

ANNUAL REPORT 2024

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The year 2024

The year 2024 has been marked by an increasingly central debate in our sector: **the reuse** of photovoltaic panels. While **recycling** continues to advance in many European countries, another reality is emerging—one where panels, although still functional, leave their original site to begin a second life. This phenomenon, still poorly regulated, presents as many opportunities as it does challenges.

In a post-subsidy context across much of Europe, and with the rise of **repowering** and **revamping**—particularly in large-scale installations where economic logic often outweighs the actual technical lifespan of equipment—more and more panels are being replaced before reaching the end of their technical life. These panels, which are often still high-performing, are finding buyers on secondary markets, either abroad or locally, with little to no traceability or regulatory oversight regarding their final destination.

For an organization like PV CYCLE, this grey area poses a real dilemma: European Extended Producer Responsibility (EPR) obligations require a certain collection rate, calculated based on the quantities placed on the market. But how can these targets be met if an increasing share of panels "disappears" into reuse, without traceability or legal recognition? The risk is clear: sanctions, penalties, and a system that becomes structurally unfair to actors like us who strive to fully comply with their obligations.

That's why during the period 2021-2024, PV CYCLE has dedicated a significant share of its resources to documenting this issue. We continued our active participation within TC 82 of the IEC, particularly through funding the coordination of a technical report on preparing photovoltaic panels for reuse. This TR 63525,ED1, currently being finalized, lays the first technical foundations for a future international standard or specification. It is a vital step toward making reuse visible, measurable, and therefore manageable within our sector.

In this evolving context, our mission remains unchanged: to offer solar waste treatment solutions that are reliable, traceable, sustainable… and economically realistic.

As circularity becomes a key element in all European strategies, we call upon the inspection authorities in Europe and around the globe to enforce the shipment requirements of Used Electrical and Electronic Equipment, including PV Panels, imposed by the Basel Convention.Together with the TR 63525 ED1, it is time to also recognize the value—and specific nature—of reuse. Because while recycling is essential, intelligent and correct reuse is just as important.

On behalf of the entire team and the Board of Directors of PV CYCLE, I wish you an excellent read of our annual report.

Jan Clyncke - CEO





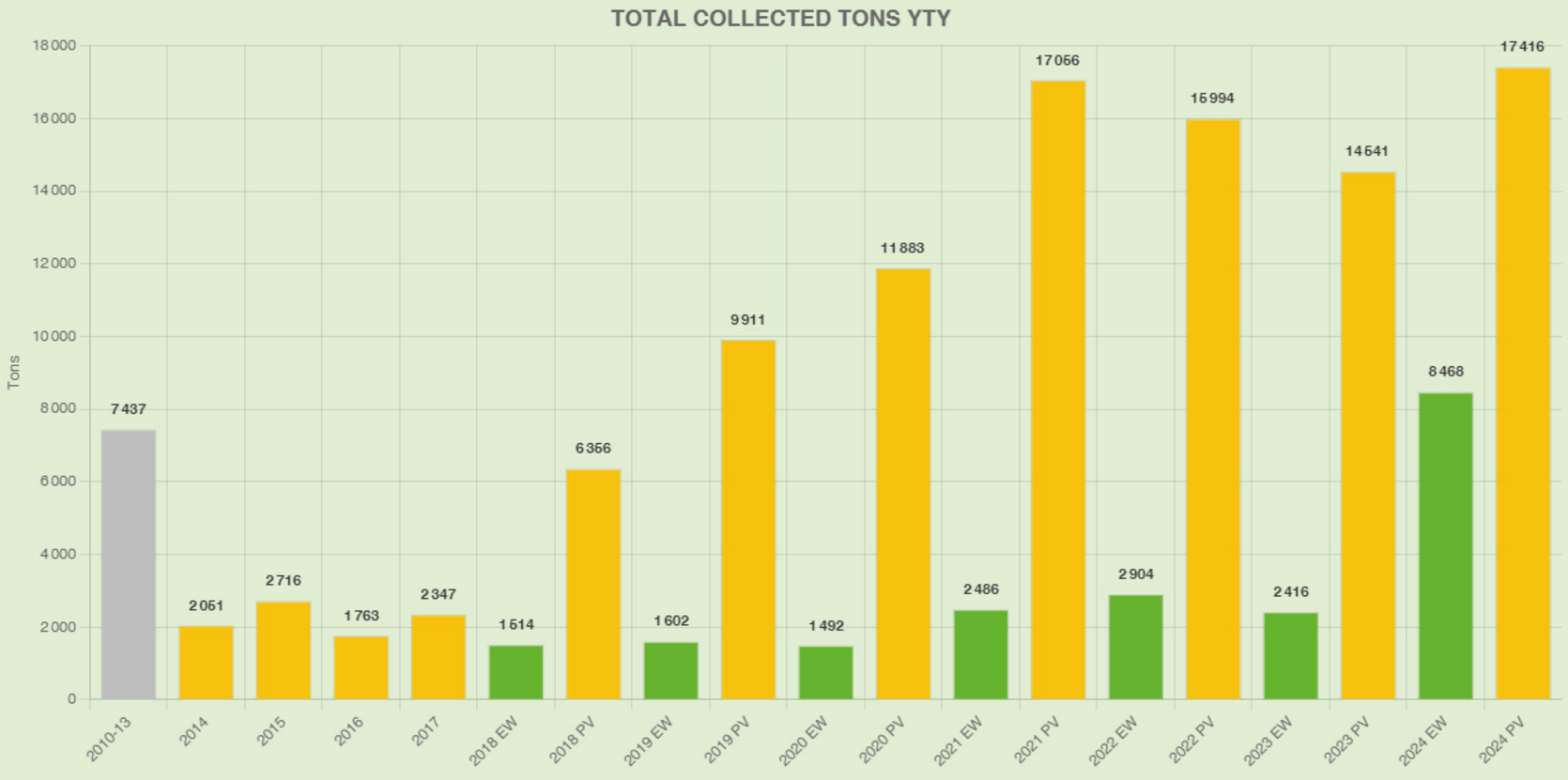
02 Operations Report

17.416 tons

During the year 2024, PV CYCLE processed **17.416 tons** waste generated from photovoltaic power systems, and **8.468 tons** of batteries and other WEEE in Italy.



The majority of the photovoltaic panels treated in 2024 were **silicon-based.**


TOTAL COLLECTED TONS YTY
Tons
18 000
16 000
14 000
12 000
10 000
8 000
6 000
4 000
2 000
0
7 437
2 051
2 716
1 763
2 347
1 514
6 356
1 602
9 911
1 492
11 883
2 486
17 056
2 904
15 994
2 416
14 541
8 468
17 416
2010-13
2014
2015
2016
2017
2018 EW
2018 PV
2019 EW
2019 PV
2020 EW
2020 PV
2021 EW
2021 PV
2022 EW
2022 PV
2023 EW
2023 PV
2024 EW
2024 PV

The chart above illustrates the evolution of collected tonnes of photovoltaic (PV) panels across the European Union and the United Kingdom. However, this evolution does not follow a straightforward or consistent path, due to the unique characteristics of PV panels and the complexity of the surrounding regulatory context.

First and foremost, it is essential to emphasize the **long lifespan** of PV panels, which come with product warranties of 10 years and performance guarantees of 20 to25 years. By the end of 2024, the total installed PV capacity in the EU and UK had reached 360 GW, compared to just 50 GW at the end of 2011. This means that roughly 300 GW of installed PV panels are only 11 years old, and therefore far from reaching their end-of-life. Unlike fast-consuming waste streams such as packaging or electrical and electronic devices, PV panels waste is generated slowly and during a long period .

In the early years, the limited and generated waste mainly came from **transportation damage, installation damage , warranty claims or extreme weather conditions**; the latter increase due to climate change. These volumes are and were marginal and not comparable to a typical replacement market with short life cycles.

Since 2014, **Extended Producer Responsibility (EPR)** obligations apply to PV panels. Over the past years, EPR has gradually become better understood and more widely adopted by market stakeholders, including producers, importers, and installers. This growing awareness is reflected in a **steady yet modest increase** in collected volumes, as witnessed in the 2024 data.

However, part of the reason for this slow growth lies in an amount of not registered PV Panels and where inspection fails : **reuse.** More and more , PV panels are being removed not because they no longer function, but due to **economic reasons** such as repowering, revamping, or financial depreciation . Many of these panels, still in good working condition, are resold or reinstalled elsewhere — but without passing through official collection systems. As a result, collection figures are **no longer fully representative** of the actual volume of PV panels being removed from the market, complicating efforts to meet mandatory collection targets.

These collection quotas are based on the quantities placed on the market, regardless of whether the PV panels are recycled or reused. As long as reuse and preparation for reuse of PV panels remains without inspection on the shipment (transboundary movements) of used electrical and electronic equipment, which includes used PV Panels, this creates a **distortion** for organizations like PV CYCLE, which are held accountable for the collection performance which also includes volumes essentially “lost” in illegal shipment of used PV Panels from the European Union to other regions outside EU-27.

It is also important to highlight that PV panels significantly contribute to **waste prevention**, the first and most important step in the waste management hierarchy. Unfortunately, this environmental benefit is still not acknowledged in current EPR legislation, which continues to define increasing and linear targets without taking into account the long term and electricity generating nature of photovoltaic panels, viable for households and businesses in a fast moving geopolitical world.



On a global scale

Throughout 2024, PV CYCLE continued its active commitment to the sustainable and responsible management of photovoltaic waste on a global scale. In a European regulatory context, this is increasingly demanding and constantly evolving; it becomes more and more complex to align the requirements of the WEEE Directive (Waste Electrical and Electronic Equipment) with the specific realities of electricity-generating equipment such as photovoltaic panels.

Unlike conventional electrical and electronic equipment, which have short lifespans and consume electricity, solar (PV) panels are designed to last several decades while generating energy. They have become an essential component for both households and businesses, especially in the context of the energy crisis. This technological and economic uniqueness, which makes PV panels a product in their own right, continues to drive our efforts to promote the need for a distinct regulatory framework tailored to renewable energy-generating equipment.

The past year, PV CYCLE intensified its advocacy for reforming the instruments of Extended Producer Responsibility (EPR) as they apply to renewable energy production equipment. Our objective remains clear: to move photovoltaic panels out of the WEEE framework—originally designed for fast-consumption equipment —and to build a specific regulatory structure aligned with the longevity, societal utility, and environmental performance of these devices. Such a reform would not only ensure fairer compliance but also strengthen the long-term sustainability of the photovoltaic industry.

On the international front, PV CYCLE significantly expanded its global presence in 2024. We formalized a partnership with SUN'R in Brazil, established our presence in Mauritius, initiated cooperation with South Africa, launched operational collaboration with Solar Recycle India, and confirmed our active partnership with Japan. These new collaborations reflect a growing global awareness of the challenges and importance of managing photovoltaic waste, particularly in rapidly expanding markets.

Thanks to these developments, PV CYCLE reinforces its role as a leader in anticipating regulatory developments, supporting both emerging and mature economies in implementing sustainable, economically viable waste management solutions based on the best available technologies.

Through these partnerships and initiatives, PV CYCLE reaffirms its commitment to promoting a circular vision of the solar industry on a global scale. Our actions continue to be driven by a simple conviction: photovoltaic panels, far from being a burden at end of life, represent a tremendous opportunity to build a cleaner, more responsible, and more resilient economy.



04 Financial Report

Below you find the consolidated financial statement of the PV CYCLE Association.

Our financial report has been audited and approved by Baker Tilly Belgium.

	in 1000 EUR
Assets	**2024 Conso HQ**
Fixed Assets	**745**
- Intangible assets	105
- Tangible assets	44
- Financial assets	80
- Amounts receivable > 1 year	516
Current Assets	
Cash at bank & in hand	**7329**
Amounts receivable < 1 year	**2580**
Deferred charges and accrued income	20
TOTAL ASSETS	**10674**

	in 1000 EUR
Liabilities	**2024 Conso HQ**
Equity	**9650**
- Capital and Reserves	8585
- Exchange Consolidation Adjustment	42
- Result of the year	1024
Amounts payable	**1023**
- Amounts payable < 1 year	867
- Amounts payable > 1 year	23
- Accrued charges and deferred income	134
TOTAL LIABILITIES	**10674**

	in 1000 EUR
	2024 Conso HQ
Turnover	**5 958**
- Services and miscellaneous goods	-4 270
Gross operating margin	**1 687**
- Remuneration, social security and pensions	-490
- Depreciation intangible and tangible fixed assets	-144
- Amounts written off stocks, contracts in progress and trade debtors	20
- Provisions for liabilities and charges	0
- Other operating charges	-50
Operating result	**1 022**
+ Financial income	199
- Financial charges	-41
Result for the period before taxes	**1 180**
- Various taxes	-156
RESULT FOR THE PERIOD	**1 024**



05 PV CYCLE & Society

Representing our members' end-of-life commitment towards society and the authorities, PV CYCLE also invests in awareness campaigns and speaks at numerous European and international conferences and events every year.

We had the opportunity through numerous occasions to meet our customers and partners at multiple exhibitions.

We were present at : INTERSOLAR – ECOMONDO – KEY – InterSolution – Solar Solutions – Solar Quality Summit – Intersolar Brazil – Solar Ireland Conference - Taiyang News - …

Last year, PV CYCLE has co-organised the first edition of the Recycling Renewables Summit with SolarPlaza — a successful inaugural event that brought together key experts to collectively shape the future of recycling in the renewable energy sector.


RECYCLING
RENEWABLES




SunR


Towards a Circular PV Industry: Strategies and innovations in PV Circular II
Solar


WELCOME
PV CYCLE
CIR


inter
Solar
SOUTH AMERICA
Agenda







Furthermore, we continue to communicate without borders through our LinkedIn page, which now has over 5.400 members: https://www.linkedin.com/company/pv-cycle/

We have disseminated more than 35 newsletters across all entities to our members, with excellent opening rates.

On a final note, we have successfully renewed our ISO 9001 and ISO 14001 certifications for a new three year period until 2027. We are, of course, proud to continue operating in line with high quality and environmental standards.