

# Making the photovoltaic industry **DoubleGreen** Our voluntary take back and recycling programme



## MAKING THE PHOTOVOLTAIC INDUSTRY 'DOUBLE GREEN'

PV CYCLE was founded in July 2007 to implement the photovoltaic (PV) industry's commitment to set up a voluntary take back and recycling programme for end-of-life-modules and to take responsibility for PV modules throughout their entire value chain.

PV modules are designed to generate clean, renewable energy for over 25 years. With the first significant installations in the early 1990s, full-scale end-of-life recycling is still another 10-15 years away.

Nevertheless, the PV industry is working to create truly sustainable energy solutions that take into consideration the environmental impacts of all stages of the product life cycle, from raw material sourcing through end-of-life collection and recycling. Although the PV industry is young, leading manufacturers embrace the concept of producer responsibility and have come together to put in place a voluntary, industry-wide take-back and recycling programme. By addressing future recycling needs now,

we can offer a truly sustainable energy solution today to help prevent climate change tomorrow.

**The voluntary take back and recycling programme is split into two phases:**

- **Phase I:** Preparatory work to solicit industry participation, design the framework and set the objectives of the programme.
- **Phase II:** Implementation of the programme throughout Europe, together with annual auditing to monitor and communicate progress towards achievement of the PV industry's goals.

Through PV Cycle, the photovoltaic industry is striving to achieve the highest economically feasible and environmentally responsible collection and recycling of PV modules.

## RECYCLING PHOTOVOLTAIC MODULES

PV modules contain materials that can be recovered and reused in either new PV modules or other new products. Industrial recycling processes exist for both thin-film and silicon modules. Materials such as glass, aluminium, as well as a variety of semiconductor materials, are valuable when recovered.

Recycling not only benefits the environment by reducing the volume of waste, but also helps to reduce the amount of energy required to provide raw materials and therefore the costs and environmental impacts of producing PV modules.

By recycling end-of-life modules, the PV industry enables the sustainable use of PV technology, furthering PV's ability to help meet the energy needs while protecting the environment.



## OUR MISSION: CREATING A VOLUNTARY END-OF-LIFE TAKE-BACK AND RECYCLING PROGRAMME

PV CYCLE's mission is to create a voluntary industry-wide take-back and recycling programme for end-of-life modules in Europe.

By 2015, when significant numbers of PV modules will start to reach the end-of-life, we intend to have a programme in place to provide take-back and recycling of end-of-life modules, financed by PV producers, consistent with the long-standing EU waste management goals of producer responsibility.

## ADDRESSING THE ENTIRE LIFE-CYCLE OF PV MODULES

Generating energy



End-of-Life



Recycling

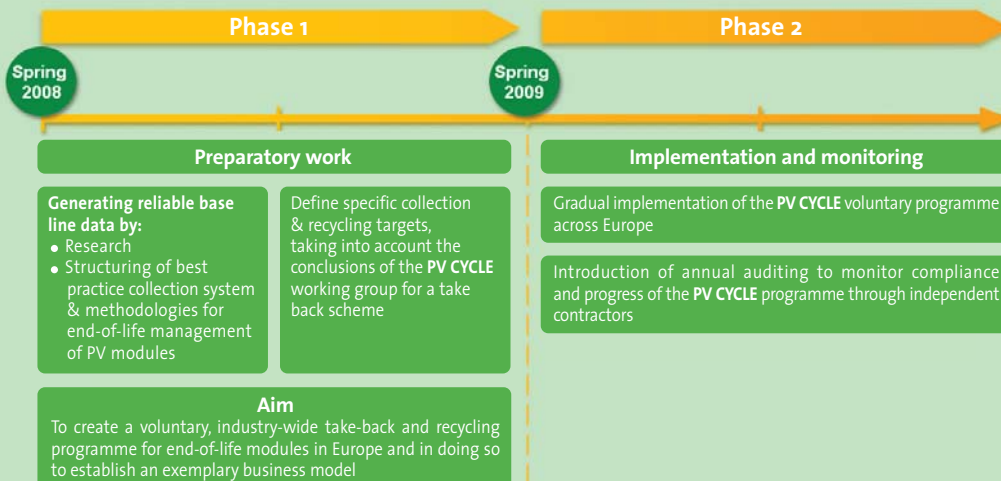


Collection



## A TWO-PHASE APPROACH

We have designed the development and implementation of PV Cycle as a two phased programme:



In addition, PV Cycle supports research to promote the development and implementation of advances in recycling technology and collection methods to minimize the environmental impacts measured on a life-cycle basis, minimize the associated costs, and maximize the recovery of materials for use in new products. PV Cycle is also working to implement communication and information programmes for owners, installers, and distributors of PV modules to inform them about the available take-back and recycling process to maximize the recovery of end-of-life modules.

## HOW FAR ARE WE TODAY?

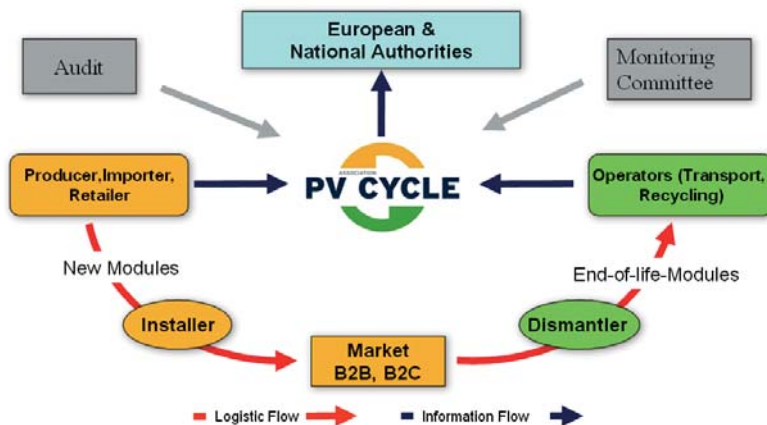
### Representing around 70% of European PV market

Since its creation last year, many module producers have joined PV CYCLE, representing around 70% of Europe's PV market. Together, we are working to develop and implement a voluntary, industry-wide take-back and recycling programme.

### Accomplishing Phase I of the programme

- We have commissioned KPMG to compile an independent overview of the amount and composition of PV modules installed in Europe throughout 2007. The findings will be aggregated in autumn 2008 and will serve as the baseline for our future recycling targets. We will conduct similar audits on an annual basis to provide reliable and up-to-date data for the design and monitoring of our programme.
- We have identified the fundamental dimensions that our programme needs to cover. The PV Cycle working group is currently shaping its implementation.

- Based on this and other background research as well as the knowledge and experience of our members, we are currently defining the specific objectives of a voluntary agreement, including recycling targets. We are committed to applying stringent and challenging targets to ensure a sustainable end-of-life programme.
- Our goal, by Spring 2009, is to have completed the design of the PV Cycle recycling model in detail and to have documented this model through a voluntary agreement with the commitment of the PV industry producers. Having done so, we will be ready to introduce Phase II in mid-2009.



Jan Clyncke, PV CYCLE Managing Director, who was appointed in April 2008.

This critical mass has allowed us to kick-start Phase I of our programme. We welcome every EU PV manufacturer or importer to join us as we develop the framework for a comprehensive, industry-wide take-back and recycling programme.



Karsten Wambach, PV CYCLE President

What is unique about our dynamic, young industry is that some of the producers have recycling installations already in operation at their production sites and the others are looking at it as well. The industry is strongly committed to act today ahead of the first large scale series of end-of-life modules.





## WHY JOIN US TODAY?

While many PV manufacturers and importers have already joined our programme, our mission is to include all EU PV manufacturers and importers.

### Becoming a member will allow you to:

- Be part of the Working Group “Take-Back-Scheme”
- Help to write the Voluntary Agreement
- Shape the final PV Cycle Scheme
- Add value to your presence in the market by using our logo
- Contribute to creating feasible collection and recycling targets
- Guarantee a level playing field

**We welcome as members all manufacturers of photovoltaic modules, all importers of these modules and every company with a responsibility in manufacturing and/or importing PV modules.**

To join PV CYCLE, or for more information, simply write to [join@pvcycle.org](mailto:join@pvcycle.org)

Full member		
Membership Category	Turnover in PV Business in Europe in the previous calendar year	Annual fee (2008)
I	>100 Mio €/a	25.000 €
II	10-100 Mio €/a	12.500 €
III	< 10 Mio €	5.000 €
Associated member		Minimum 1.000 €



End-of-Life- PV-Module



Recycling Process



Silicon



### For further information:

PV CYCLE Association  
Jan Clyncke, Managing Director  
Renewable Energy House  
Rue d'Arlon 63-65 - 1040 Brussels - Belgium  
Tel: + 32 (0)2 465 38 84  
Fax: + 32 (0)2 400 10 10  
e-mail: info@pvcycle.org  
www.pvcycle.org

### MEMBERS



### ASSOCIATE MEMBERS

