Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir
This project is co-funded by the European Union and the Republic of Türkiye

TURKEY in HORIZON 2020

Technical Assistance for Turkey in Horizon 2020 Phase-II
EuropeAid/139098/IH/SER/TR

Turkey in Horizon 2020 Phase II

Mehmet Eren

Kalyon PV

18.11.2022 | Ufuk 2020'de Türkiye Faz-II

Kalyon PV Introduction

İstanbul

TURKEY in HORIZON 2020
COOPERATION. INNOVATION. COMPETITIVENESS

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YEKA Project: Renewable Energy Resource Areas

All solar panels has to be manufactured in a factory located in Türkiye starting from polysilicon

Kalyon RERA Karapınar Solar Power Plant

20 Million m²
Konya-Karapınar SPP

1347 MWp
Installed Capacity

3.300 Million
Modules Produced

2.600 GWh / year
%20 of Türkiye's Yearly Solar Production

BiFi Bifacial + Tracker
Higher Energy Production

REPUBLIC OF TÜRKİYE MINISTRY OF INDUSTRY AND TECHNOLOGY
COMPETITIVE SECTORS PROGRAMME
TÜBİTAK

Konya Karapınar Solar Power Plant

Fifth biggest Solar Power Plant in the World.

1.500 m²
SCADA Center

3.300 Million
Module

2 Million
Household Electricity Consumption

5.400 m²
R&D Test Center

KalyonPV Vertically Integrated Factory

100.000 m²
Ankara

1000 MW
Production Capacity
+1000 MW in 2023

Integreted Production
Ingot-Wafer-Cell-Module

75%
Local Supply-Chain

2.200
Employees

2.500 m²
R&D Center

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TURKEY in HORIZON 2020

kalyon PV

Production Started at August 2020

Ingot Factory

Wafer Factory

Cell Factory

Module Factory

Ingot Factory

CZ / Mono-C

Boron Doped P-Type

4m

Wafer Factory

Diamond Wire Cutting

158.75mm x 158.75mm	182.00mm x 182.00mm
G1 Size	M10 Size
180 um	180 um

Cell Factory

Mono-PERC

Bifacial Technology

%22.6 Efficiency

%70 Bifaciality

Module Factory

Glass/Glass Frameless

Bifacial Modules

72 – Half Cut Cells

385W (G1) & 535W (M10) Power

> %70 Bifaciality

Kalyon PV R&D

2.500 m²
R&D Center

30
Average Age

Education Level

1 September 2020 Official R&D Center Opening

Kalyon PV R&D

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Organisational Structure

R&D Management
Dr. Güven Korkmaz

İngot Wafer Cell Research Chief Engineer
Dr. Güven Korkmaz

Module Research Chief Engineer
Meriç Çalışkan

Characterization & Product Design Research Chief Engineer
Dr. Mete Günöven

Energy Production & Storage Resarch Chief Engineer

Scientific Committee
Kübra Kalyoncu Şeherli
Ersan Tüfekçi

Project Management Office
Mehmet Eren
Aylin Yıldırım
Funda Kaya
Belgin Kaya

Intellectual & Industrial Property Rights Office
Yusuf Turan

Ar-Ge Focus Areas

5 Years of Focus Areas

1- Photovoltaics Cell & Module Efficiency Increase Technics
2- Semiconductor Manufacturing Process Technics
3- Smart Factory, Industry 4.0 & Zero Waste
4- Energy Storage Systems
5- PV Performance Monitoring & Advanced Characteristics

Project Portfolio

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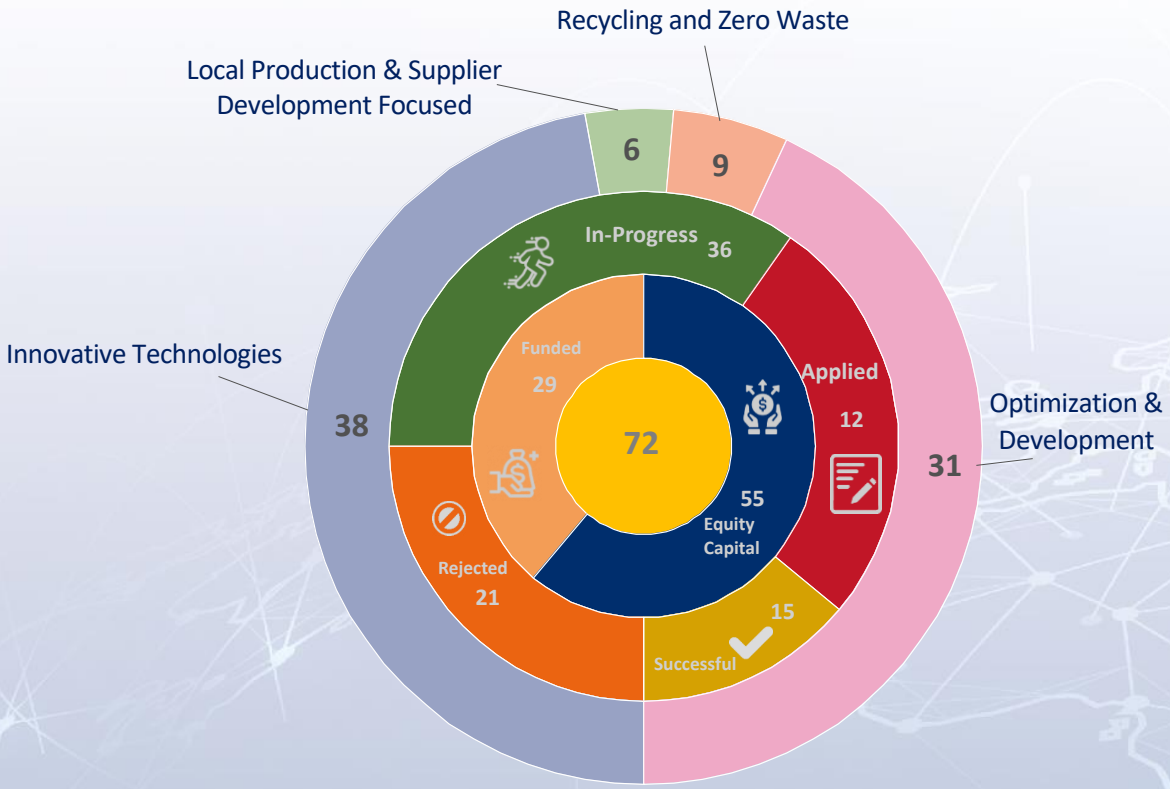

Applied Funds

- TÜBİTAK 1001
- Horizon 2020
- Horizon 2021-2027
- AB Green Deal
- TÜBİTAK 1707 & Other Local
- Erasmus+
- TÜBİTAK ERA.NET
- TÜBİTAK M-ERA.NET
- TEYDEP

Local Cooperation

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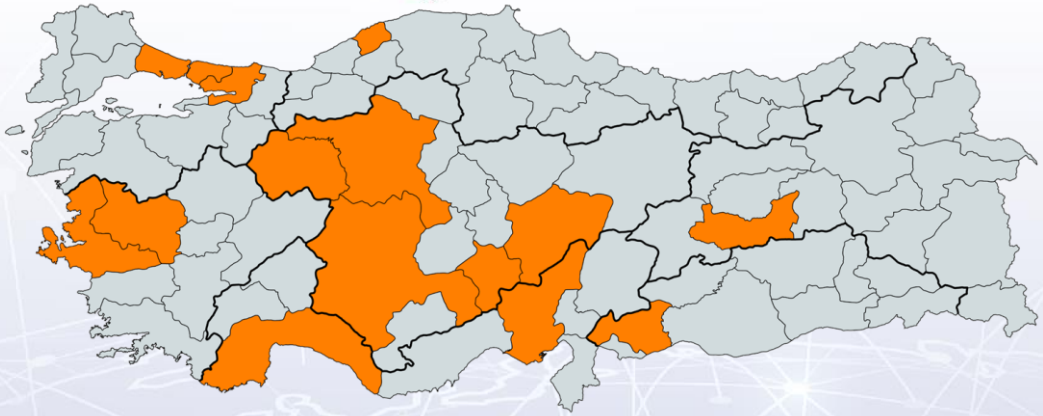

International Cooperation

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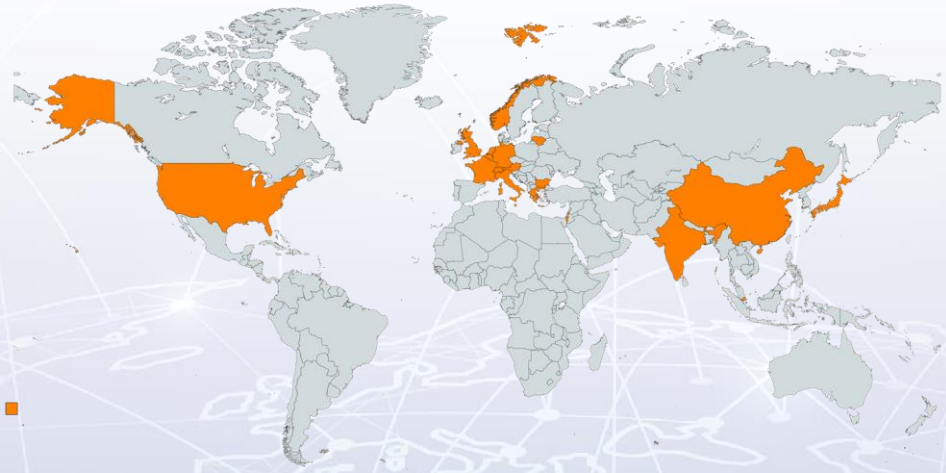


CL5 Projects

PV4Plants

Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir
This project is co-funded by the European Union and the Republic of Türkiye

kalyon PV

TURKEY in HORIZON 2020

- **AgriPV system with climate, water and light spectrum control for safe, healthier and improved crops production**
- **Project Duration** 48 months (E2023.January – E2027.January)
- **Total Budget** 5.7 Million €
- **Kalyon PV Budget** 0.9 Million € (70% Funding: 630K Euro)
- **Project Partners** DTU, R2M, UoS, GUN, SFS, YTU, DAV, E2C, CEOE, AMB, TAT, CLU, TEK

REPUBLIC OF TÜRKİYE MINISTRY OF INDUSTRY AND TECHNOLOGY

TÜBİTAK

PV4Plants

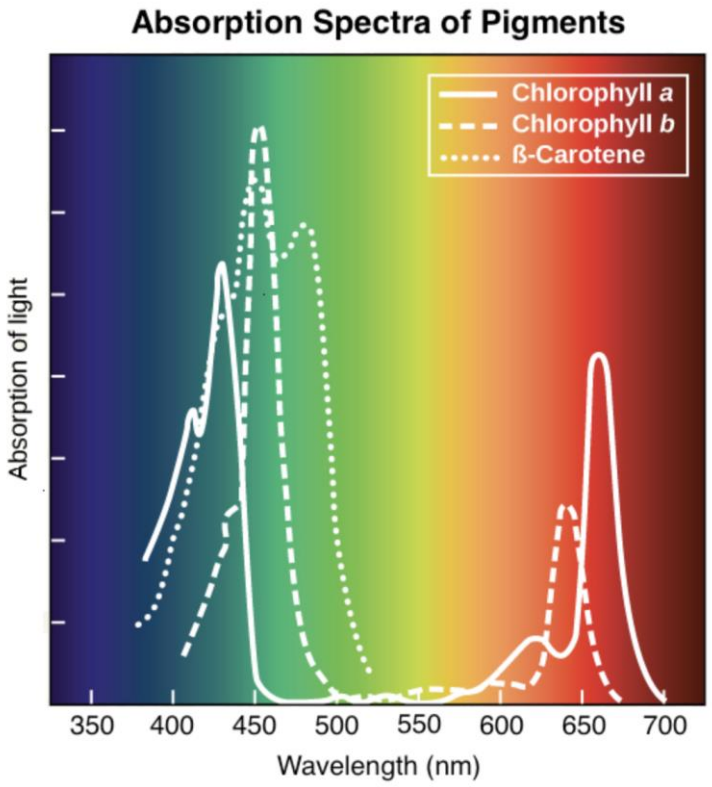
Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir

kalyon PV

What Are the Best Light Sources For Photosynthesis?

SEPTEMBER 4, 2018 NEWS AND ANNOUNCEMENTS

Photosynthetic organisms such as plants and algae use electromagnetic radiation from the visible spectrum to drive the synthesis of sugar molecules. Special pigments in chloroplasts of plant cells absorb the energy of certain wavelengths of light, causing a molecular chain reaction known as the light-dependent reactions of photosynthesis. The best wavelengths of visible light for photosynthesis fall within the blue range (425–450 nm) and red range (600–700 nm). Therefore, the best light sources for photosynthesis should ideally emit light in the blue and red ranges. In troVis® Plus Spectrophotometer with a t sources. This allowed us to determine t



What Color of Light is Best for Plant Growth?

The colors blue and red are considered the best for a plant's growth and development.

Chlorophylls quickly absorb these color combinations to produce food and energy for the plant; hence, directly helping with the photosynthesis process.

Plants enjoy a higher amount of red, up to 5 times as much as blue.

Plants are grown with 80-90%red light and 10-20% blue light helps achieve fuller plants with lush thick foliage and appropriate stem lengths.

TÜBİTAK

PV4Plants

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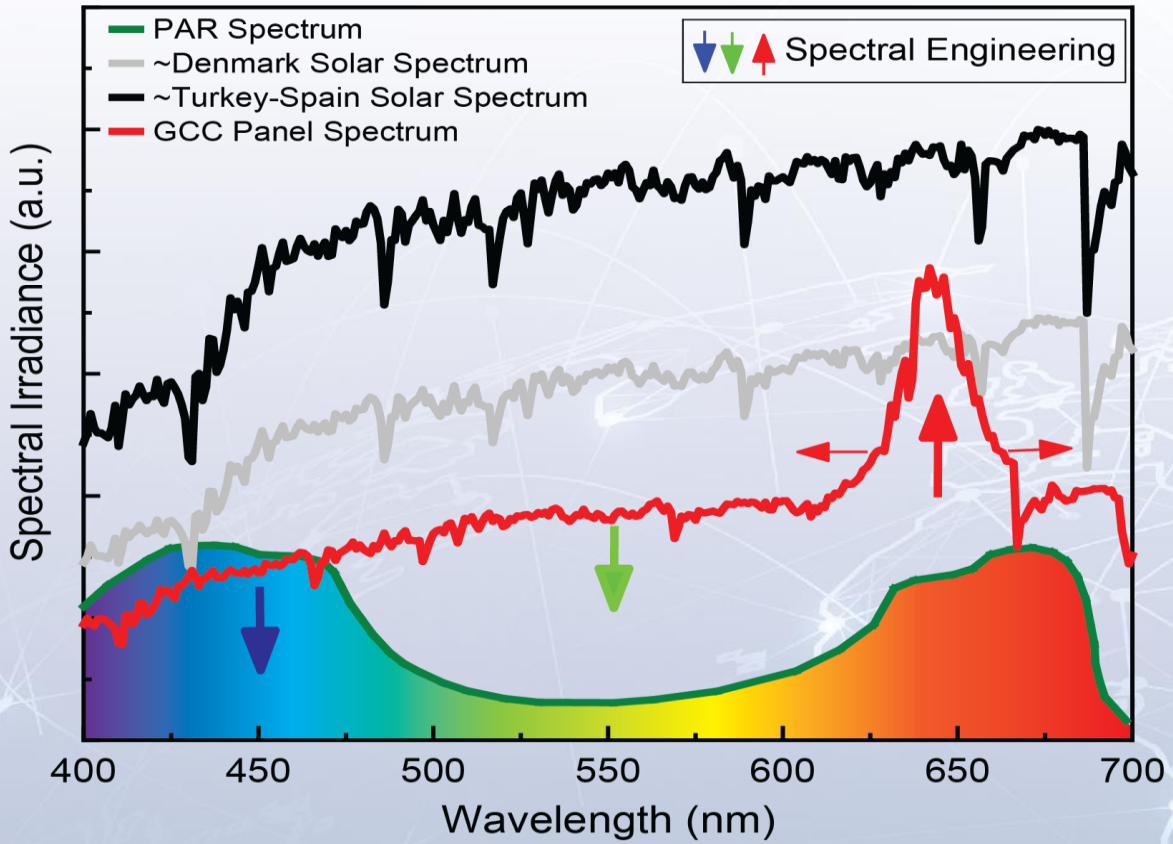
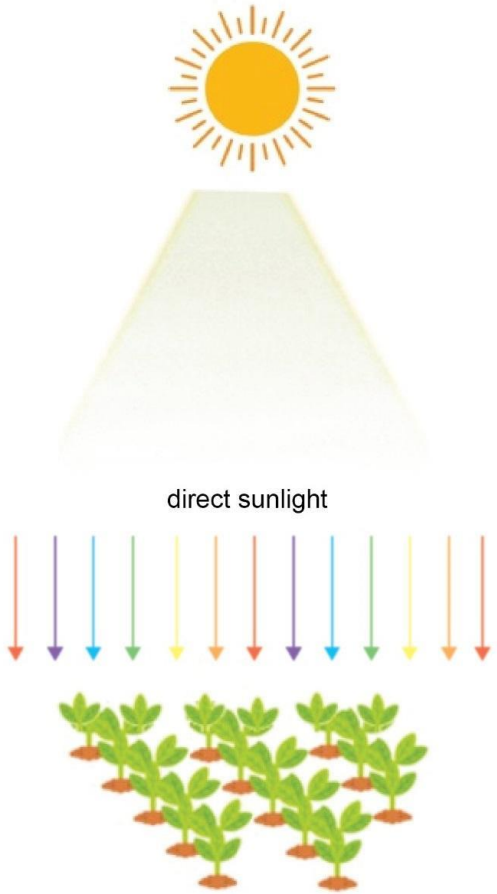
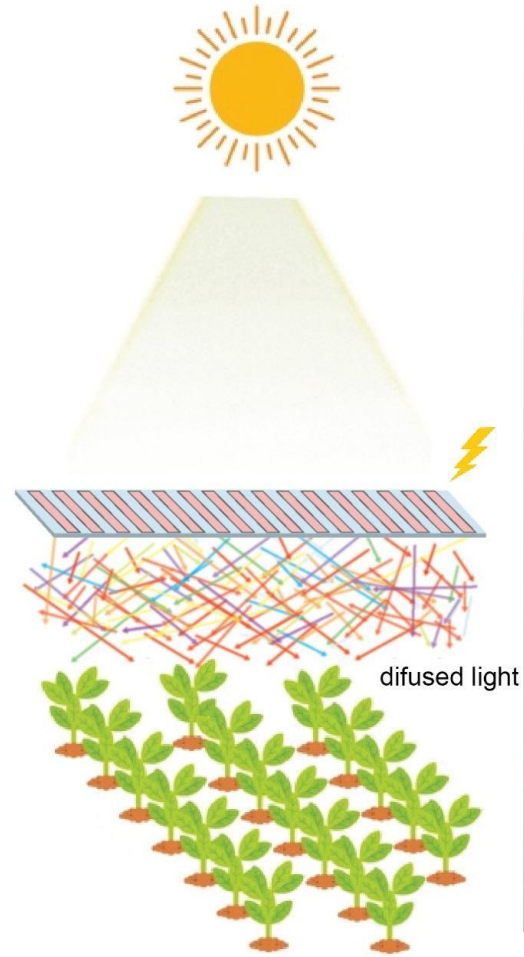
kalyon PV







Workpackages of PV4Plants

Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir
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WP #	WP Title	Lead	PM	Start	End
WP1	End-users requirements and PV4Plants pilots characterization	DTU	79	M1	M48
Pilot characterization and KPIs definition for latter comparison. Creation of a long-term engagement strategy with the end-users and development of activities for increasing the awareness of the civil society.					
WP2	Physiological indicators of crops performance underneath the PV panels	UoS	100	M1	M48
Creation for a generalised experiments framework to analyse spectral engineering impact on crops performance and related results analysis. Development of adaptation strategies for the agriPV panels.					
WP3	Manufacturing of the PV4Plants system and IT infrastructure	GUN	128	M1	M48
Development of the luminescent glass-based colour converters (GCC) and adaptation of the initial agriPV system design to pilot characteristics (climatic conditions and cultivated crops). Optimization algorithm deployment.					
WP4	PV4Plants system implementation and validation	KAL	144	M13	M48
Practical implementation of the agriPV system in the pilot sites, including installation and monitoring for the three pilot sites. Scaling-up strategies through crowdfunding campaigns. Cost-benefit analysis for business cases.					
WP5	LCA and circular economy applied to the agricultural sector	AMB	89	M6	M42
Environmental and social analysis of the agriPV system life-cycle. Specific focus on circularity approaches.					
WP6	Communication, Dissemination and Exploitation to boost replication	R2M	114	M1	M48
Communication and dissemination plan. Exploitation strategy, policy brief development and projects clustering.					
WP 7	Project management and coordination	KAL	49	M1	M48
Includes necessary actions to successfully manage PV4Plants. Financial and administrative management.					

IBC4EU

Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir
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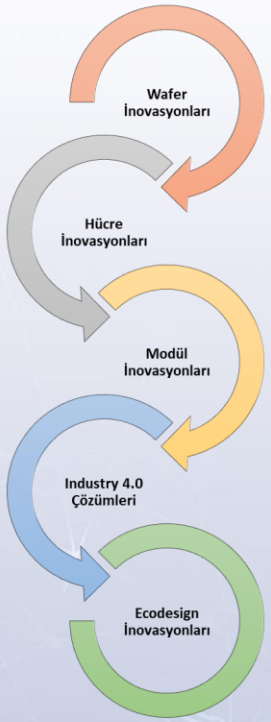
kalyon PV

TURKEY in HORIZON 2020

- **Piloting novel cost-competitive bifacial IBC technology for vertically integrated European GW scale PV production value chain**
- **Project Duration** 36 months (2022.November – E2025.October)
- **Total Budget** 17 Million €
- **Kalyon PV Budget** 1.7 Million € (70% Funding: 1.1 M Euro)
- **Project Partners** *NORSUN, VC, VALOE, ENER, FUTURA, HIGH, COPP, CT, TOYAL, RENA, LPFK, ISCK, ISFH, IMEC, CEA, TNO, PROTECH*



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Workpackages of IBC4EU

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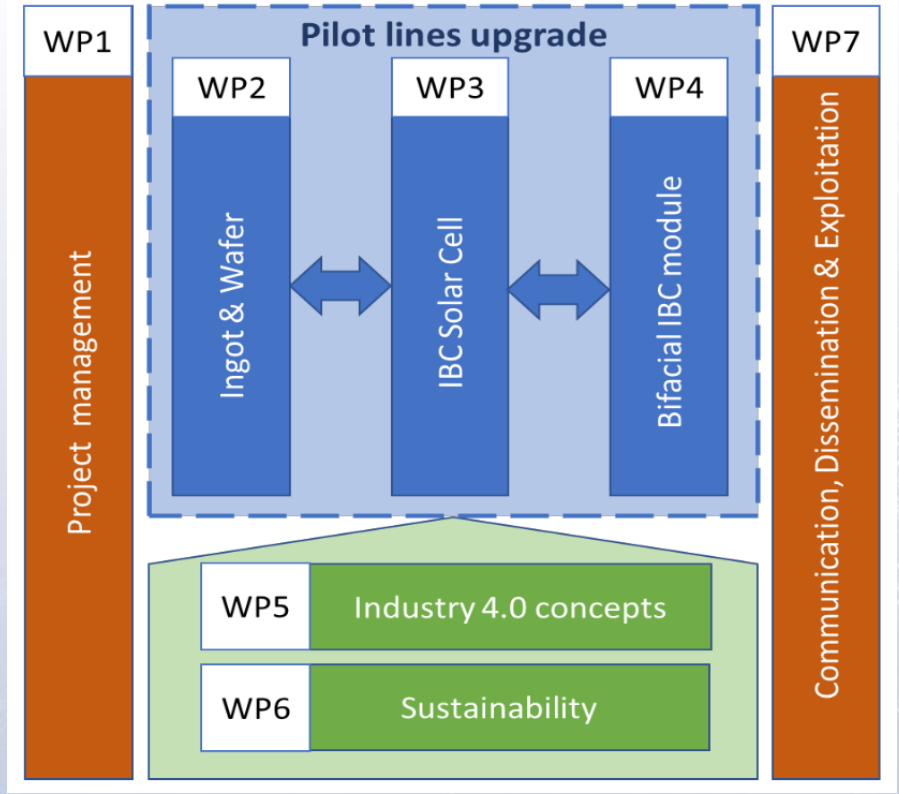

Work package No	Work Package Title
1	Management
2	Ingot & Wafer
3	IBC Solar Cell
4	Bifacial IBC module
5	Industry 4.0 concepts
6	Sustainability
7	Communication, Dissemination & Exploitation

Participants of IBC4EU

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List of participants

Participant No. *	Participant organisation name	Short name	Country
1 (Coordinator)	INTERNATIONAL SOLAR ENERGY RESEARCH CENTER KONSTANZ ISC EV	ISCK	Germany
2	PERSPEKTYVINIU TECHNOLOGIJU TAIKOMUJU TYRIMU INSTITUTAS	PROTECH	Lithuania
3	NORSUN AS	NORSUN	Norway
4	ENERGYRA B.V.	ENER	Netherlands
5	FuturaSun	FUTURA	Italy
6	INTERUNIVERSITAIR MICRO-ELECTRONICA CENTRUM	IMEC	Belgium
7	COMMISSARIAT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	CEA	France
8	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK TNO	TNO	Netherlands
9	INSTITUT FUR SOLARENERGIEFORSCHUNG GMBH	ISFH	Germany
10	Copprint Technologies Ltd	COPP	Israel
11	LUXCHEMTECH GMBH	LUX	Germany
12	WIRTSCHAFT UND INFRASTRUKTUR GMBH & CO PLANUNGS KG	WIP	Germany
13	UAB VALOE CELLS	VC	Lithuania
14	VALOE OYJ	VALOE	Finland
15	HighLine Technology GmbH	HIGH	Germany
16	Kalyon Günes Teknolojileri Uretim A.S.	KALYON	Turkey
17	BECQUEREL INSTITUTE	BI	Belgium
18 Associated	Centrotherm AG	CT	Germany
19 Associated	Laser & Electronics AG	LPFK	Germany
20 Associated	Toyo Aluminium K.K.	TOYAL	Japan
21 Associated	RENA Technologies GmbH	RENA	Germany

We are Interested in

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- Photovoltaics & its integration
  - Ingot & its technologies
  - Wafer & its technologies
  - Cell & its technologies
    - TOPCon Cells
    - Perovskite Cells
    - Tandem Cells
  - Module & its technologies
  - Characterization
  - BIPV- Building Integrated PV
  - AgroPV- PV Integrated Agricultural Land
- Carbon-free Cities
- Energy Storage Related
- Industry 4.0
  - SCADA Systems
  - INGOTVR (VR Training Module)

HU Suggestions

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- If not experienced, choose professional project writers.
- TUBITAK supports for project writing.
- Try to extend network, if not today, tomorrow it will come back.
  - Met a Research Institute 2 years ago.
  - Today invited us to prepare a proposal.
- Try to be at least a small part of consortium.
- Do not give up.
  - Our first score was 3/15 (SolarBlockChain), then to 14/15.

Starting as Coordinator

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- Starts with an GA comments.
- Introduction meeting & good impression.
- Take everything under your control.
- Prioritize validation for all partners, takes long time.
- Be careful about rules: SME Owner Costs, Gender Equality Plan
- Keep your PO close to you all the time.
- Technical person & legal department work together.
- Looks hard but not when you start.

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THANK YOU

Contact Us

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