LCPDelta

Solar PV

Research and Bespoke Consulting

About LCP Delta

Our mission is to enable a better, faster energy transition for all

Founded in 2004 and based across the UK, France, Norway, the Netherlands and beyond, LCP Delta provide data-driven research, consultancy, technology products and training services to companies investing in and navigating the energy transition.

We are a diverse team from a variety of backgrounds including engineers, data analysts, environmentalists and more.

LCP Delta is a mission driven organisation - all of us want to make a difference to the energy transition and accelerate the path to a low carbon future.

The energy market is becoming increasingly complex. As consumers become more empowered and as energy systems around the world decarbonise, there is a need to understand both the generation and demand side to effectively navigate the rapid changes occurring.

We know it's a complicated topic, and we're here to help.

Andy Bradly, Partner, LCP Delta

LCP Delta was formed through the merger of Delta-EE and LCP Energy to bring together deep generation and consumer-side expertise, to provide our clients with a single partner to help them on their journey and provide them with a 360° view across the energy spectrum.

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200+
Global clients

6
offices

110+
Colleagues

LCP Delta provides the best advice, support and tools to enable the energy sector to drive the energy transition

Subscription research services

Our portfolio of subscription research services offer in-depth insights across the energy transition landscape. We have been undertaking primary research with organisations active in the energy transition since 2004 – we have an unparalleled international network of contacts we can draw on. Each service focuses on a particular aspect of the energy transition.

Market and strategic advisory consulting

We provide support across the full energy value chain with bespoke research, insight, forecasts and advice tailored to them. Our consultancy offerings draws on expertise and data from across LCP Delta, from strategic market entry analysis through to detailed half-hourly revenue forecasting.

We support our clients in four ways

Technology & data

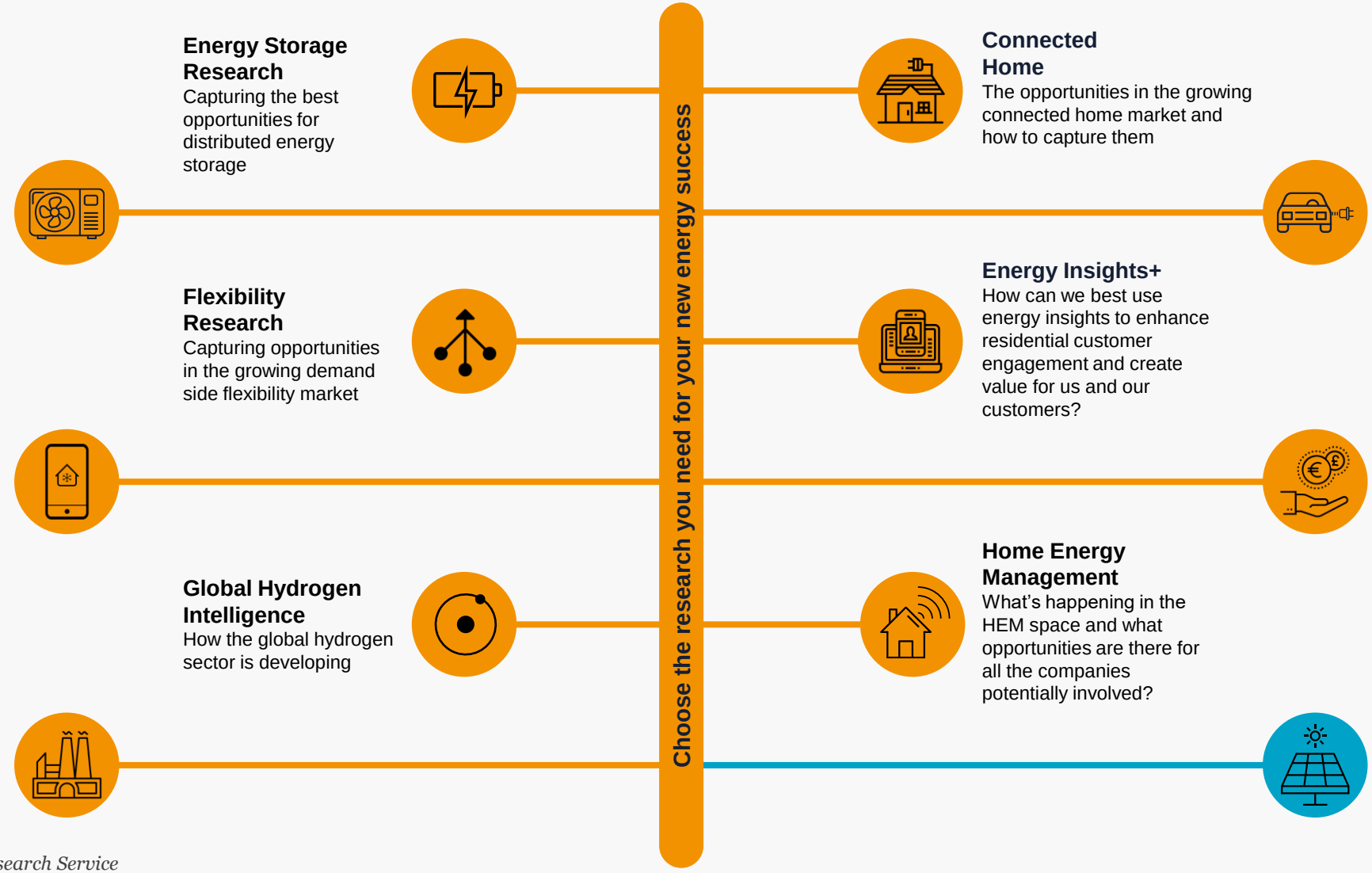
Data integration and analysis is at the heart of the energy transition. However, sourcing and navigating complex, wide-ranging datasets is challenging. At LCP Delta, we combine and curate proprietary and public datasets to provide you with a single source of truth across the energy spectrum and make this data interactive using our cutting-edge technology.

Training

Our training helps professionals quickly develop their new energy knowledge, accelerating their impact for organisations who want to capture opportunities. We provide meaningful, concise and easy to understand short courses.

Subscription Research Services

Use a combination of our subscription research services, bespoke consultancy projects and training services to gather the information you need to ensure your business's success in the energy transition.



Energy Storage Research
Capturing the best opportunities for distributed energy storage

Decarbonisation of Heat
Gain a holistic understanding of the future of the heating sector from a product and policy point-of-view

Flexibility Research
Capturing opportunities in the growing demand side flexibility market

Heating Business
How to evolve from selling individual products and commodities to become a successful home energy solution provider

Global Hydrogen Intelligence
How the global hydrogen sector is developing

Distributed Power
How to succeed in the global distributed power market

Connected Home
The opportunities in the growing connected home market and how to capture them

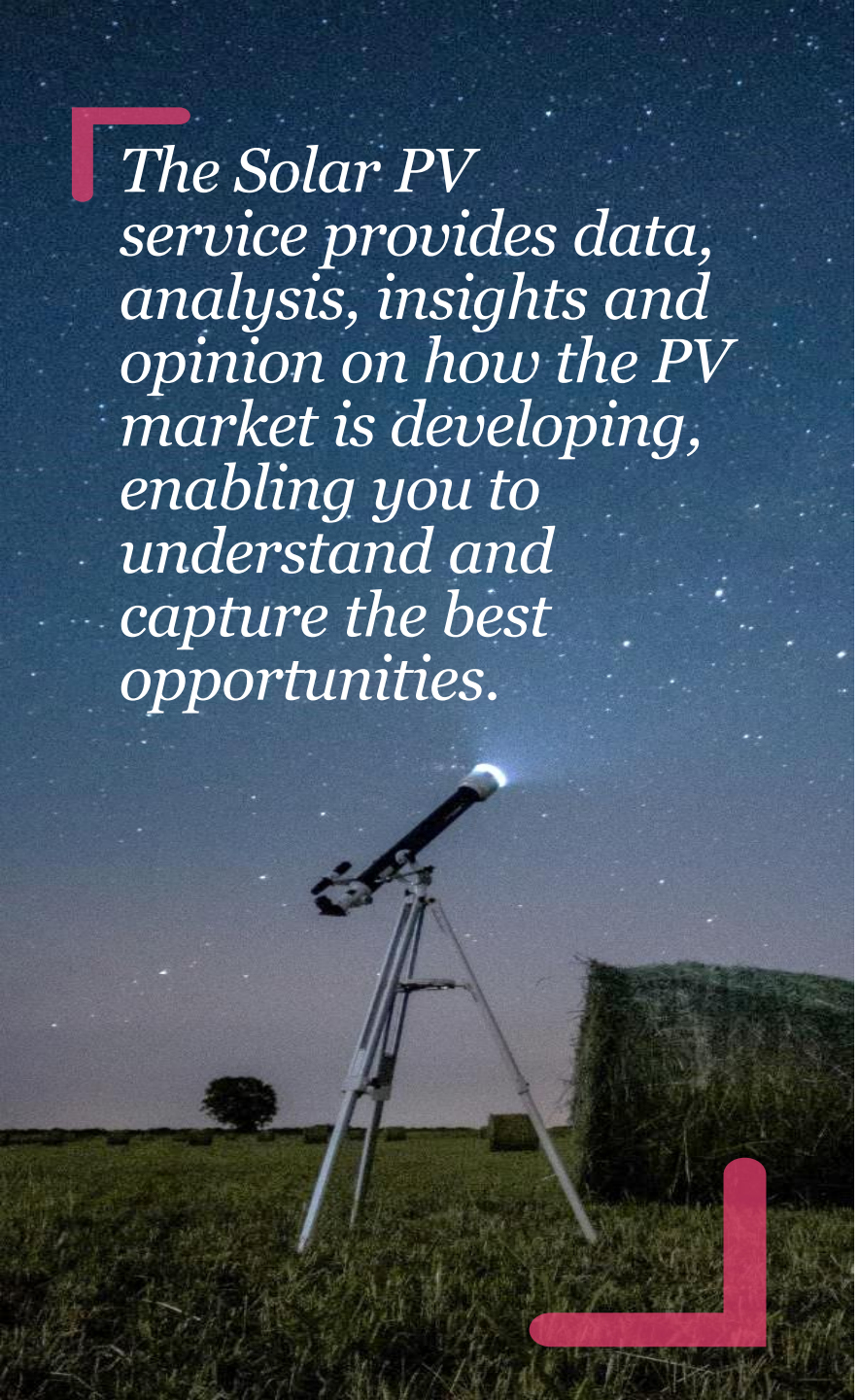
EV Charging
How to best develop position and activities to succeed in the rapidly growing eMobility market

Energy Insights+
How can we best use energy insights to enhance residential customer engagement and create value for us and our customers?

New Energy Business Model
Understand, identify and implement the most promising commercial opportunities from the increasing disruption in the energy sector

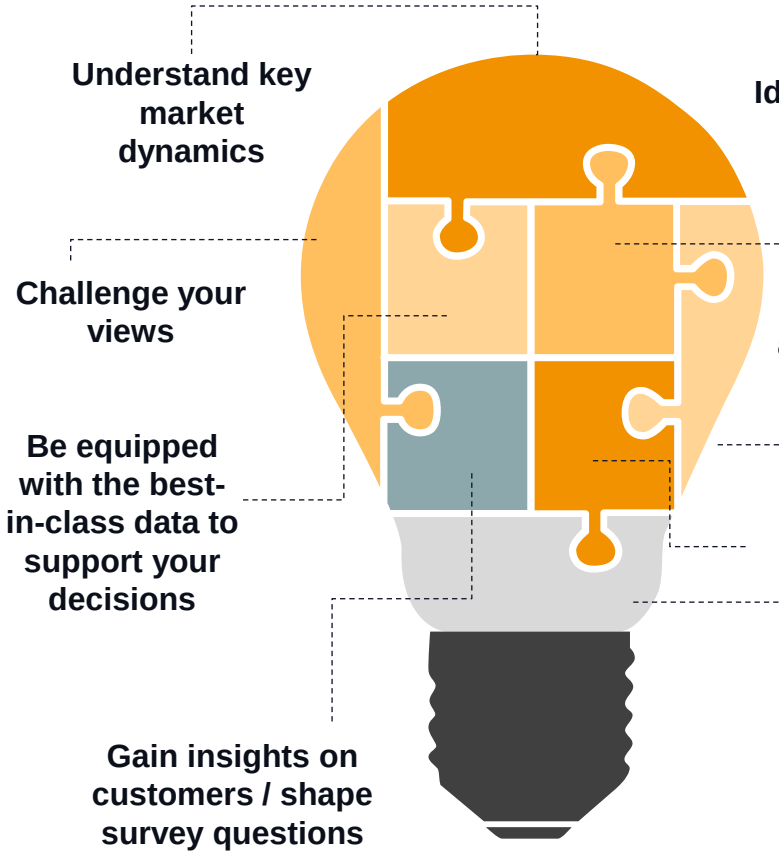
Home Energy Management
What's happening in the HEM space and what opportunities are there for all the companies potentially involved?

Solar PV
Understanding the growth of solar PV across Europe



The Solar PV service provides data, analysis, insights and opinion on how the PV market is developing, enabling you to understand and capture the best opportunities.

BENEFITS TO OUR SUBSCRIBERS



How we can help you

Research that provides expert insight and data into a rapidly emerging sector; consulting that brings in-depth knowledge and commercial acumen; and

Subscription Research

Solar PV Research Service

Provides clients with deep-dive country analysis, market forecasts, and immediate access to hard-to-get data and insight on the behind-the-meter solar PV market.

Subscribing clients can leverage our deep sector knowledge about the current state of the Solar PV market in Europe, how it is evolving, what the current trends are, and what opportunities and business models show the most promise.

Tech & Data

SOLARbase

Solar Market dashboard

Consulting

Solar PV Consulting

Provides clients with bespoke projects and advice tailored to them. We work closely with clients to understand their needs, and design and deliver our services to provide the information and insight they require.

Our consultancy team have a strong track record for delivering highly regarded research, trusted forecasts and exceeding client expectations, through robust market analysis and modelling.

Financial Analysis

Partnership

Able to partner with LCP's covenant and financial analysis team to offer a full bespoke client package.

We assess the financial profile of companies, diving deep into their financial health, stability and growth prospects.

We can support with financial due diligence, identifying targets within a market, understanding sustainability / net zero strategies and corporate transaction support.

Example Subscription Service content

1 *Residential solar PV market Europe: State of the market*

Report + Data

Europe Residential Solar PV Landscape – We provide a high-level view of the state of the <10kWp solar PV market today.

Analysis of top markets, Europe-wide trends and key sales channels.

Deep-dive country analysis

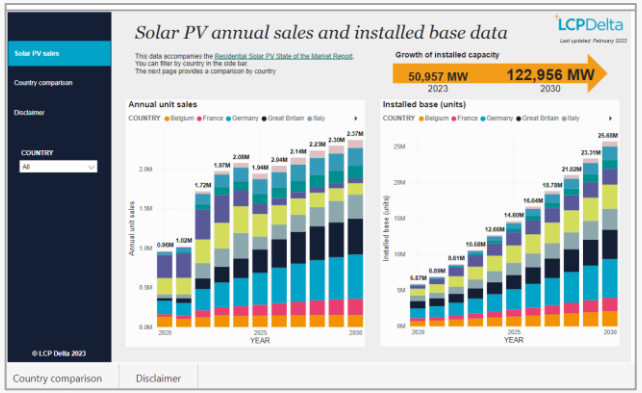
- Germany
- Netherlands
- Belgium
- Italy
- Spain
- UK
- Portugal
- France
- Poland
- Sweden

With forecasts based on LCP Delta's market outlook framework.

Residential solar PV database

- Annual sales forecasts, 2020 – 2030
- Installed base (MW)
- Installed base (units)

With Power BI data visualisation on the subscriber portal



1 *Residential solar PV market Europe: State of the market*

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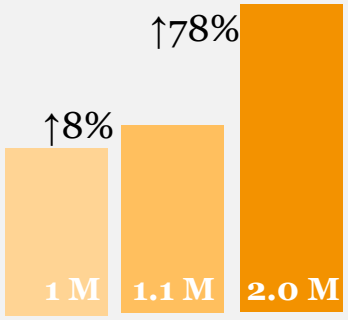
1 *Key findings*

The outlook is bright for the European residential solar PV market

Though individual markets will experience peaks and troughs, overall the European market is set for relatively steady growth.

What happened in 2022?



Annual installations

- Demand exploded for residential solar PV systems following record high retail energy prices (linked to the 2021/22 energy crisis and the release of pent up demand post-pandemic).
- Supply chain disruptions and labour shortages held the market back from further growth.

Market outlook to 2030

- Customer fear of further retail energy price hikes and price volatility, falling solar equipment costs, increased electrification of the home and transport, policy incentives and regulatory requirements, market player push, and more – form the basis for continued growth this next 8 years.

The race to scale

- Today's supply market is very fragmented – but national and international players will continue to gain market share across Europe and will also drive overall market growth.
- The supply market will become increasingly competitive.

1 *Generous subsidies spurred the residential PV market in the past*

Prior to the current wave of PV installations, there was a first peak around the 2010s that formed the basis for most of the installed base in Europe

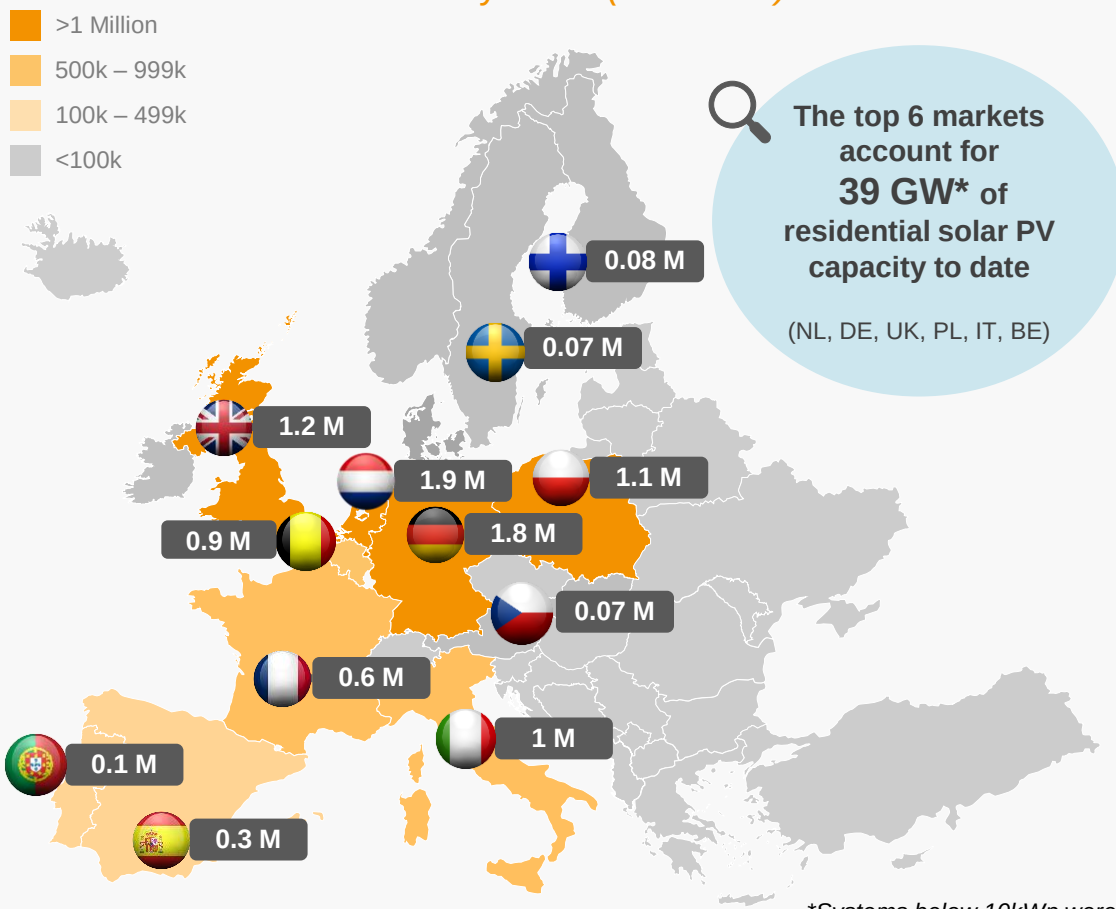
The implementation of government incentives, including a number of **CAPEX subsidies** and **OPEX remuneration schemes**, have made PV systems more affordable and accessible to a wide range of European homeowners. Subsequent increases in **environmental awareness** and **falling PV panel prices** have also contributed to market growth in the past.

Key OPEX remuneration schemes for residential PV customers include:

- **Feed-in tariffs:** Long-term contracts for renewable electricity producers, offering a subsidy for each kWh of electricity generated and a fairly generous export tariff for electricity fed into the grid.
- **Net metering:** A system that credits PV consumers for the electricity they export and allows them to import the same amount from the grid. The meter is effectively working backwards when exporting.
- By the end of the 2010s, the initial top residential solar PV markets (e.g. DE, IT, UK) declined as governments reduced subsidies or began to impose taxes.

Residential solar PV installed base*

- number of systems *(end 2022)*



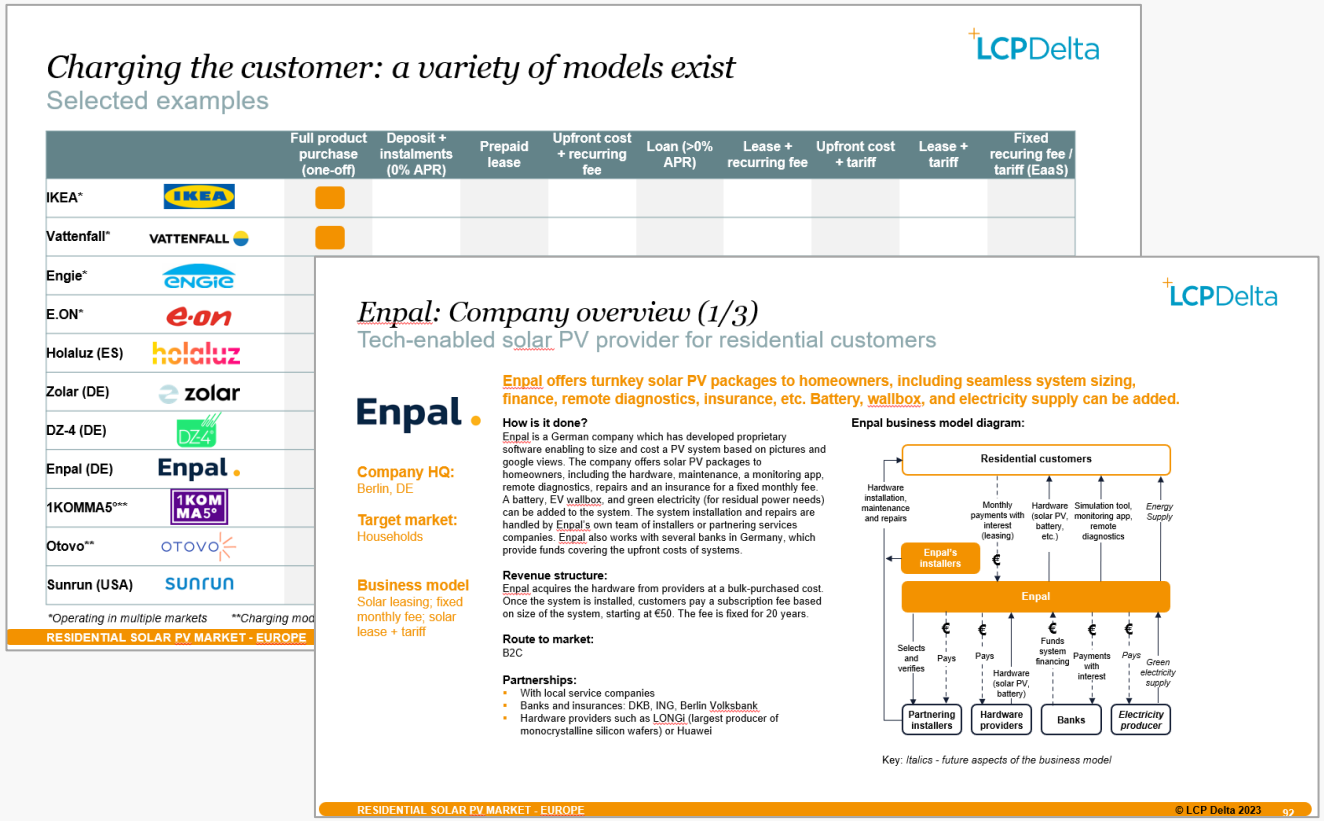
*Systems below 10kWp were considered 2022 figures are estimated.

2 *Business model case studies: Residential solar PV*

Report

Business model review
We look across 10 selected companies that are either:

- providing innovative business models in the rooftop PV space;
- emerging market players that are gaining traction or disrupting the traditional supply chain;
- incumbent utilities diversifying their product portfolio and energy solutions.



Charging the customer: a variety of models exist

Selected examples

	Full product purchase (one-off)	Deposit + instalments (0% APR)	Prepaid lease	Upfront cost + recurring fee	Loan (>0% APR)	Lease + recurring fee	Upfront cost + tariff	Lease + tariff	Fixed recuring fee / tariff (EaaS)
IKEA*	■								
Vattenfall*	■								
Engie*									
E.ON*									
Holaluz (ES)									
Zolar (DE)									
DZ-4 (DE)									
Enpal (DE)									
1KOMMA5°**									
Otovo**									
Sunrun (USA)									

*Operating in multiple markets **Charging mod

RESIDENTIAL SOLAR PV MARKET - EUROPE

Enpal: Company overview (1/3)

Tech-enabled solar PV provider for residential customers

Enpal offers turnkey solar PV packages to homeowners, including seamless system sizing, finance, remote diagnostics, insurance, etc. Battery, wallbox, and electricity supply can be added.

How is it done?
Enpal is a German company which has developed proprietary software enabling to size and cost a PV system based on pictures and google views. The company offers solar PV packages to homeowners, including the hardware, maintenance, a monitoring app, remote diagnostics, repairs and an insurance for a fixed monthly fee. A battery, EV wallbox, and green electricity (for residual power needs) can be added to the system. The system installation and repairs are handled by Enpal's own team of installers or partnering services companies. Enpal also works with several banks in Germany, which provide funds covering the upfront costs of systems.

Company HQ: Berlin, DE

Target market: Households

Business model Solar leasing; fixed monthly fee; solar lease + tariff

Revenue structure:
Enpal acquires the hardware from providers at a bulk-purchased cost. Once the system is installed, customers pay a subscription fee based on size of the system, starting at €50. The fee is fixed for 20 years.

Route to market: B2C

Partnerships:
- With local service companies
- Banks and insurances: DKB, ING, Berlin Volksbank
- Hardware providers such as LONGi (largest producer of monocrystalline silicon wafers) or Huawei

Enpal business model diagram:

Key: *Italics - future aspects of the business model*

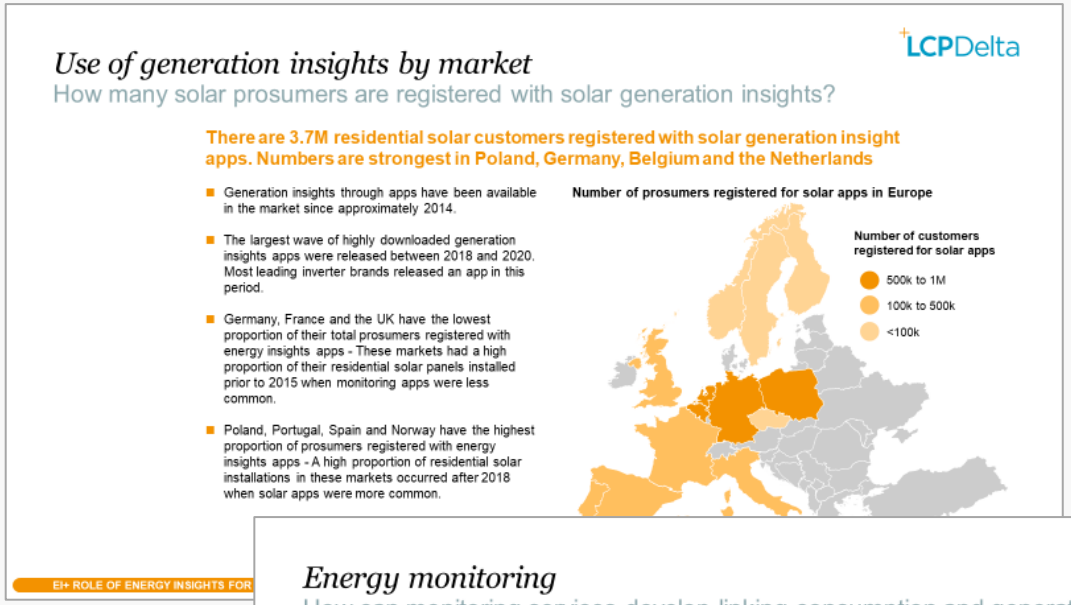
RESIDENTIAL SOLAR PV MARKET - EUROPE © LCP Delta 2023 92

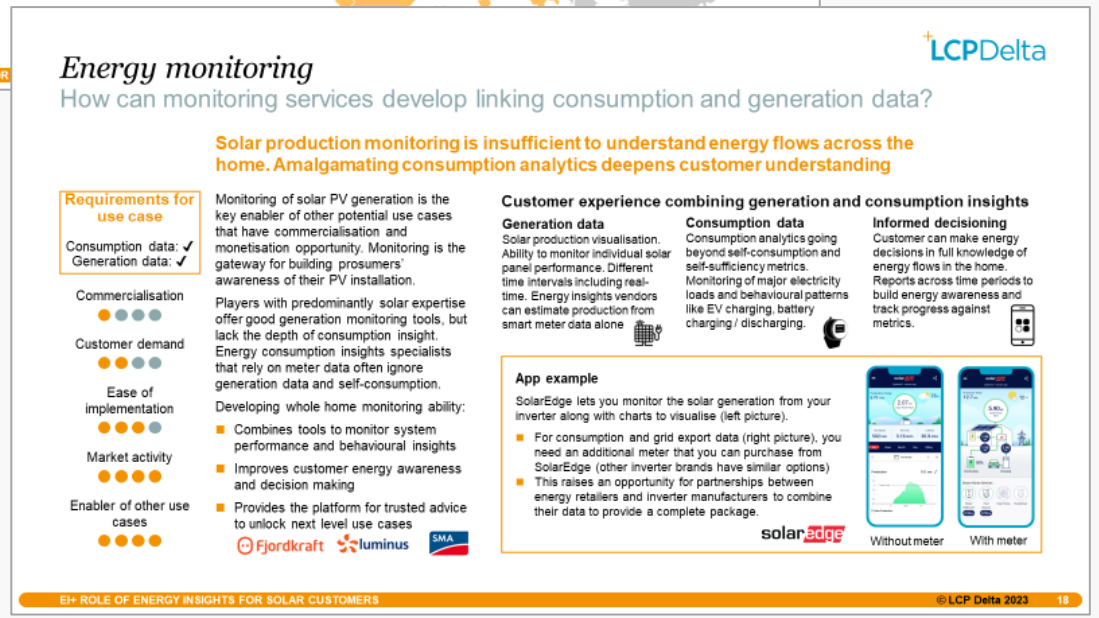
3 *Role of energy insights for solar customers*

Report

Energy insights for prosumers

- High level market landscape of prosumer apps using generation data, including usage by European market, competitive landscape and customer experience.
- Analysis of 7 promising use cases incorporating generation and/or consumption data for energy companies to position themselves at the forefront of the prosumer customer experience.





3 *Role of energy insights for solar customers*

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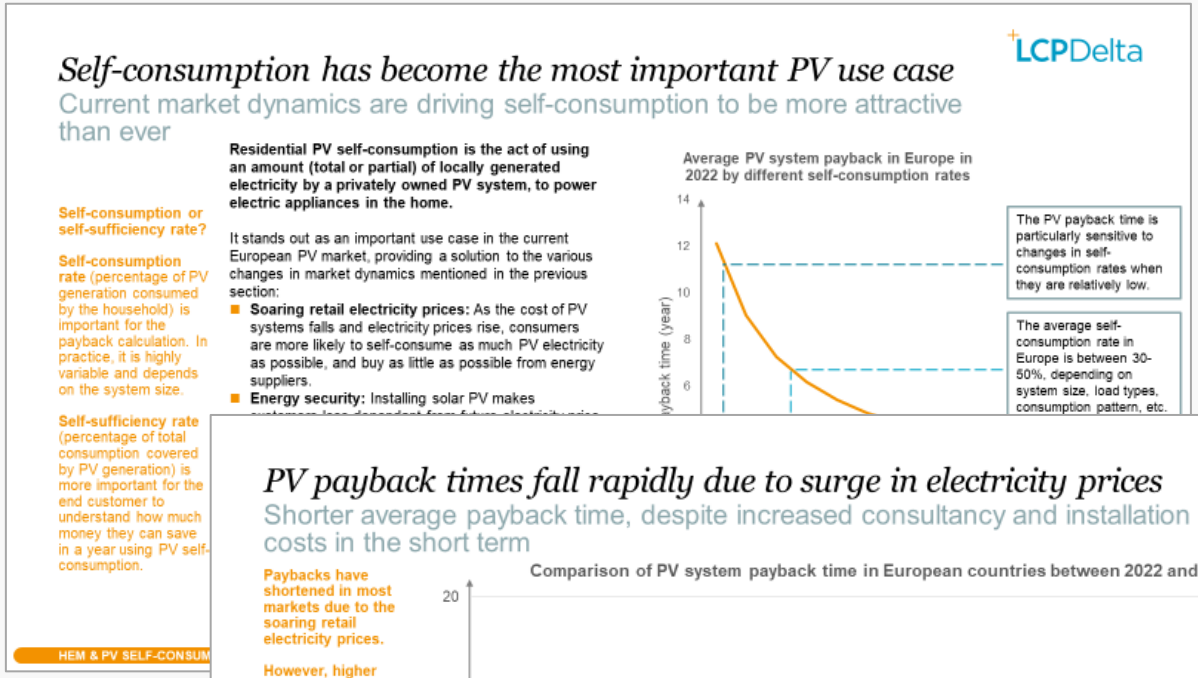
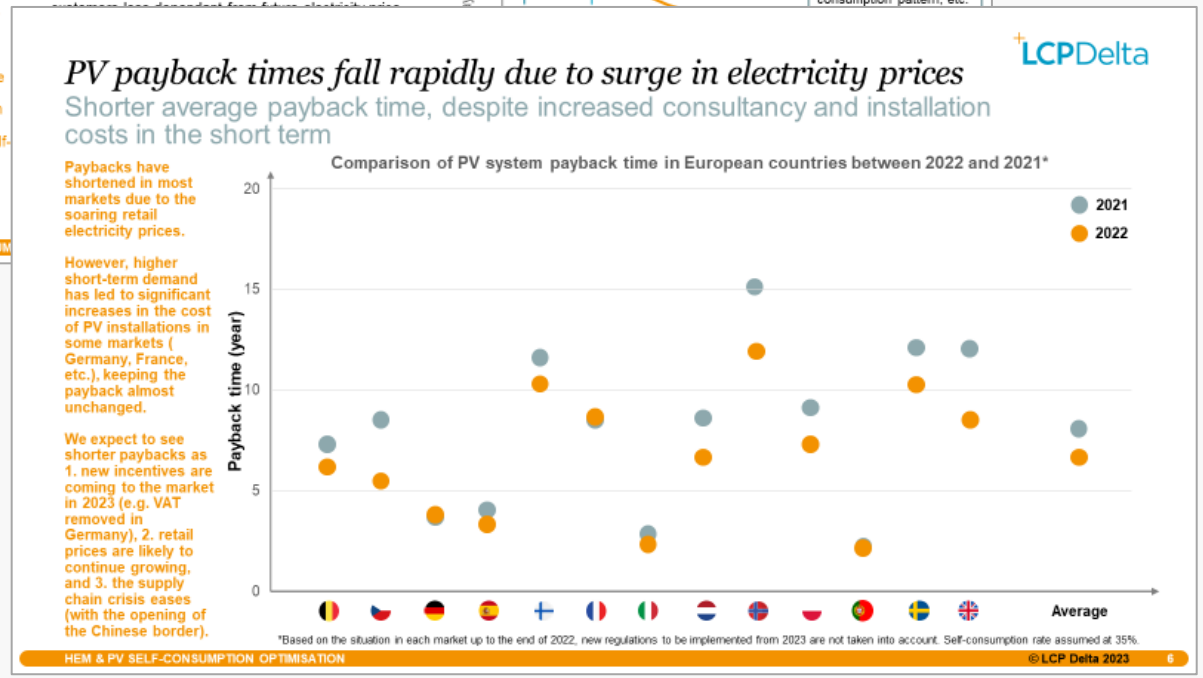
4 *HEM and solar PV self-consumption optimisation*

Report

HEM and solar PV self-consumption optimisation

- This report discusses the payback times for PV investments in different countries.
- Analysis on how HEMS can optimise the use of different household energy assets in order to improve PV self-consumption.





4 *HEM and solar PV self-consumption optimisation*

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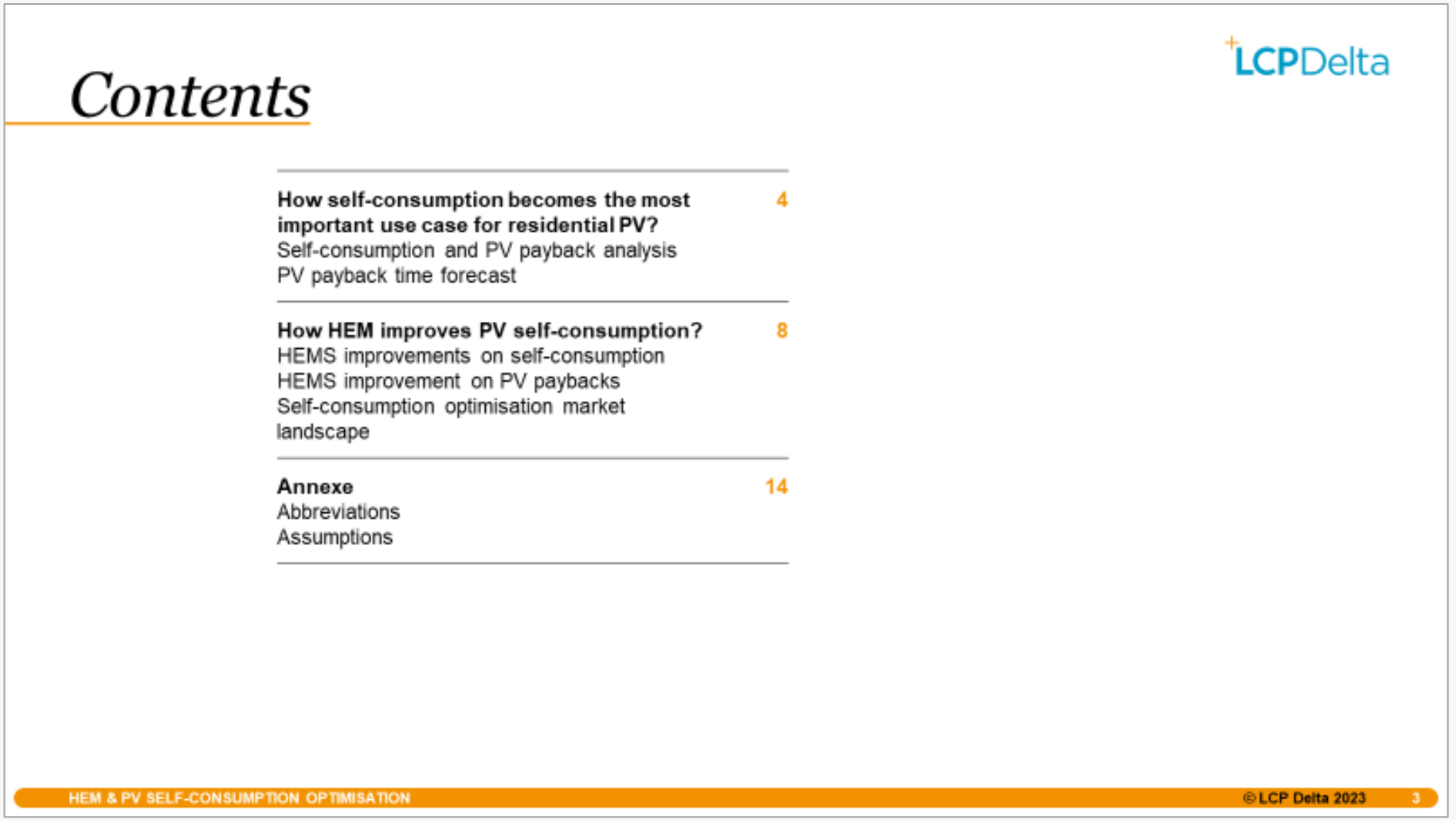

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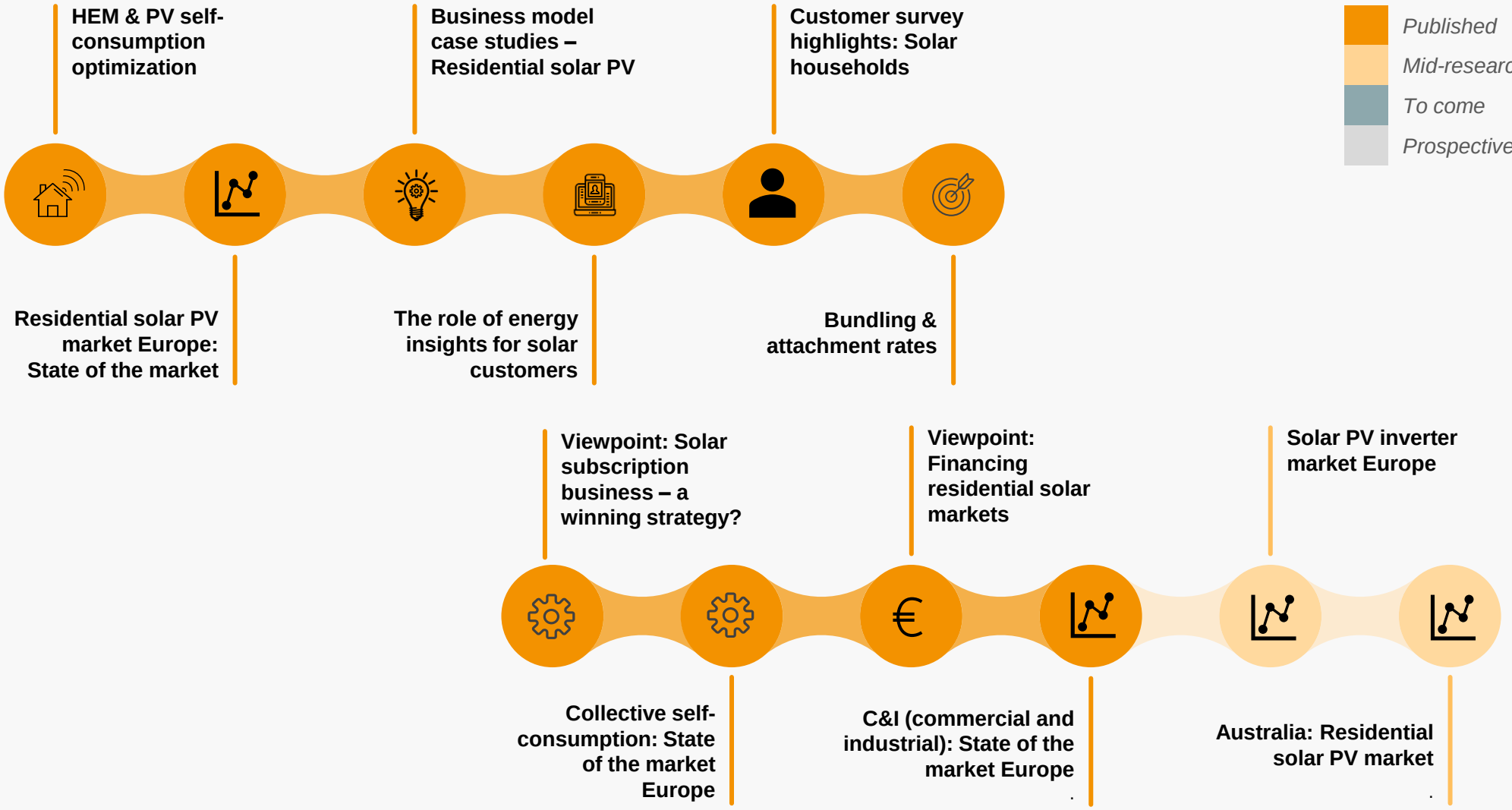
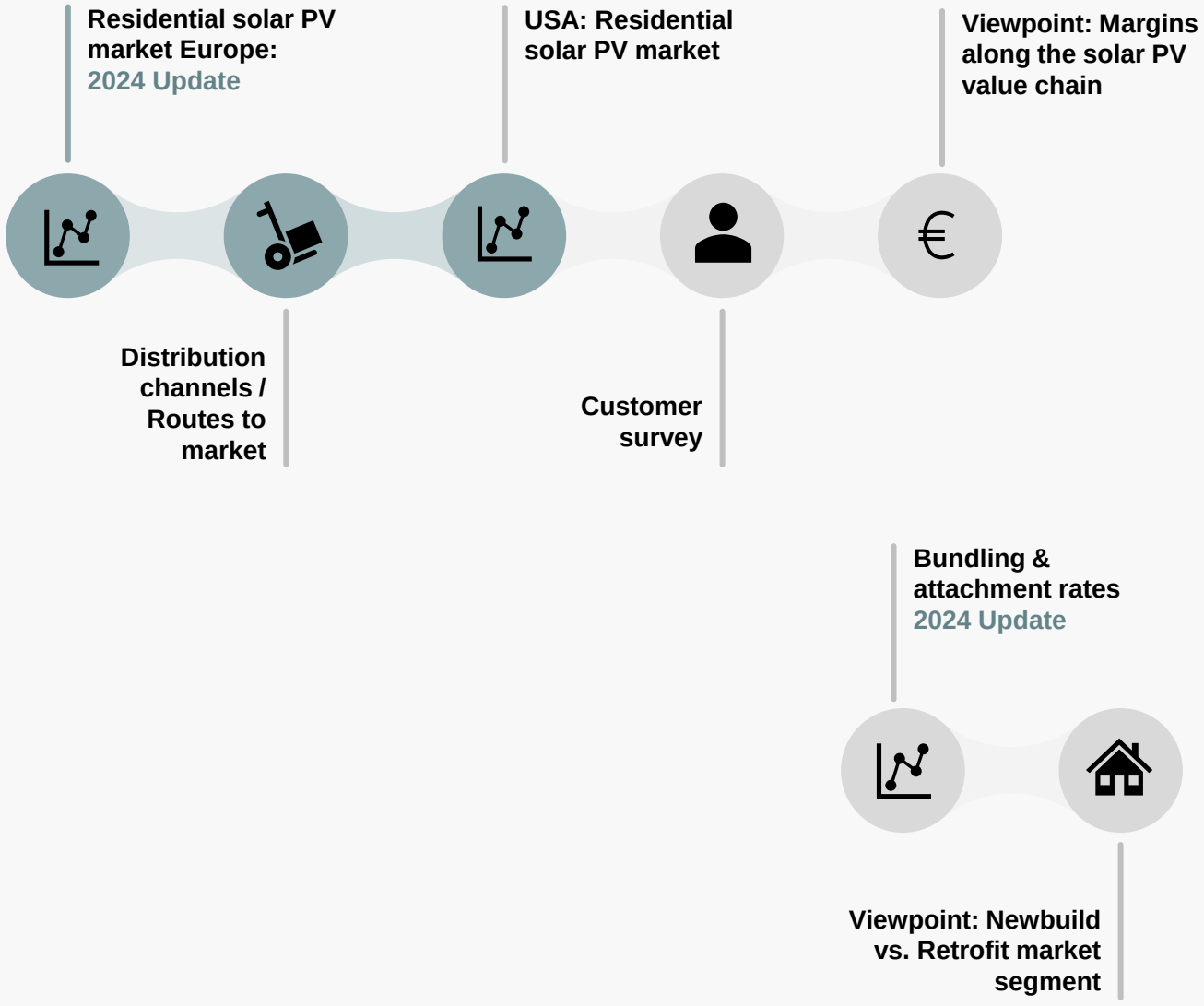
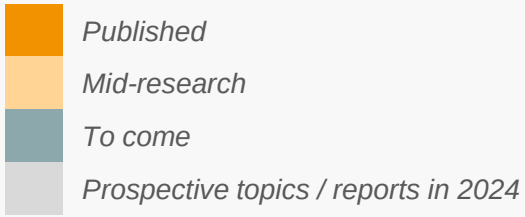


Q2 – Q4 2024 Deliverables programme





2024 will also include the launch of our Solar Market Outlook Dashboard

SOLARbase

Contact us

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About LCP Delta

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