



## **PV CYCLE**

European association for the take-back and  
treatment of discarded PV Panels

GRCJ- AGC Delegation 19.11.2015

Brussels



## AGENDA

- MISSION
- HISTORY
- LEGISLATION
- OUR SERVICES
  - Collection: small & large quantities
  - Recycling and Treatment
- KEY FIGURES
- LIFE CYCLE ASSESSMENT



## MISSION

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- PV CYCLE is a pan-European Producer scheme, offering dedicated compliance and waste management services for products under WEEE and Battery Producer Responsibility regulations, with a special focus on solar energy systems.
  - We enable our members to execute their commitment to sustainable waste management by offering the best-in-class waste management and compliance service for discarded solar energy system products in the European countries.

- **Founded in 2007** by the photovoltaic industry, PV CYCLE has started as a voluntary system managing the photovoltaic waste by offering services to the Producers & Importers based in Europe
- **At the forefront** of collective collection and recycling solutions in the photovoltaic industry, PV CYCLE has already treated several thousand of tons of photovoltaic panels which reached their end of life
- **Today**, PV CYCLE is composed of several national subsidiaries managing daily operations and offering solutions for treatment and WEEE-compliance of waste from a wide variety of products from solar equipment





## LEGISLATION

- Waste management must be executed in compliance with the European, national and/or local regulations
- **WEEE Directive (Waste Electrical and Electronic Equipment)**
  - The WEEE Directive governs the management of products that have reached their end of life and requires Producers (eg. Manufacturers and Importers) of electrical and electronic equipment to comply with national legislation on the organization of waste management, especially towards financial and administrative responsibility. The first WEEE Directive (2002/96) dates back to January 27, 2003, and was amended in 2003 and 2008. Since 2012, the photovoltaic panels are also within the scope of this Directive.
- **Waste Directive**
  - Established to avoid harmful effects of waste generation and promote sustainable waste management, the European Directive 2008/98 / EU on waste provides a legal framework for waste management in Europe. It also defines the concepts and definitions around this theme.
- **Waste Shipment Regulation**
  - The European Regulation 1013/2006 / EU on waste transfers defines the procedures on waste shipments within the EU as well as to and from third countries. Thereby regulating shipments of waste, the EU aims to better protect the environment and prevent uncontrolled transfers.

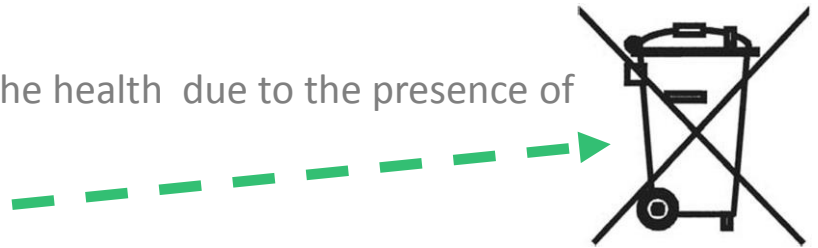


## WHO IS PRODUCER ?

- **Manufacturer** established in a country of EU-28 and putting for the first time an **EEE** (Electrical and Electronic Equipment) on the territory of that country (sells under his own name or own brand)
- **Distributor** established in a country of EU-28 and putting for the first time an EEE (Electrical and Electronic Equipment) on the territory of that country (resells under his own name or own brand)
- **Importer** established in a country of EU-28 and putting for the first time on the territory of that country, **on a professional basis**, EEE (Electrical and Electronic Equipment) originating from third countries or another country of the EU-28
- Natural or legal person which sells EEE **by distance sales communication directly to households or users other than** households, in a country of the EU-28, and which is established in another country of the EU-28 or in a third country (online sales)

## OBLIGATIONS OF THE PRODUCER ?

- Registration in the WEEE Register;
- Reporting of the quantities put-on-the-market in weight;
- Reporting of the quantities collected and treated;
- Informing the treatment centers of the composition of the EEE products;
- Informing the users (consumers)
  - of the potential effects on the environment and the health due to the presence of hazardous substances in the EEE;
  - the meaning of the symbol (separate collection);
  - the available take-back systems, encouraging the coordination of the information on the available collection points, irrespective which Producer or Operator has put them in place;
  - not disposing the WEEE with non-sorted municipal waste and proceed collecting the WEEE separately;
  - of their role in the re-use, the recycling and the other forms of treatment of WEEE;
- Informing how they execute their obligations (individual or collective)





## OUR SERVICES

- PV CYCLE services cover the complete compliance and waste management process for WEEE (incl. Solar equipment products) in one or more countries



### Compliance services

- Centralized online registration and declaration
- Financial guarantee (country-specific)
- PV-focused consultancy
- Campaigning and marketing services
- WEEE Compliance (according the specific requirements country per country).

### Waste management services

- **Collection** on the territory of each country:
  - Hundreds of fixed collection points
  - Direct pick-up service for large quantities
  - Collection via municipal collection points (country-specific, only for household WEEE)
  - Collection through distributor locations (country-specific)
- **Recycling:**
  - State-of-the-art recycling and treatment solutions

### Tailor-made solutions

- Consultancy and centralized solutions for companies operating across Europe
- Interesting solutions for internationally operating companies, e.g. authorised representative





## OUR COLLECTION SERVICES

- PV CYCLE is operational in 28 countries of the EU and the 4 countries of the EFTA.
- The network of PV CYCLE is composed of:
  - Hundreds of fixed collection points in Germany, France and Belgium
    - To find your nearest collection point, consult the Navigator on [www.pvcycle.org](http://www.pvcycle.org).
  - A collection service for large quantities
  - European recycling partners
  - Experienced waste transportation partners

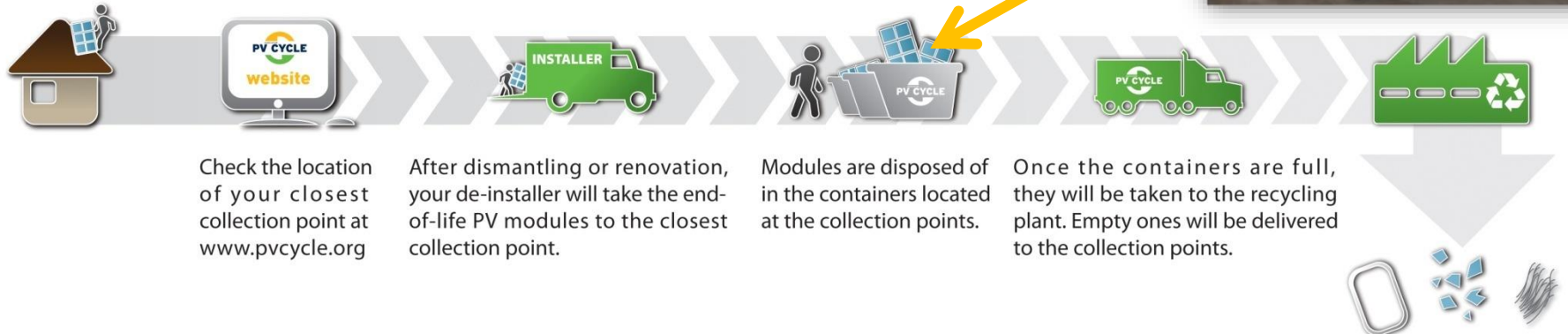




# COLLECTION - SUMMARY



## SMALL QUANTITIES < 30-40 MODULES



Check the location of your closest collection point at [www.pvcycle.org](http://www.pvcycle.org)

After dismantling or renovation, your de-installer will take the end-of-life PV modules to the closest collection point.

Modules are disposed of in the containers located at the collection points.

Once the containers are full, they will be taken to the recycling plant. Empty ones will be delivered to the collection points.

New raw materials are ready to be used in various products.

## LARGE QUANTITIES > 30-40 MODULES

Call or email PV CYCLE to schedule a pick up. A truck will be sent to take your end-of-life PV modules to one of our partner recycling facilities.



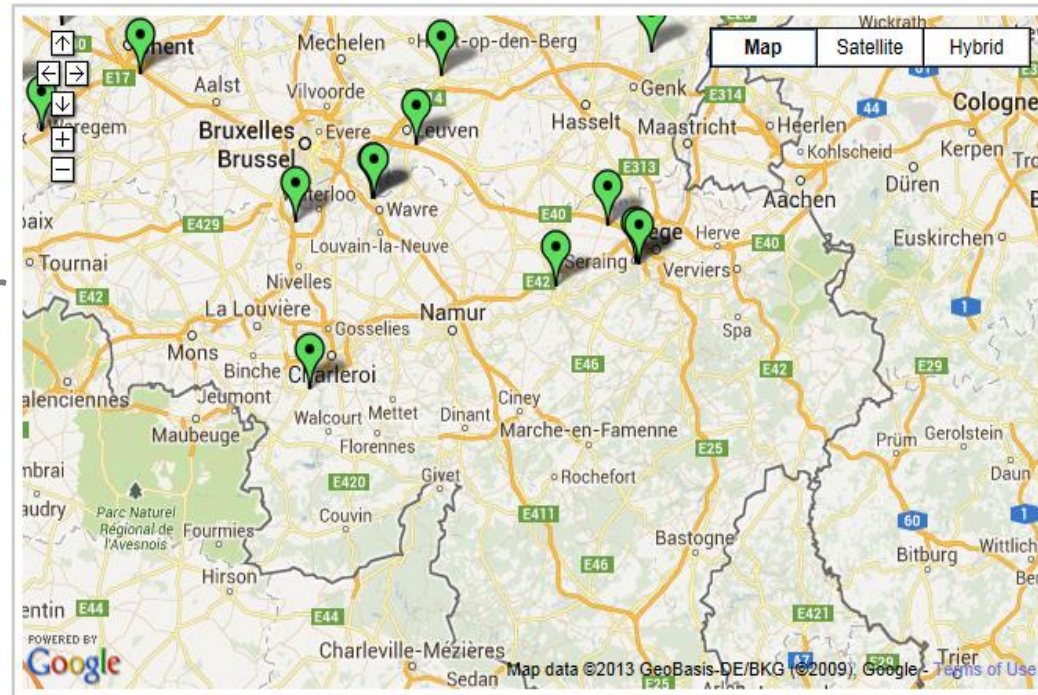
In large PV installation and renovation sites, modules will be directly picked up on location and then taken to the recycling plant. Special conditions may apply. For more information please contact PV CYCLE.





## COLLECTION SMALL QUANTITIES

- To find your nearest collection point in Belgium e.g. , visit our *Collection Point Locator* at [www.pvcycle.org](http://www.pvcycle.org).





## ADVANTAGES TO BECOME A FIXED COLLECTION POINT

- **Additional and more distinctive** service towards customers
- **Certificate** of PV CYCLE, which acknowledges the collection point as a partner
- **Listed** on sur [www.pvcycle.org](http://www.pvcycle.org) with their contact details
- Free of charge **marketing material** in both electronic and hardcopy version
- Free of charge use of the **PV CYCLE Logo**



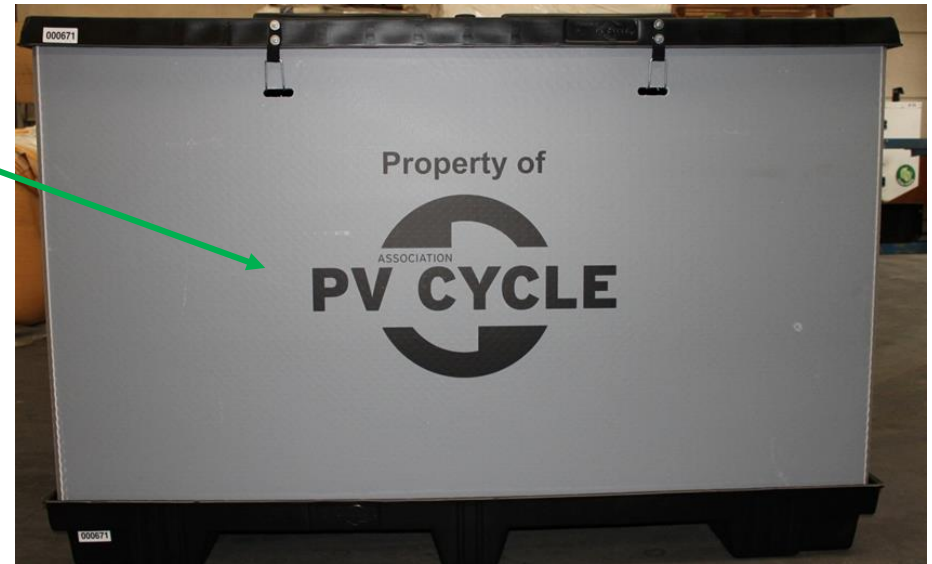
## REQUIREMENTS TOWARDS FIXED COLLECTION POINTS

- **Signature** of the Collection Point Contract
- **Available space** for two receptacles in a safe location: **Silicon based & non-Silicon thin-film based** [1.820 x 1.200 x 1.190 mm]
- **Smooth administrative procedure** for accepting discarded PV Panels in PV CYCLE' network
- **Contact** PV CYCLE for the pick-up when the containers are full



## COLLECTION POINT (CTD)

- After signature of the contract, PV CYCLE delivers the container)
- The different technologies are separately collected.
- All silicon-based PV Panels can be packed together (mono-, poly-, amorphous et micro-morphous).
- All the other technologies such as CI (G) S, CdTe PV must be packed separately from silicon based PV Panels.



For more information about the role of a Collection Point, contact us by [operations@pvcycle.org](mailto:operations@pvcycle.org)



# COLLECTION POINT (CTD)

- Complete the form online and submit this
- An e-mail is sent with the contract and additional information related to the role of a collection point
- Return the signed contract to PV CYCLE
- After the signature of the contract your company is listed on our website being an official collection point.

## BECOME A COLLECTION POINT

Any company who deals with discarded photovoltaic (PV) modules can become a PV CYCLE Collection Point.



If you are interested in becoming a collection point for the PV CYCLE network, please complete and send this online form. It is not necessary to be member of the association.

Name *	<input type="text"/>
Contact person *	<input type="text"/>
Street *	<input type="text"/>
Num. *	<input type="text"/>
Post code *	<input type="text"/>
City *	<input type="text"/>
Country *	<input type="text" value="v"/>
Telephone *	<input type="text"/>
Email *	<input type="text"/>
Website	<input type="text"/>
	<input type="submit" value="Submit"/>

\* = Mandatory fields

- › FIND A COLLECTION POINT
  - › ADVANTAGES
  - › BECOME A COLLECTION POINT
- 
- › WEEE COMPLIANCE
  - › WASTE DISPOSAL
  - › COLLECTION POINTS



## COLLECTION OF LARGE QUANTITIES

- Discarded PV Panels are, from a legal point of view, waste.
  - The definition of waste does not imply that the handling of waste PV Panels should not happen in an proper way.
- Therefore important to learn and to brief Owners of waste PV Panels how to pack properly the panels in order to avoid extra damages and issues during the loading and transportation.





# COLLECTION OF LARGE QUANTITIES

Properly packed





## COLLECTION OF LARGE QUANTITIES

**Not properly packed**





## OUR RECYCLING SERVICES

- Our Recycling partners have been tested during many years and have already treated more than 12.500 tonnes.
- These partners guarantee an efficient and sustainable treatment of the PV Panels, resulting in 95% recovery of the materials.
- By working with companies located in Europe, we can guarantee that the “**Best Available Techniques**” are applied for the treatment of each PV Panel technology.



## The secondary raw materials

- The recovered materials can be reprocessed in the industry as:
  - New materials
  - New products
- This prevents the use of primary raw materials and therefore limits the use of these materials.

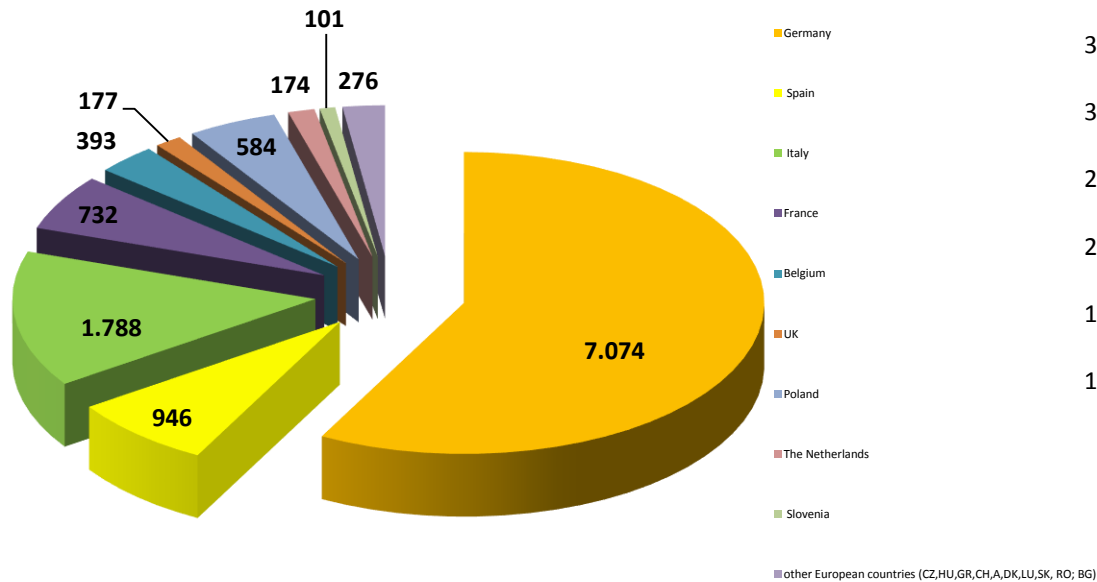




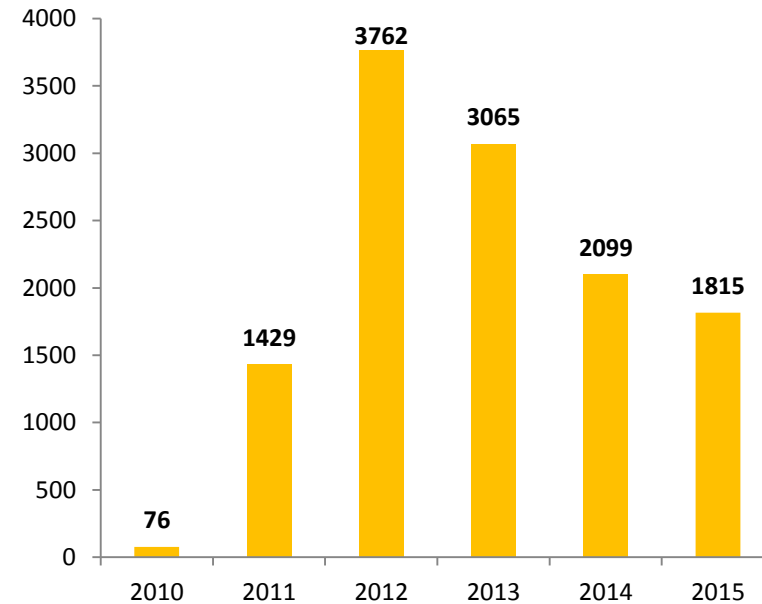
## KEY FIGURES

- PV CYCLE is the first collective take-back scheme for PV module waste worldwide and active since June 2010.
  - More than **12.500 tonnes** collected to date

Cumulative total per country

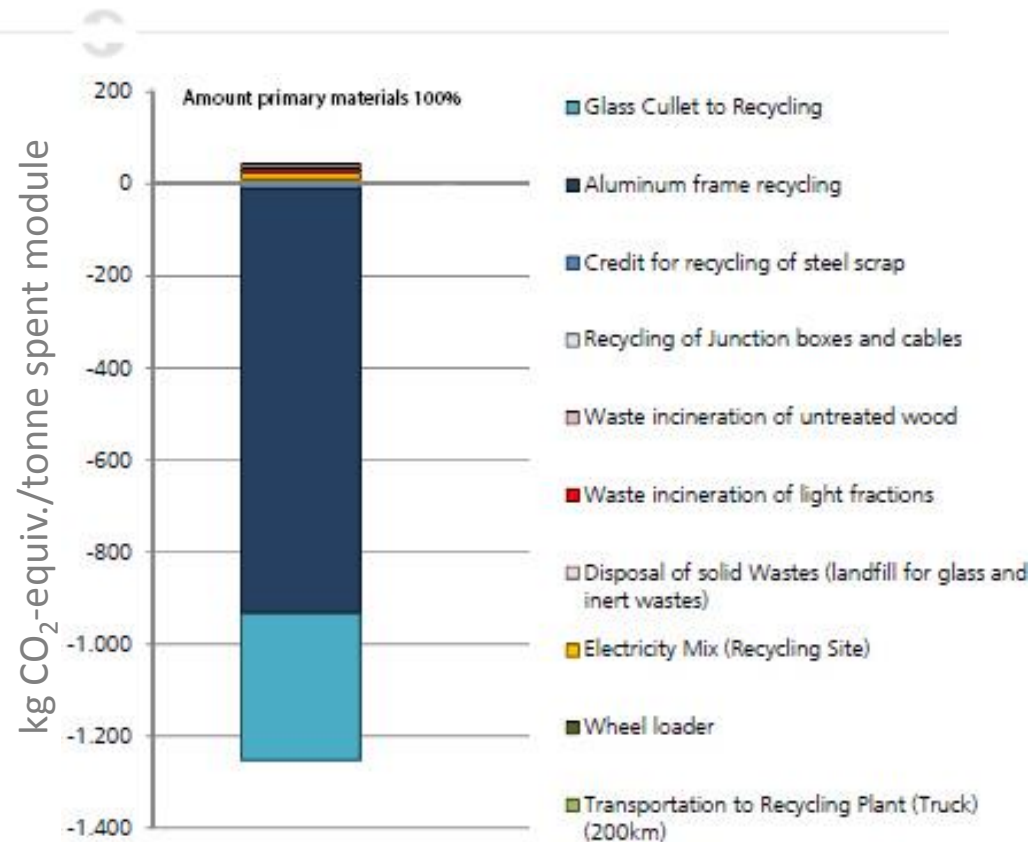


Historical overview per year



### LCA – Impact of Si PV module recycling on CO<sub>2</sub> savings

- 1 tonne recycled Si-based PV Panels saves >1,200 kg CO<sub>2</sub> emissions
- Recycling of aluminum and glass cullet → significant reduction of the environmental profile of the recycling process





**THANK YOU FOR YOUR ATTENTION**

**QUESTIONS?**

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