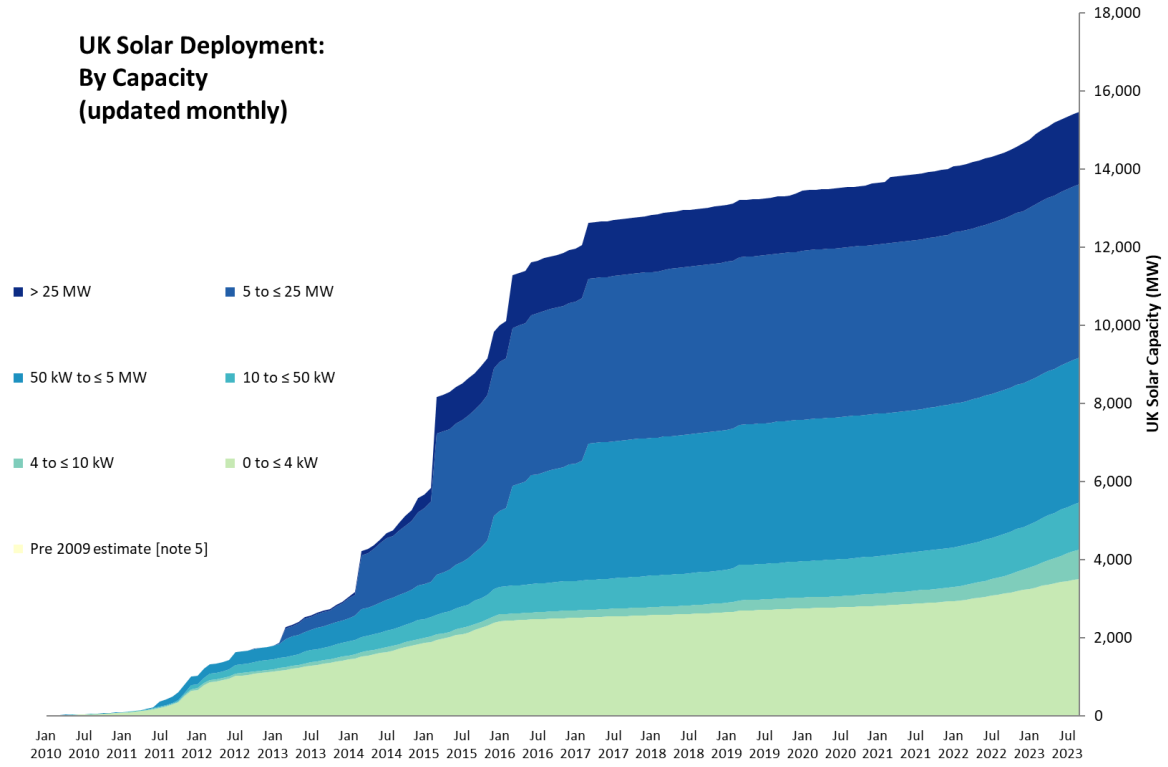
SPV – Single Purpose Vehicles – separate or single legal entities which are set up for the sole purpose of large-scale generating and selling photovoltaic electricity.
Visible Fee – a scheme that manages their products at their end-of-life to inform the consumer that the price paid to purchase a specific product includes costs for recycling.

BACKGROUND TO THE UPCOMING WEEE CONSULTATION

This document is presented against the backdrop of DEFRA's long-awaited WEEE consultation, expected Q4 in 2023, whereby the solar industry finally has a chance to present a consensus position on the regulations that dictate how its waste will be considered and handled as the industry approaches the era of exponential solar growth by 2030. After this consultation, it is unlikely the WEEE regulations will be reviewed for considerable time, so it is critical the PV industry fully engages with this consultation and understands its significance. This document, therefore, sets out several recommendations and proposals which, in our 10 years of UK experience and our 16-year experience of servicing the photovoltaic sector across Europe with WEEE compliance, we believe would be appropriate and necessary improvements for the United Kingdom.

BACKGROUND TO UK SOLAR DEPLOYMENT

As per the table and figures below, the UK has witnessed a significant increase in solar deployment since 2010[3].
In 2023, the UK government announced ambitions to increase solar deployment fivefold by 2035[4]. Therefore, the subject of photovoltaic waste will become increasingly important as legacy assets are retired and a new generation of solar technology is installed.



[3] https://www.gov.uk/government/statistics/solar-photovoltaics-deployment
[4] https://www.gov.uk/government/news/untapped-potential-of-commercial-buildings-could-revolutionise-uk-solar-power

SOLAR, PoM & OTHER WASTE FIGURES [3,5,6]

a) The table below notes the cumulative installed capacity (MW) of solar, the difference per year (MW) and the difference estimated per weight (tonnes) *(assuming 80 tonnes per 1 MW (2015-2020) & 60 tonnes per MW (2021-2022);
b) the requisite collection targets versus the total collected on an annual basis;
c) placed on the market figures for photovoltaic.

PV CYCLE draws attention to the vast difference between solar waste volumes and other waste streams, whereby in 2022 just 382 tonnes of photovoltaic waste was collected, compared to, for example, 164,250 tonnes for Large Household Appliances in the same period.

	Year	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Installed Capacity (MW) (3)		9,643	11,787	12,676	12,915	13,254	13,477	13,804	14,417	n/a
Difference on Previous Year (MW)		4,173	2,144	889	239	339	223	327	613	n/a
Estimated Difference on Previous Year (tonnes)*		333,840	171,520	71,120	19,120	27,120	17,840	21,255	39,845	
Place on Market Figures for Photovoltaics ('Household') (tonnes) (5)		114,324	49,225	19,851	19,210	30,983	36,204	43,504	127,047	n/a
Solar Waste (Tonnes)	Collection Targets (tonnes)					87	87	274	254	302
	Total Collected (tonnes) (4)	95	99	106	87	65	236	254	382	n/a
Other waste streams (tonnes) (4)	Large Household Appliances	178,687	215,362	183,704	169,577	175,236	186,368	182,646	164,250	n/a
	Small Household Appliances	35,738	38,013	36,703	38,046	35,542	27,938	31,386	32,759	n/a
	IT and Telcomms Equipment	47,268	52,008	48,563	45,013	44,798	31,974	36,681	37,119	n/a
	Consumer Equipment	37,974	40,657	39,539	36,529	36,034	19,557	20,917	20,450	n/a
	Electrical and Electronic Tools	18,469	19,290	18,724	17,901	17,838	20,147	22,741	22,953	n/a
	Toys Leisure and Sports	2,418	2,548	2,328	2,194	2,283	3,968	4,542	4,621	n/a
	Display Equipment	74,326	71,266	54,199	47,066	44,615	36,029	39,707	40,428	n/a

BREXIT

PV CYCLE, a European-based organization, notes that after 10 years of operating in the UK, since the UK decided to leave the European Union (Brexit) in 2020, there has been a seismic shift away from opportunities for the UK to access centralized European PV recycling facilities, which yield higher recycling rates and work to improved economies of scale in favour of the customer.

PV CYCLE calls on policymakers at the Environment Agency and DEFRA to consider its existing position of nominating PV waste as 'orange listed', creating burdensome administrative costs and unnecessary red-tape at odds with its European neighbours, and significantly diminishing the UK's position to remain competitive in this market.

In contrast, the UK has an opportunity, acting outside of the European Union, to use the upcoming WEEE consultation to lead European counterparts by removing photovoltaics from the scope of the WEEE Regulations.

DOCUMENT SCHEDULE

This document is split into two sections:

1. It is the primary aim of this document to make the case for why, PV CYCLE believes, the priority outcome for the WEEE consultation is for photovoltaic panels to be removed from the scope of the WEEE regulations on the characteristics and application of the technology itself. Instead, we propose for a separate Extended Producer Responsibility legislative framework to be developed for ALL Renewable Energy Equipment (REE).

2. The secondary aim of this document is to highlight several areas where existing WEEE regulations are failing to produce satisfactory outcomes or added value for the solar sector. Thus, either inside the existing WEEE regulations, or outside via newly proposed regulations, as a minimum demand from the solar sector, these areas of policy (failures) urgently need reviewing in the upcoming amendments of WEEE Regs or the dedicated EPR for all REE.

[5] Gov figures, WEEE Collected UK
[6] Gov figures, Electrical and electronic equipment placed on the UK market

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 Regs 2013. **Detailed explanations can be found after this summary.**

1. GENERAL RECOMMENDATION

- It is the conclusion of PV CYCLE that **Renewable Energy products and equipment do not fit under the WEEE Regs** as per the technical and financial differences summarized in the table below. We invite the Environment Secretary to remove 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 that have a completely 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. INTRODUCTION OF A VISIBLE FEE

- PV CYCLE recommends to envisage the introduction of a visible fee for PV Panels.

3. DEFINITION OF PRODUCER

- PV CYCLE recommends taking 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 (SPVs) 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.
- PV CYCLE recommends the notion of an identifiable Producer is integrated into the planning application process for future solar farm developments, whereby it is transparent who the nominated producer is, and whether they have joined a Producer Compliance Scheme or not.
- PV CYCLE recommends a dedicated task force from the Environmental Regulator to monitor the landscape of photovoltaic producers, with greater enforcement and meaningful penalties for non-compliance, including if necessary historical cases of non-compliance.

4. ABOLISH THE COLLECTION TARGETS FOR WASTE PHOTOVOLTAICS

- PV CYCLE recommends to immediately abandon 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 (due to preparation for reuse and reuse as second-hand PV Panels) of photovoltaic panels as part of a photovoltaic power installation, and which takes into account that photovoltaic panels are an investment product with a completely different behaviour than short life consumable electrical and electronic equipment.

5. TREATMENT & RECYCLING DEFINITIONS

- PV CYCLE recommends defining 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.
- PV CYCLE recommends that the Environment Secretary must assess a dedicated Extended Producer Responsibility legislation for all Renewable Energy Products so that 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, small hydro equipment and photovoltaic panels.

6. SEPARATE COLLECTION

- PV CYCLE recommends the notion of a separate collection of photovoltaic panels must remain.
- PV CYCLE recommends the collection of photovoltaic panels through Local Authorities must be forbidden.
- PV CYCLE supports the notion that Producer Compliance Schemes and Producers are obliged to set up a B2B-collection network for small amounts to capture the amounts of residential rooftop PV installations.

7. PHOTOVOLTAICS IN RELATION TO LABELLED 'HOUSEHOLD WEEE' OR 'OTHER THAN HOUSEHOLD WEEE'

- PV CYCLE recommends defining photovoltaic panels as 'Household EEE' 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.
- PV CYCLE recommends collection and takeback aspect of photovoltaic panels to be organized as "other than household WEEE".

8. REUSE

- PV CYCLE recommends to first have in place a Norm or Standard or Technical Specification regarding the reuse of photovoltaic panels.
- PV CYCLE recommends greater enforcement and tracking of shipments of photovoltaic panels entering and leaving the UK and European Union.
- PV CYCLE recommends a review of the existing MCS regulation stating that reused photovoltaics is forbidden.

9. MONITORING AND REGULATION OF REVAMPING AND REPOWERING

- PV CYCLE proposes the UK adopt a monitoring and evaluation program for all utility-scale solar assets which are repowered or revamped, with the objective to integrate these numbers in the dedicated KPIs for REE.

10. 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.
- PV CYCLE recommends considerations for the various types of photovoltaic technologies coming onto the market, with appropriate guidance for recycling.
- PV CYCLE believes that the current Question in the FAQs related to what is not defined as a photovoltaic panel must remain in the FAQ' list.

11. AUTHORIZED REPRESENTATIVE

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

SECTION 1

1. REMOVAL OF PHOTOVOLTAIC PANELS FROM THE WEEE REGULATIONS AND MAINTAIN THESE UNDER DEDICATED EPR LEGISLATION FOR ALL REE

We understand that Extended Producer Responsibility increasingly applies to new products or equipment, which are of recent date. PV panels were put for the first time under the scope of the recast WEEE Directive, implemented by the WEEE Regulations 2013 in the United Kingdom.

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

PV CYCLE and the solar sector invite policymakers to reflect upon the question of whether it is appropriate for photovoltaic panels to be regulated in the same category as consumer products with significantly shorter lifecycles? For example, vapes (electronic cigarettes), which last for less than five minutes as a consumer product, are the most obvious contradiction of this policy, which are treated under the same regulations as an investment product, which is supported by a manufacturer' product guarantee of ten (10) years and a performance guarantee of twenty+(20+) years.

By virtue of photovoltaic panels generating electricity, they are purchased and installed primarily as an *investment* product. Thus, photovoltaic panels are a critical part of the UK's national infrastructure and energy policy, contributing to the nation's energy mix and the UK's commitment to a transition to net-zero carbon emissions.

The solar industry is directly impacted by energy policy and geopolitical decisions which is not the same for other EEE/WEEE streams. For example, the UK witnessed the cost of electricity increase in the aftermath of Russia's invasion of Ukraine in 2022, and as a response, solar sales boomed to counter the cost of electricity and reduce reliance on imports. To our knowledge, the UK did not witness a boom in the sales of fridge/freezers or other EEE products since Russia's invasion of Ukraine in 2022. Further to this point, in 2023, the UK government announced[7] an ambition to increase fivefold solar generation by 2035 – as far as we are aware, there is no government announcement to increase the sales of vacuum cleaners or other EEE products by fivefold by 2035.

Other policies such as Feed in Tariffs, Contracts for Difference and Renewable Obligation Certificates incentivize increased solar deployment. In stark comparison, consumer products under the scope of the existing WEEE regulations, such as TVs, laptops, microwaves, & fridge-freezers consume electricity, provide no net benefit for the UK carbon emissions (indeed, actually contribute); have a life cycle of less than 10 years; and are not incentivized via subsidy mechanisms.

[7] https://www.gov.uk/government/news/untapped-potential-of-commercial-buildings-could-revolutionise-uk-solar-power

Furthermore, PV CYCLE points out that the waste hierarchy, as stated in Chapter 12 of the Waste (England and Wales) Regulations 2011, whereby *prevent* is the first call of action when one disposes. As per the table above stating waste quantities, PV CYCLE draws attention to the minimal levels of waste generated, after more than a decade of exponential growth in comparison to other (W)EEE categories. Photovoltaic panels are constructed to avoid waste, to operate in outside weather conditions for a very long time, and with ever-increasing electricity generation efficiencies. Yet under the existing legislation, no material reward or rebalancing is implemented for the solar industry's efforts in *preventing* waste from entering the waste stream in the first place, whilst simultaneously being forced to comply with EPR regulations and funding mechanisms developed for EEE consumer products with a short lifespan. The net result is no tangible benefits or added value to the solar sector for being dragged into this regulation, of which the only obvious commonality is that of flowing electrons through copper cables.

PV CYCLE notes that Extended Producer Responsibility legislation such as the WEEE Regulations is driven by achieving increasingly higher collection targets. This assumes that the short lifetime of EEE generates increasing volumes of waste over a shorter amount of time. However, this is clearly not the case with photovoltaic panels and its technology, which are lasting longer and becoming more efficient.

This paper with our evaluation of the WEEE Regulations 2013 primarily focuses on photovoltaic panels. However, the recommended solutions are applicable for any further legislative proposal in relation to Extended Producer Responsibility for products and equipment from the Renewable Energy sector which have the characteristics of long-term investment products. This compares to items with a household consumer behaviour, i.e. have a short lifetime; fast consumable electronics; and which consume electricity, as noted in the above table.

PV CYCLE draws attention to EPR arrangements for electric cars, which fall out of the scope of the WEEE regulations yet arguably fall under the EEE definition of *being dependent on electric currents of an electromagnetic field to work properly*. Furthermore, within the existing scope of the WEEE Regs, large-scale fixed installations such as luggage transport systems and elevators are exempt. PV CYCLE believes there is overwhelming evidence that photovoltaics and other investment products generating electricity should also be exempt from the WEEE Regs and assess our recommendation.

Recommendation:

It is the conclusion of PV CYCLE that Renewable Energy products and equipment do not fit under the WEEE Regs as per the technical and financial differences summarized in the table above. We invite the Environment Secretary to **remove 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 that have a completely 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).

SECTION 2
PROPOSED REGULATORY CHANGES INSIDE THE WEEE REGULATIONS

2. INTRODUCTION OF A 'VISIBLE FEE'

Regarding **the financing of the organization of collection and treatment of photovoltaic panels**, PV CYCLE warned during the years 2011-2012 (draft stages of the WEEE Regs) on numerous occasions that not allowing PV panels, being EEE for the first time under the scope of WEEE Regs, to benefit from the visible fee during a limited number of years, shall create an enormous risk regarding the financing of waste PV Panels for the future.

After eight years, with the exception of Belgium and France (where the visible fee is in place for PV Panels), in the majority of the EU-27 + UK countries, there are barely (or no) provisions in place for the collective take-back systems, and there is no guarantee that the collection and treatment of photovoltaic panels is secured for the next twenty years, taking into account the very long lifetime of photovoltaic panels (20 years+), the volatile solar market, the geopolitical environment and/or the global or national energy policy impacting the numbers placed on the market and the like. PV CYCLE views this as a ticking time bomb and a huge financial risk for the solar industry.

Under the existing arrangement, over the past eight years, PV CYCLE has noticed that in the UK there is a race to offer the cheapest compliance fee, whereby nothing is covered for the (near) future, creating a lack of a level playing field in this market.

Instead, PV CYCLE proposes a secured financing mechanism such as obliging that during a period of time, each Producer of each PCS managing PV panels must build up provisions for future end-of-life costs via a visible fee at the point of sale of a PV panel. The level playing field must be monitored by DEFRA so that there is no race to the bottom regarding compliance costs.

In Belgium and France, the only two countries where a visible fee is in place and where all photovoltaic panels are defined as 'Household EEE', we have witnessed, and still witness, the following positive effects of the introduction of a visible fee:

- due to the very long lifetime of photovoltaic panels, a secured financing mechanism;
- during a limited period of time or unlimited the individual take-back system of one single Producer and the collective take-back systems must build up provisions for future costs and under the same conditions;
- a level playing field is created amongst all Producers in the country because the fee is – for example – per technology the same;
- smooth approach to introduce 'eco-modulated' compliance fees (see also previous point);
- very limited to almost no 'free-riders';
- the ability to build up a limited amount of provisions for future waste management costs which is monitored by the solar sector and the local Regulatory Authority; the latter is required when there are multiple PCS's on the market;
- Benefit to the final disposer, who is entitled to get rid of their PV waste "free of charge."

Recommendation:

- PV CYCLE recommends to envisage the introduction of a visible fee for PV Panels.
- PV CYCLE believes that the introduction of a 'visible fee' is a must for PV panels. Renewable Energy products and equipment do not fit under the WEEE Directive. We invite the Environment Secretary to exclude photovoltaic panels from the scope of the WEEE Regs 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).

3. PRODUCER DEFINITION (Section 2, WEEE Regs 2013)

The definition of *Producer* in the WEEE Regs currently disregards and misses a huge allocation of how photovoltaic panels are actually placed onto the market. As a consequence, many solar 'producers' avoid their obligated responsibilities to join a PCS and report their Placed on the Market (PoM) figures to the PCS and through these to the Environment Agency. This subsequently leaves an unlevel playing field between solar installers, between those who do comply and those who do not. Furthermore, as things stand, this leaves a blackhole in the financing of future collection and recycling of photovoltaic panels, and an under-reporting of photovoltaic EEE PoM.

The current definition – similar to many other articles and notions in the WEEE Regs – only takes into account the 'classical' electrical and electronic equipment, which mainly consists of fast-consuming EEE (TV sets, IT, washing machines, and more recently vapes, etc.) 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 individual consumers.

The photovoltaic supply chain works completely differently: with the exception of a few photovoltaic panel manufacturers in the European Union, the vast majority of PV Panels are manufactured outside the United Kingdom and the European Union, and enter the UK 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 Single Purpose Vehicles (SPV).

The latter SPV - and in size the biggest one – are owned or set up by utilities or financial organizations which are investing in large-scale ground-mounted photovoltaic power installations of at minimum 1 Megawatt (MW) and up to 100 MW or more, and thus easily representing 3,000 photovoltaic panels (~ 1 MW).

The PV panels installed in these large-scale power plants are directly purchased from the foreign manufacturer and are 'as such' not placed on the market by a local distributor or wholesales company, nor by an installer. Thus, in the UK, we have noticed that the UK regulating bodies have no idea as to who to define as the "Producer" (the foreign manufacturer or the local legal entity representing the large PV power plant, also known as the SPV). PV CYCLE proposes introducing the obligations of Producer Responsibility at the planning stage of solar developments, so a final producer is clearly defined within the WEEE regulations or dedicated EPR legislation.

A recent Freedom of Information (FOI) request asked the Environment Agency how many cases of enforcement action they have taken for suspected non-compliance of solar producer responsibilities in England. The FOI stated that there have been zero cases. This loophole or lack of enforcement and oversight in Producer responsibilities, creates 'free-riders' and a competitive disadvantage between Producers, Importers and solar installers, as one Producer pays their fair share into producer compliance, and the other does not, with no apparent consequences for parties acting illegally.

This is the biggest maze in the 'consumer EEE oriented' WEEE Regs and in extension the 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 Environment Secretary to exclude photovoltaic panels from the scope of the WEEE Regs 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 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.
- PV CYCLE recommends the notion of an identifiable Producer is integrated into the planning application process for future solar farm developments, whereby it is transparent who the nominated producer is, and whether they have joined a Producer Compliance Scheme.
- PV CYCLE recommends a dedicated task force from the Environmental Regulator to monitor the landscape of Producers within the solar sector, with greater enforcement and meaningful penalties for non-compliance, including if necessary historical cases of non-compliance.

4. ABOLISH THE COLLECTION TARGETS FOR PHOTOVOLTAIC PANELS WASTE (Section 76 WEEE Regulations)

In the UK, Producer Compliance Schemes must reach their collection targets for the categories of WEEE they are responsible for, as noted in the table above. These targets are based on the previous years Placed on the Market (POM) figures per category, divided by the market share of the Producer or its PCS. Whilst this type of approach may have merit for regular household waste streams, such as vapes, TVs or Microwaves, whereby one item is purchased can be assumed that another is thrown away in the same period, photovoltaic panels operate on a completely different timespan and different market conditions, namely exponential growth and as an investment product. This creates embedded conflict for the photovoltaic waste stream:

1. Not in each year a stable number of photovoltaic panels are sold;
2. Even though the UK collection target takes into account previous years' data POM and OOM, it is difficult to predict what will actually arise as photovoltaic panels waste in a given year;
3. It is impossible for new solar farm developments to accurately budget their future producer responsibility costs;
4. The sale of photovoltaic panels is heavily influenced by subsidies, energy prices and the energy policy;
5. The WEEE Regulations and most of the EPR legislation is written for 'fast consuming products', hence the ambitious collection targets, whilst Renewable Energy Products such as photovoltaic panels are investment infrastructure products, guaranteed with a ten (10) year product guarantee and a twenty (20) year performance guarantee;
6. The collection targets ignore 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.
7. The collection targets do not consider the photovoltaic panels have both a long lifespan and contribute a vital part of the energy transition and help secure the country's renewable electricity production;
8. Reuse of photovoltaics is not rewarded in the collection targets, only in the recovery (recycling) targets;
9. The PCS is obliged to divert valuable resources to pay a financial penalty (named ‘compliance fee’) when it fails to achieve the collection target;
10. The unintended consequence of the annual collection target means that for photovoltaic panels this is no longer a supporting element of Extended Producer Responsibility, but instead only purely a financial mechanism that offers no added value to the ‘Producer Responsibility’.
11. The publication of an annual collection target on 31 March of the year is completely opposed to how Producers and PCSs manage their operations, i.e. pro-active, forecasting, planning etc. Collection targets for the next year (compliance period) must be published the latest by December 15 of the previous year so that Producers and PCSs can anticipate them.

Therefore, if collection targets remain within the WEEE regulations for photovoltaic panels, as a minimum demand, PV CYCLE proposes alternative solutions appropriate specifically for photovoltaic panels. For example KPIs or quantifiable measures of performance over time for a specific objective, such as solar deployment figures, waste-generated targets or circular inputs (materials that are not virgin or virgin materials that are sustainably manufactured). PV CYCLE proposes a balancing mechanism to reflect the very long lifetime of investment products whereby the ‘prevent’ aspect of photovoltaic panels or other REE is rewarded, alongside the contributions to the UK's renewable energy mix and reduction in carbon emissions for people and planet.

Recommendations:

- PV CYCLE recommends to immediately abandon 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 completely different behaviour than short life consumable electrical and electronic equipment.

- PV CYCLE believes that the challenge of who to define as a "*Producer"* cannot be covered with the current definition. Renewable Energy products and equipment do not fit under the WEEE Directive. We invite the Environment Secretary to exclude photovoltaic panels from the scope of the WEEE Regs 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. DEFINITIONS 'RECOVERY' & 'RECYCLING'

The current requirements regarding 'treatment' completely neglects the composition and the nature of photovoltaic panels. The UK Guidance on Best Available Treatment Recovery and Recycling Techniques (BATRRT) and treatment of Waste Electrical and Electronic Equipment (WEEE) of 2006 does not even contain a reference to Photovoltaic panels. The BATRRT treatment guidance only refers to classical electrical and electronic equipment and has no added value for the solar sector.

Silicon photovoltaic panels contain flat glass (~70%), in most cases an aluminium frame (~10-20%), plastics (5-10%) and a few metals (copper, silicon) (~0.5 -1%). Therefore, the existing treatment targets relevant for EEE have no, or little relevance with a laminated flat glass (sheet) product such as a photovoltaic panel, which is composed of lots of flat glass (not even comparable with car glass or building glass), a bit of aluminium and very small amounts of metals (copper) and silicon (which is a by-product of sand). The only relation to other EEE products is that it has electrons flowing through it.

There is increasing interest in the subject of solar panel recycling from asset managers and financers responding to Environmental Social Governance (ESG) requirements, as attention is turned to decommissioning and repowering, etc. However, there is not a level playing field or equal comparisons between recycling treatment methods, leaving the market largely unregulated and uninformed and vulnerable to infiltration by bad-faith stakeholders bringing the solar recycling industry into disrepute.

PV CYCLE finds that companies can act with impunity to claim they 'recycle 99%' of a solar panel, without having to supply any proof to the regulating authorities, and with no oversight or minimal threat of legal redress. PV CYCLE has evidence of UK companies simply storing the waste or exporting illegally on the black market. This comes without the customer's knowledge and at the expense of legitimate partners working tirelessly within the regulations to chase collection targets discussed in the previous section, or to achieve recovery and recycling targets.

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.
- PV CYCLE recommends that the Environment Secretary must assess a dedicated Extended Producer Responsibility legislation for all Renewable Energy Products so that 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, small hydro equipment and photovoltaic panels.
- We invite the Environment Secretary to exclude photovoltaic panels from the scope of the WEEE Regs 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 OF PHOTOVOLTAIC PANELS

PV CYCLE supports the separate Category 14 in relation to the reporting of 'placed on the market'.

We do not support the collection of PV Panels through DCFs operated by Local Authorities.

Moreover, it is recommended to remove the current instructions of the DCF Code of Practice:
Category E contains *'all other WEEE except photovoltaic panels'.*
"Photovoltaic panels are included in the WEEE system. Currently you do not have to provide dedicated space for collection as you're unlikely to receive them from households in a big enough quantity. If you do receive these panels, they should be kept separate from other waste and you should contact your contracted PCS to arrange separate collection, treatment, recovery and sound environmental disposal. Household items powered by solar need to be put in the most appropriate collection stream."

PV CYCLE assesses the above statement as creating uncertainty, confusion, and a high amount of costs.

Based on the most recent figures, between January – June 2023, 103 tonnes of photovoltaic panels were collected by DCFs, and in 2022 this figure was 195 tonnes. This raises the question, are so many households disconnecting their photovoltaic panels themselves and taking them to their local Household Waste Recycling Centre?

PV panels, being always part of a PV system, are installed and de-installed by professionals for technical and safety reasons and to 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.

In 2022, PV panels returned under Regulation 43 and Regulation 50 are much lower than collected through a DCF. Thus, the phrase from the extract above "*as you're unlikely to receive them from households in a big enough quantity"* is in our opinion not the current reality.

Today, there is no cap on the maximum amount of PV panels which a DCF can accept or collect. Thus in the (near) future, the solar sector faces the huge risk that large-scale PV Power plants shall be dropped off at DCFs whilst the vast majority of DCFs operated by LA's do not have the storage capacity to store, for example, a 5 MW PV power plant, 350 tonnes, or 700 pallets of PV waste. Moreover, the carbon emissions related to this activity are huge: first shipping from the original PV Power plant to the LA-DCF and then a second pick-up, handling and shipment by the PCS to the AATF.

In our experience of other countries such as Germany and Italy, using the municipal (Local Authority) collection points for photovoltaic panels provides an inefficient modus operandi and thus several problems:

1. There is no sorting between the different photovoltaic technologies which hampers an efficient treatment because additional sorting and costs are generated;
2. There is an inefficient allocation of which receptacles must be used in the municipal collection points, whereby accepting a receptacle with two PV Panels is allowed, which is an example of a very costly, not cost-efficient and not climate-friendly collection of waste.
3. There is as such no limit on which amount of photovoltaic panels can be brought into a municipal collection point. This means that a photovoltaic installation of 1 MW (roughly 60 to 70 tonnes) can be dropped off at a municipal collection point and that all the costs related to this are borne by the Producer or the PCS he adhered to.
4. The experience of PV CYCLE throughout Europe shows that the collection of small amounts of PV Panels (a pallet of 30 to 35 pieces) through industry-owned collection or drop-off points, represents only on average 10% of the annual total collected tonnes.

By comparison, 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 and its infrastructure. One of the reasons for the success is that the dismantling and removal of photovoltaic panels from an installation is executed by a professional installer, who groups the PV

Panels at his premises on receptacles or brings these PV Panels to his supplier, the wholesales company or the distributor.

Moreover, the collection of large amounts of photovoltaic panels from large-scale PV installations runs through a direct pick-up and represents on average 90% of the annual total collected tonnes in the European countries.

Therefore, we do support the notion of a separate collection of PV Panels, only in the B2B Collection network and not through DCFs owned by Local Authorities.

For the (near) future, we plead to terminate the collection of photovoltaic panels through DCFs operated by a Local Authority.

Recommendations:

- PV CYCLE recommends the notion of a separate collection of photovoltaic panels must remain.
- Collection of photovoltaic panels through Local Authorities must be forbidden.
- PV CYCLE supports the notion that Producer Compliance Schemes and Producers are obliged to set up a B2B-collection network for small amounts of PV panels to capture the amounts of residential rooftop PV installations.
- We invite the Environment Secretary to exclude photovoltaic panels from the scope of the WEEE Regs 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. PV PANELS DEFINITIONS – 'HOUSEHOLD' OR 'OTHER THAN HOUSEHOLD' EEE AND CONSEQUENCES

Under the existing WEEE regulations, WEEE can be either classified as either:

a) 'household' including 'dual use'
b) 'other than household'

These definitions are important when considering both:

i) Organization collection and treatment of WEEE
ii) Financing of the activities under i)

The definition of WEEE from private households in the WEEE Regs 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, which is problematic because a photovoltaic installation on the rooftop of commercial, industrial, institutional and other sources of infrastructure (store, warehouse, public infrastructure, etc.) has a **different nature and quantity** than a photovoltaic installation on the rooftop of a house(hold), yet the WEEE regs treat all photovoltaic panels to be applied and installed in similar amounts on residential household rooftops versus commercial, industrial, institutional rooftops and large stand-alone PV power installations.

For a residential rooftop photovoltaic installation, there are many 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,* etc. In comparison, EEE other than photovoltaic panels do not need to take into account these complex considerations because in a normal household, purchasing one washing machine, or one vacuum cleaner, is the maximum amount.

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

Within the wider scope of the United Kingdom and the EU-27 countries, defining PV panels as 'dual use' is only recommended to secure financing when at the same time a visible fee mechanism is in place. Defining PV Panels as 'dual use' equipment and thus Household (W)EEE, whilst all PV Panels are installed by a professional installer and the vast majority of British PV installations are commercial, industrial or utility large-scale installations, causes confusion and market disparity with regards to the collection, treatment and financing of these operations by Producers and PCS's.

Based upon our eight years' experience, we recommend that the Environment Secretary oblige that each photovoltaic panel be defined as 'household EEE' so that the accompanying financing is secured and ring-fenced through the implementation of a visible fee.

Moreover, the financing requirements for all photovoltaic panels, irrespective where they will be installed, and any other equipment for the first time under the scope of the WEEE Directive – reference date is today 13 August 2005 – require the obligation that the UK Producer(s) must foresee the creation of provisions during a limited period of time (e.g. five (5) years) so that equipment with a very long lifetime can plot a fund through a mandatory visible compliance fee.

On the other side, the **operations of organizing the collection and take-back** must take place in only a B2B environment. Hence, PV CYCLE proposes a not common proposal within the WEEE mindset, whereby the financing of a long-lifetime product is ring-fenced and the collection and take-back only uses B2B-collection and take-back channels and not the LA DCFs.

Recommendations:

- PV CYCLE recommends defining photovoltaic panels as 'Household EEE' 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.
- Collection and takeback operations of photovoltaic panels run only through B2B-collection channels and exclude DCFs operated and owned by LA's.
- We invite the Environment Secretary to exclude photovoltaic panels from the scope of the WEEE Regs 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. REUSE

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

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 kWp to 1 MWp) or utility-scale PV power plants (> 1 MWp) in Europe, the 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 demands more manpower for very small volumes and is not economically 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 take 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 handling (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. PV panels should only be considered for re-use that still have a power above 70% of their initial value, and 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. In this context, product liability is critical because photovoltaic panels generate electricity instead of consuming electricity, and this should be reflected in the relevant WEEE (or otherwise) regulations.

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 second-hand PV panels is at risk when their adequate waste treatment and recycling are 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.

g) Second-hand PV panels are feasible and socially desirable, under the condition that certified and monitored organizations undertake the technical inspection. This includes technical and safety conformity, guaranteed by a technical track and trace documentation.

h) As a result of the Reuse Study, 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 presented this case in May 2021 to the IEC (International Electrotechnical Commission), Technical Committee 82 related to ‘Solar

Photovoltaic Energy Systems'. Experts of TC 82 are currently drafting 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.

Exports of Reused Photovoltaic Panels

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's global and European actors export towards the Sahel countries, Afghanistan, Pakistan, the Palestinian territories and Turkey.

The relevant regulators need to ensure 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 United Kingdom or the European Union, is today not covered nor guaranteed at these destinations.

The European Union and the UK's relevant authorities must be granted and use greater enforcement powers to ensure equal treatment and legal clarity for all economic actors in this sector, for example through the IMPEL Network. If PV CYCLE's proposed standard is implemented, inspection authorities for used products, waste and the shipments of waste can then be used in their assessment if repair centres perform environmentally, technically and safely sound in accordance with the standard. Furthermore, the actors involved in these activities can be held accountable for what they do with potential reusable photovoltaic panels.

Considerations also need to be made for the CO2 footprint of exporting potentially thousands of tonnes to secondary destinations around the world, considering photovoltaic panels have been manufactured to reduce society's burden of carbon emissions on the planet.

Removal of MCS Clause 4.12.2

Although not strictly relevant for the upcoming WEEE consultation, there is an issue in the UK regulations in the fact that clause 4.12.2 of the Microgeneration Certification Scheme (MCS) code of practice states:
"4.12.2 Products and materials installed shall be new and not previously used."

Therefore, if the UK is to encourage the reuse of photovoltaic panels, this unnecessary and unjustified regulation needs to be immediately abolished.

Recommendations:

- PV CYCLE recommends to first have in place a Norm or Standard or Technical Specification regarding the reuse of photovoltaic panels
- Greater enforcement and tracking of shipments of photovoltaic panels entering and leaving the UK and European Union
- PV CYCLE recommends a review of the existing MCS regulation stating that reused photovoltaics are forbidden
- Renewable Energy products and equipment do not fit under the WEEE Directive. We invite the Environment Secretary 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. MONITORING OF THE ACTIVITIES RELATED TO REVAMPING AND REPOWERING AND THEIR IMPACT ON KPI'S RELATED TO EPR LEGISLATION

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.

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.

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.

The most common technical reason for repowering is the so-called degradation of the PV Panels: 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.

Despite the fact that photovoltaic panels receive a product guarantee of 10 years and a performance guarantee of 20 years, we notice the last years that some Large Scale Photovoltaic installations have an economical lifetime – as a reminder, they are investment products – of for example ten (10)years due to the practice of repowering and revamping.

In relation to an upcoming innovative KPI under a REE-EPR legislation or – currently - Collection target under the WEEE Regs, revamping and repowering result in a significant extension of the lifetime of a photovoltaic power plant (including its photovoltaic panels); this extension might even surpass the initial estimated 20 years lifetime. The generation of PV panel waste shall thus be even more delayed and shall continue having a huge negative impact on the current collection targets imposed by the current WEEE Regs.

The process of repowering and revamping is already underway in the UK, and will inevitably have a direct impact on the levels of photovoltaic waste coming through the system, either as reuse or recycling.

Under the existing collection of solar deployment figures, revamping and repowering are not accounted for, yet this practice will skew the total solar figures significantly against the true generation of the UK solar deployment. Furthermore, it is not clear if SPVs that revamp or repower are being included in the EEE Producer figures, which means a further lack of financing of solar waste that is being produced in the process and future waste generated in decommissioning.
This process also increases the likeliness of large quantities of waste (or severely degraded) photovoltaics being exported to other parts of the world under the guise of 'reuse'. Without an approved reuse standard there is no tangible way of undertaking standardized safety checks and due diligence or liability of reused products. And therefore, this is an issue the solar and waste industry needs to urgently address.

Recommendations:

- PV CYCLE proposes the UK adopts a monitoring and evaluation program for all utility-scale solar assets repowered or revamped
- We invite the Environment Secretary to exclude photovoltaic panels from the scope of the WEEE Regs 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. DEFINITION OF PHOTOVOLTAIC PANELS (no article in the WEEE Regs 2013)

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

The past eight years, we have witnessed that the UK considers all photovoltaic panels as being photovoltaic panels under the scope of WEEE and being 'household EEE' including the accompanying financing requirements, whilst some other countries of the EU-27 exclude BIPV (Building Integrated Photovoltaics) or some other countries of the EU-27 have no understanding of the different photovoltaic technologies and thus have even no opinion about 'BIPV'.

As BIPV might become more and more present on the market due to requirements imposed by legislation related to Energy Efficiency, the solar sector must know if BIPV is under the scope or not and if this might then have a competitive disadvantage in the market or not.

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 of the European Commission related to what is not defined as a photovoltaic panel must remain in any FAQ' list.
- We invite the Environment Secretary to exclude photovoltaic panels from the scope of the WEEE Regs 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

The experience of the past eight (8) years shows that the UK has a different interpretation – compared to other former colleague Member States of the European Union - on when and how the notion of Authorized Representative must be executed.
Having no clear set of requirements and obligations for the Authorized Representative is unacceptable.

PV CYCLE supports the notion of *an authorized representative* and encourages the UK to ensure that this provision is properly guided. 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 an *authorized representative* and insists on harmonized and equal implementation of this requirement with a clear set of instructions on how to implement this in the UK.