

# The Role of Innovation in Shaping a Sustainable Solar Industry

Thursday, December 7  
10:00 – 11:00

SUSTAINABLE  
SOLAR  
EUROPE 2023



A portrait of Hanna Dittmar, a young woman with long, straight blonde hair and blue eyes, smiling. She is wearing a dark grey, high-necked, textured top. The background is white.

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# Hanna Dittmar

Junior Project Officer,  
SolarPower Europe

7 December, Brussels, Belgium



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# Claire Agraffeil

Project Coordinator,  
CEA

7 December, Brussels, Belgium



**From research to industry**  
Towards a sustainable green energy transition

## PHOtovoltaic waste management – advanced Technologies for recOvery & recycling of secondary RAw MAterials from end-of-life modules

H2020 project (May 2021 – April 2024)

Budget : 10,365,764.75 €

EC Contribution : 8,381,666.38 €

- 13 partners
- 5 key objectives
- Set up of a full management Pilot Line



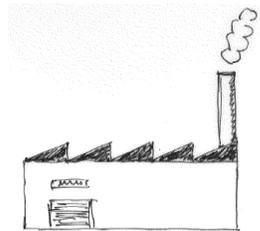
### A circular economy across the photovoltaic value chain

*“develop innovation leading to competitive solutions to launch sustainable markets for secondary RM in Europe.”*



# A circular model

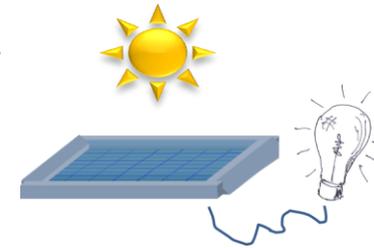
## From concept to field experience



### Sustainable products

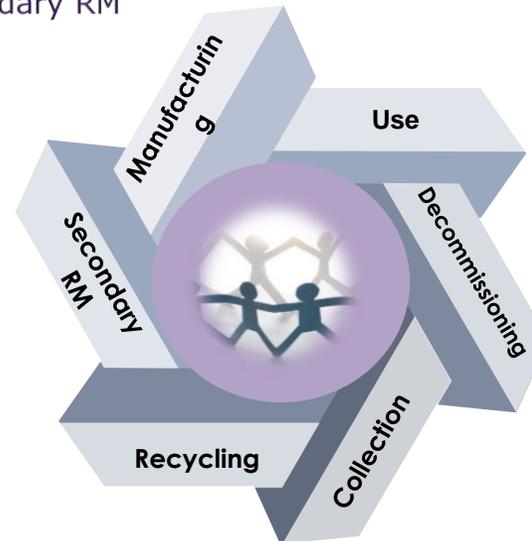
- Made up of secondary RM

### Green energy Production



### High-value recovery

- Recovery ratio > 98 %
- Metal purity 98-99.999 %



### Good practices

- Assessment EoL
- Characterization
- Standardization



### Up-cycling

- 7 Pilot Units
- Full Pilot Line





# Francisco Javier Luque

Senior Project Manager,  
Iberian Sustainable Mining Cluster

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EUROPE 2023

7 December, Brussels, Belgium

# ReSi lex

07/12/2023  
Clustering Workshop  
Sustainable Solar Event



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**Francisco Luque**  
Coordinator  
DEC Leader





Funded by the European Union

Grant Agreement Number 101058583

# RESiLEX project

Website: <https://www.resilex-project.eu/>



**Context :** Development of technological solutions for reusing Silicon, recycling PV modules and designing new products in the fields of mining, solar & batteries

The RESiLEX Consortium gathers **21** partners from **8** different countries:

## Industries & SMEs



## Industry-driven Clusters & Associations



## Research Centres



## Universities





Funded by the European Union

Grant Agreement Number 101058583

# RESiLEX project

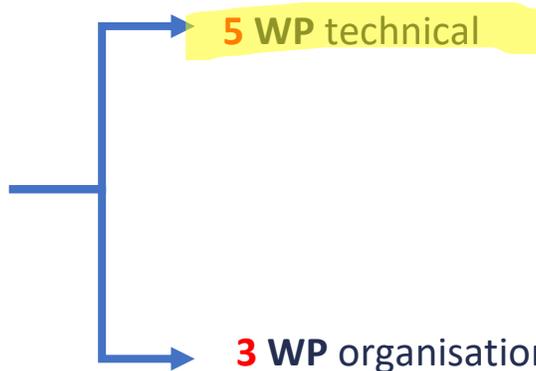
Website: <https://www.resilex-project.eu/>



- Budget → 12 M €
- Duration → 4 years, started on June 2022
- Technologies → 8 Demonstrations



- Work packages → 8 WP



- WP2 : Mining & Raw materials extraction
- WP3 : Production of Solar-grade polysilicon
- WP4 : Cells & modules manufacturing
- WP5 : Recycling of PV panels
- WP6 : Manufacturing of Si-based anodes for Li batteries

- WP1 : Project management
- WP7 : LCC, LCA, social impact, ...
- WP8 : D&C + Exploitation strategy

- ISMC role



# Stakeholder Engagement Event in Brussels

**When:** afternoon 23<sup>rd</sup> May 2024

**Framework:** Annual Conference of the European Technology and Innovation Platform (ETIP PV) in cooperation with the HE project EVERPV



<https://etip-pv.eu/events/etip-pv-conference>



# ReSi lex

## Thank you!

<https://www.resilex-project.eu/>

[www.ismc-iberiamine.com](http://www.ismc-iberiamine.com)

 RESiLEX Project

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 @ISMCluster

 Iberian Sustainable Mining Cluster (ISMCL)

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**Grant Agreement Number 101058583**



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# Daniela Arioli

Sustainability and Circular Economy Specialist  
(Technical Innovation department),  
BayWa r.e. EMEA

7 December, Brussels, Belgium

# TRUST-PV research project

## Exploring second-hand PV opportunities

Presented by  
Daniela Ariolli, Sustainability and Circular Economy Specialist  
BayWa r.e. Operation Services S.r.l., Rome, Italy

7<sup>th</sup> December 2023, Sustainable Solar Europe 2023, Brussels  
The Role of Innovation in Shaping a Sustainable Solar Industry



**TRUSTPV**  
SOLAR PV, PERFORMANCE & RELIABILITY

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 952957



# TRUST-PV | overview and second-life task

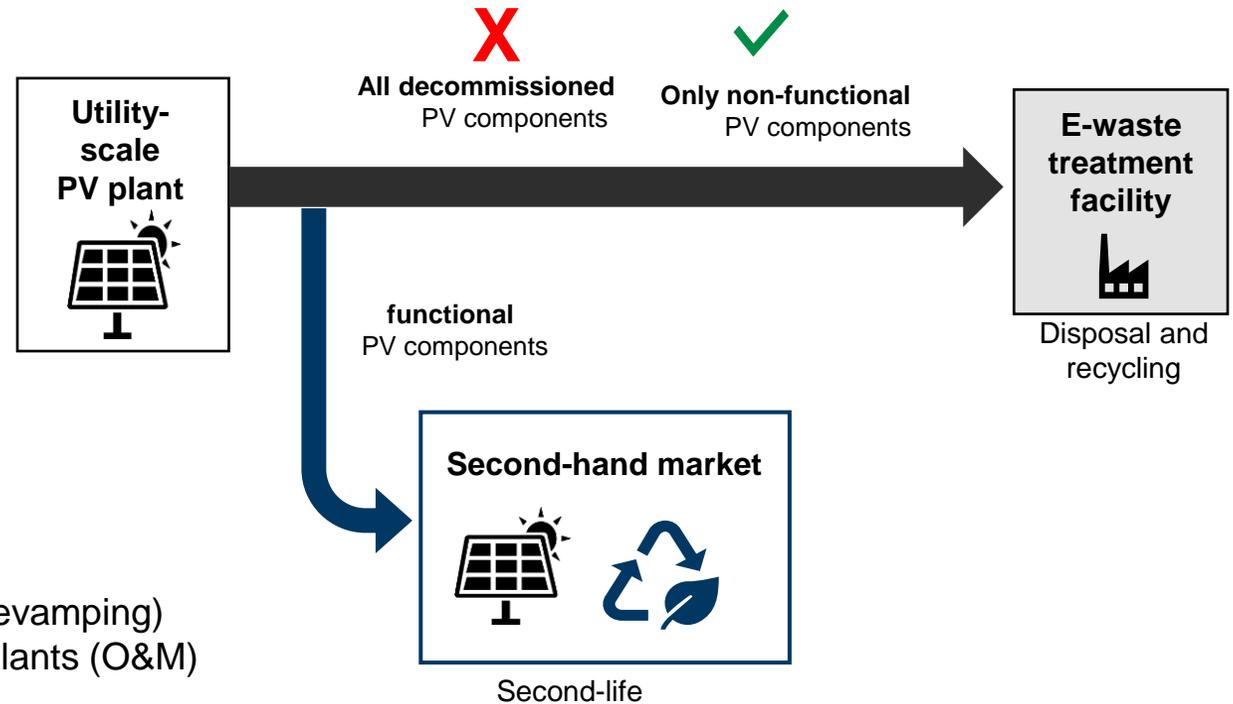
## Circular PV

### ■ Topics explored:

- Extending the lifetime of PV assets by improving their reliability and performance
- Progressive revamping
- Re-use as an alternative of the state-of-the-art of EoL management (recycling/disposal)

### ■ Main activities:

- European circular PV players mapping
- Circular business model assessment in Italy (reuse & revamping)
- Test on site for preparing modules to be reused in PV plants (O&M)



**TRUSTPV**  
SOLAR PV, PERFORMANCE & RELIABILITY

**Link to the scientific article:**

<https://doi.org/10.4229/EUPVSEC2023/5DO.15.6>

**Link to TRUST-PV report:**

[Re-use of PV modules and circular business models – TRUST PV \(trust-pv.eu\)](https://trust-pv.eu)



# Thank you!

**Daniela Ariolli**

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**BayWa r.e. Operation Services S.r.l.**

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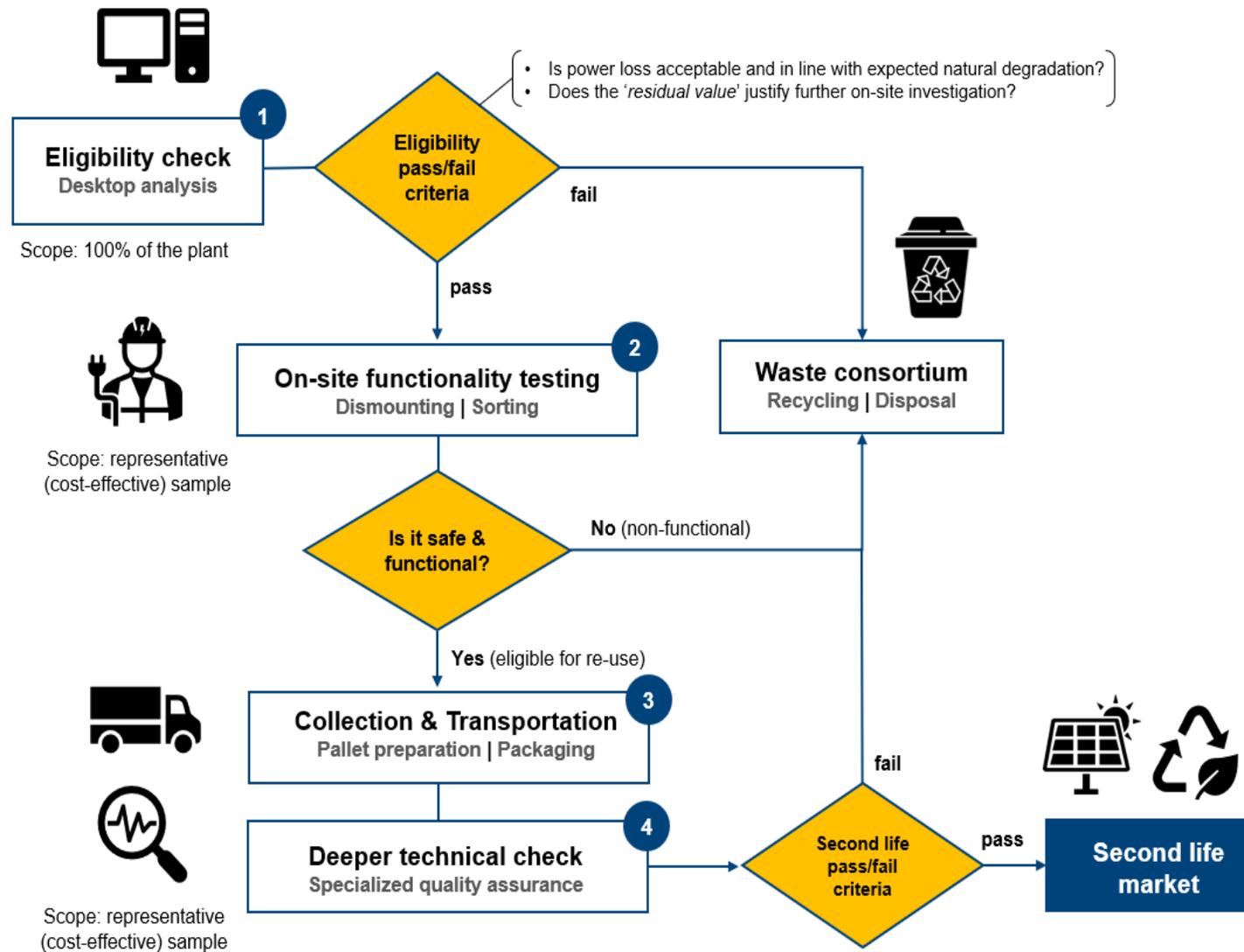
[info@baywa-re.it](mailto:info@baywa-re.it)

**Managing directors**

Anne Henschel, Max Methe

REA No.: MI - 2004725

IT IVA No.: IT 026 7042 0211



Preparing for re-use procedure. Source: BayWa r.e.



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# Yijiang Xu

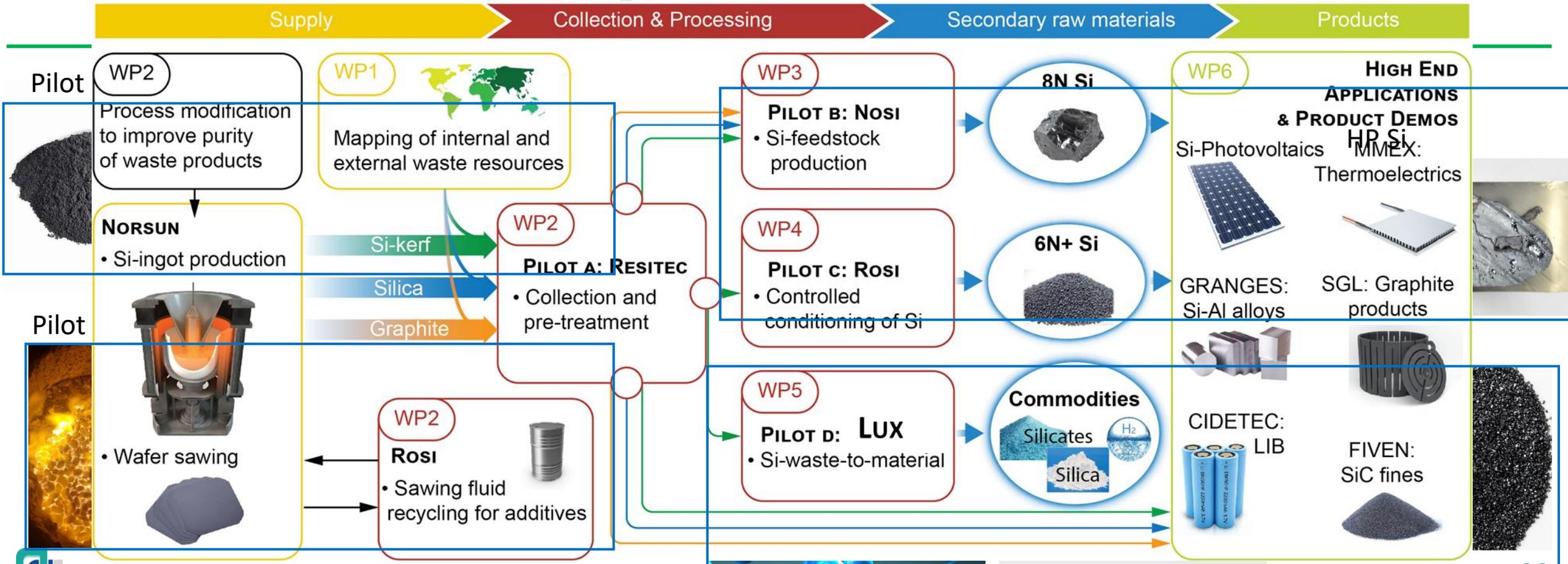
Research Scientist,  
SINTEF Industry

7 December, Brussels Belgium

# PV value chain



# Waste materials





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# Tom Rommens

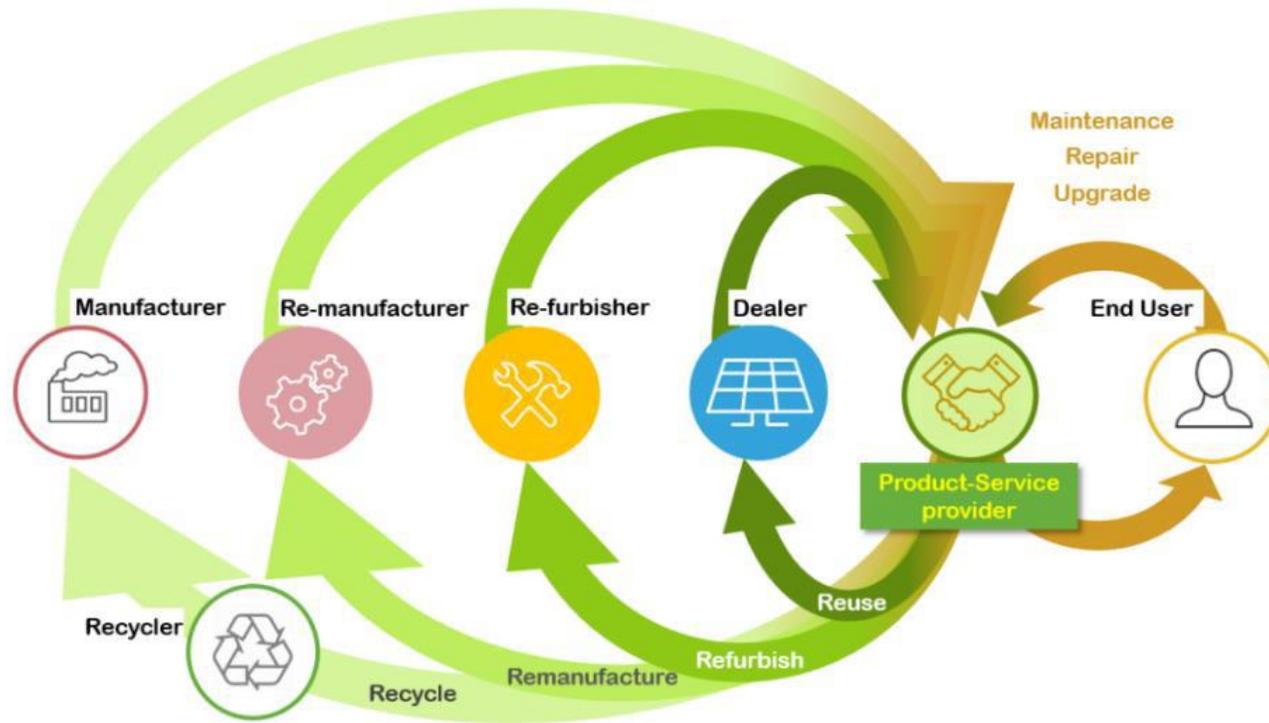
Researcher,  
VITO

7 December, Brussels, Belgium



Tom Rommens - VITO

# Circular Business Models for the Solar Power Industry



Circular PSS model = Circular product management + Value added product-service



daidalos peutz



BKW



FUTECH  
stop talking start acting



SunCrafter

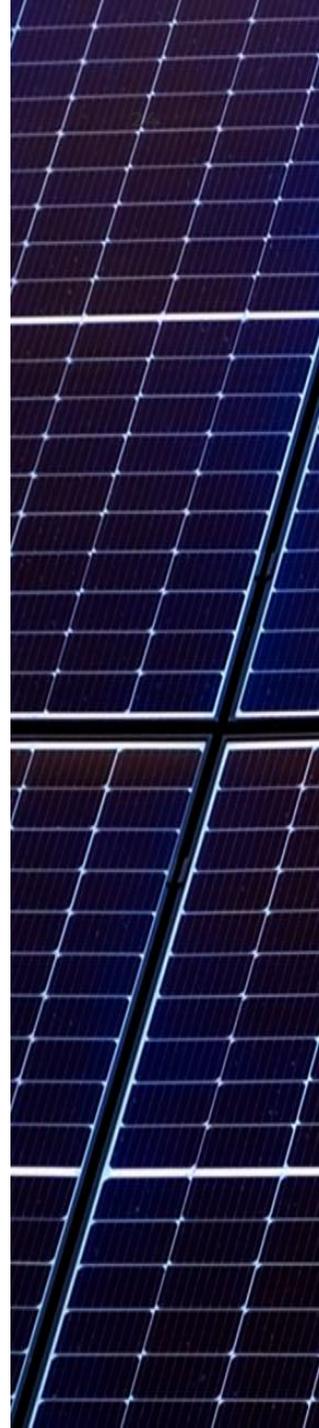
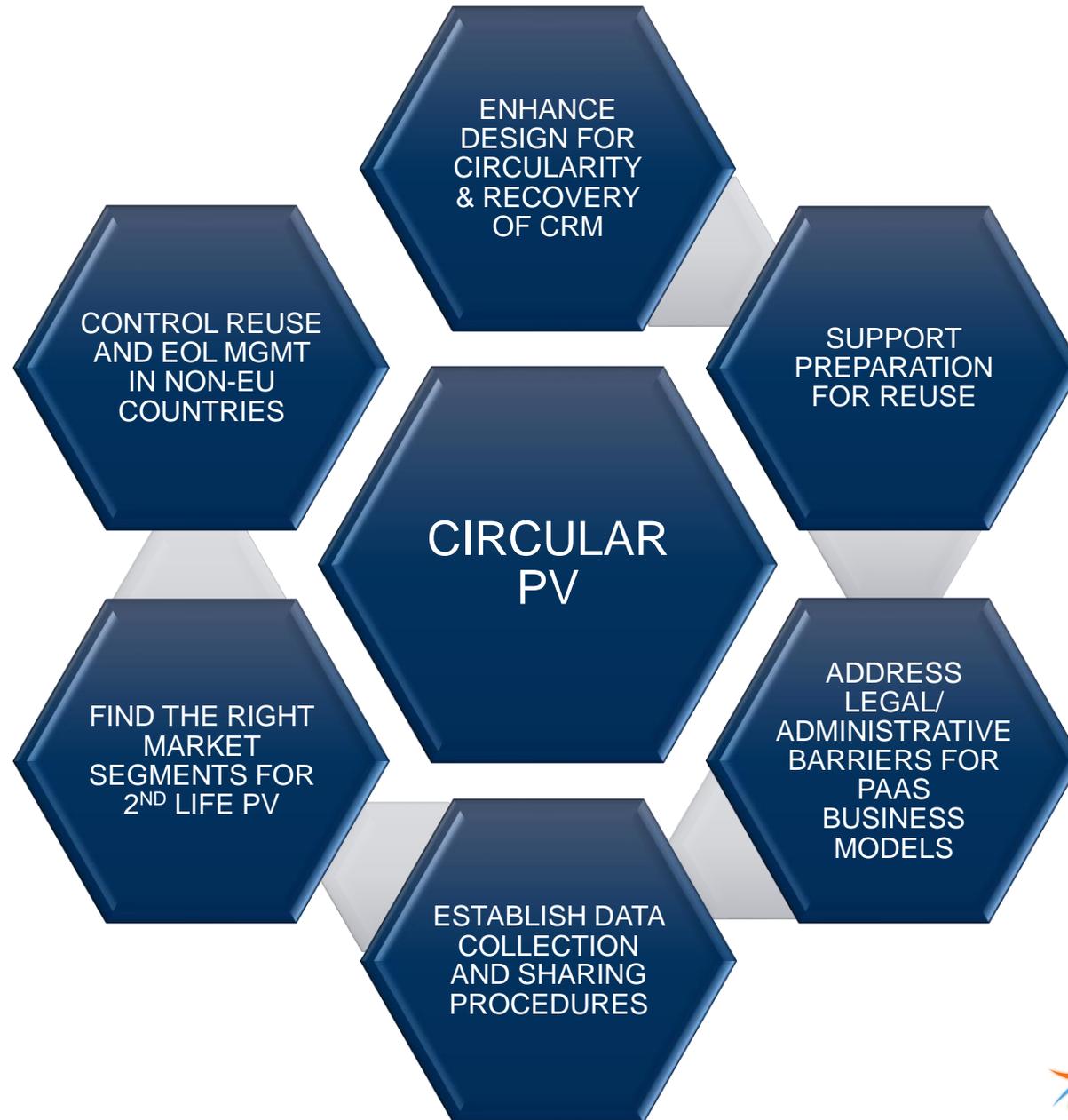
Ecopower  
cvba



Stijn Spanhove



# Lessons



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**Francisco Javier Luque**

Senior Project Manager,  
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Research Scientist,  
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Researcher,  
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