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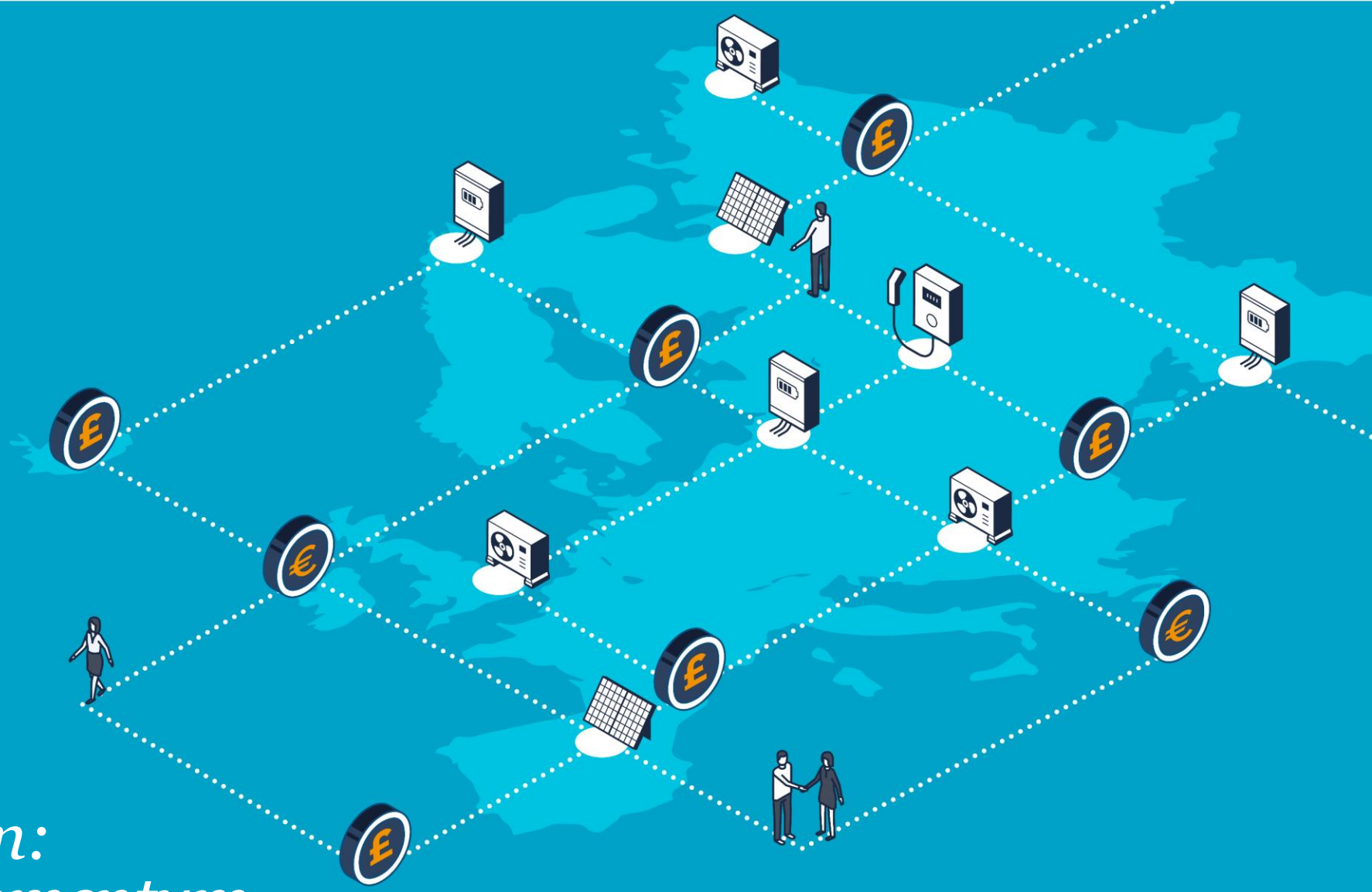

Energy Transition: Regaining the Momentum

Three pillars for financing the mainstream market

Contents

Foreword

This series of three whitepapers examines the recent slowdown in the energy transition over the past 18 months and outlines how the market can position itself to regaining the positive momentum to reach the mainstream consumer market.

Paper 1

Explores the market slowdown across three consumer-facing technologies. It presents an analysis of the scale and impact of the slowdown, explores the key reasons behind its depth and offers a perspective on emerging opportunities that brings reason for optimism.

Paper 2

Considers the consumer journey, addressing how businesses can design compelling product offerings and how governments can establish effective policy frameworks to drive adoption among mainstream consumers.

Paper 3

Focuses on three pillars for financing the mainstream market, both at the business and consumer levels. These are the provision of capital to companies, making products affordable and implementing government policies that encourage private investment, creating the momentum to reach the mainstream market.

Each of these papers draws on extensive research and data analysis conducted by LCP Delta's expert teams, covering areas such as **Decarbonisation of Heat, EV Charging, New Energy Strategies** and **Solar & Battery**. Papers 2 and 3 also highlight the range of services that LCP Delta provides, from research to consulting, that facilitate our clients with their ambitions to reach the mainstream market.

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Executive summary

Three pillars for financing the mainstream market

Company Capital

- This decade has seen a significant positive step change of the investment inflows into the sector.
- Investment opportunities across vast range of companies, both in stage of development and technology.
- Opportunities for different types of investor, from venture capital to incumbents looking to expand into the new technologies.

Affordability

- Making residential net zero products affordable is crucial for the mainstream consumer.
- Technology providers are partnering with banks to offer affordable solutions.
- Consumer financing enabled by Asset Backed Securities (ABS): Europe's net zero ABS market is opening and has huge potential.

Enabling Policies

- Long-term, sustainable government policies will enable investment into the sector.
- A virtuous circle will be created where investors grow in confidence, capital flows to companies and companies produce affordable, compelling products for mainstream consumers.
- The market can become self-sustaining, requiring lower levels of policy over time.

History can provide reassurance on finance

Introduction

If Karl Benz had a crystal ball

We have to admit that when we were drafting this series of whitepapers, we had doubts about using the history of the car in the twentieth century as a recurring reference point, not least because of the car's significant contribution to climate change. However, there is no benefit in regretting the past, and whilst no two markets' development will correlate perfectly, parallels do exist between the two. These parallels mean **there are valuable insights to be gained from looking at the car's development last century**, that can help the energy transition's development and the world to achieve net zero.

If it had been possible for Karl Benz, when he first invented the car, to look into a crystal ball to what the world would look like by 1960; with the millions of cars, the supply chains to build the cars, the motorways, the petrol stations, the oil wells drilling for the fuel, the huge number of new skills that had been developed in the workforce and the level of finance required for it all…it is probably fair to say he would have been surprised at the enormity of it.

Now, as we are faced with trying to imagine the net zero world of 2050 and the sheer scale of the task of rolling out the technologies, the infrastructure, developing the skills in the workforce and the financing of the task, we can use the development of the car market and its infrastructure as evidence that **markets requiring huge finance to develop have succeeded in the past and therefore, we can achieve it again.**

To turn our focus to the mainstream consumer; a consumer looking to bring the net zero technologies of solar PV, battery, heat pump and EV into their homes and lives is going to require a significant financial outlay. And yet the **car proved in the last century that despite being expensive, it managed to move from invention to domination across the global consumer.**

In this final whitepaper of the series, we look at how the various financial elements needed for developing the net zero homes market can be put in place to ensure the momentum is regained, can successfully reach the mainstream consumer and as we detail in the conclusion, reach a positive tipping point on the path to net zero.

The three pillars for financing the mainstream market

The word expensive is often used to describe the energy transition. However, as is becoming more accepted in the commentary around the sector, expensive is the wrong way to view it. Expensive is now more commonly being viewed as revenue, profit, growth and jobs. The move to the mainstream market can result in all of these.

First Pillar

Capital for companies (1 of 2)

Start-ups need capital for take-off.

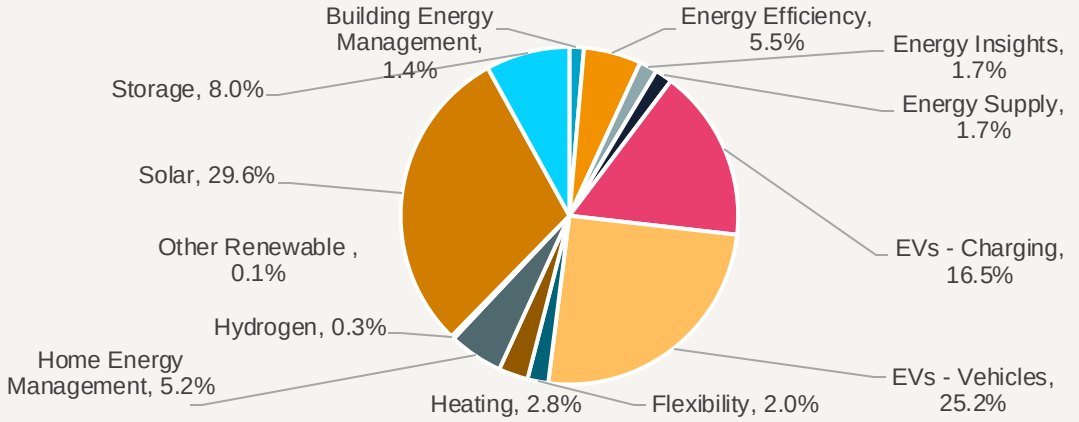
The vastness of the investment opportunity for the energy transition spans the whole range of the spectrum, both in terms of company and investor. The companies involved range from the innovative start-ups, through to the listed companies valued in the hundreds of billions. And just as the types of company varies, so too do the types of investor, ranging from the venture capitalists, through to traditional energy companies looking to diversify into renewable energy. This whitepaper details two areas of investment where we are seeing significant inflows, providing companies with the capital needed to drive the energy transition:

The charts opposite detail the investments in 620 start-up companies that LCP Delta analyses in its "Follow the Money" dashboard. The companies in the top chart are **driving the innovation that is so vital to winning the mainstream consumer** and have received over €60bn of investment from the investor types detailed in the second chart.

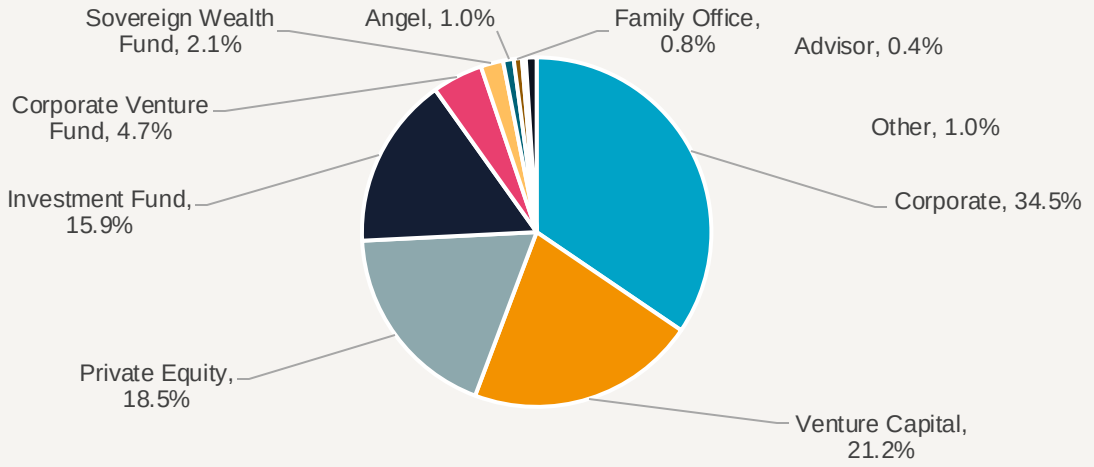
Whilst, as outlined in the first whitepaper, there was a dip in funding last year, it is important to highlight that **of the €60bn investment flows, €47bn of these were invested this decade.** A significant step change has been made.

The start-up market of the energy transition has come a long way in a short space of time. There is good reason to be optimistic that the start-ups will continue to see capital flowing into them as they help drive the energy transition to the mainstream market through their market disrupting innovations.

Companies Invested In



Investor Types



First Pillar

Capital for companies (2 of 2)

Super-tankers need capital to change course.

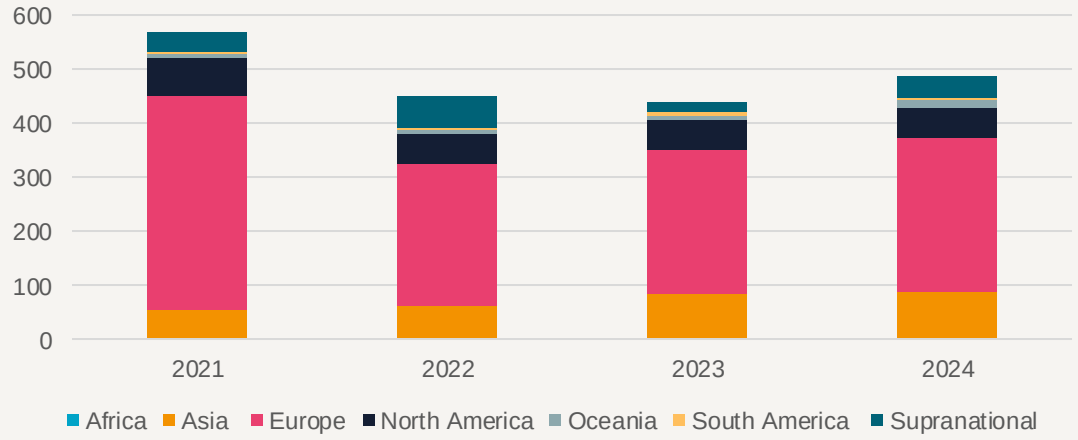
The role of innovative start-ups should not be understated, they so often provide the spark needed for a market to move from the status-quo. However, **net zero will only be achieved if the existing large incumbents of the energy transition sector have the capital required to change their customer offering and move the innovations to their mainstream consumer base**. The level of capital required for this is huge and is likely to be significantly funded by the bond market, the largest capital market in the world.

As the chart shows, the scale of green bond issuance is significant and can enable huge steps forward in the move towards net zero, as companies seek the capital to implement their plans. Indeed, similar to the pattern of the start-up finance market outlined earlier, the green bond market has grown substantially this decade, until 2020 the annual issuance had not reached the €200bn level. Now, it is regularly in the region of €500bn, currently dominated by the European market.

To give a company-specific example from within this vast total, E.ON has been able to source €12.8bn of green finance in the green bond market as it continues its journey, and therefore the journey of its customers, to net zero.

As these two pages illustrate, the **substantial investment building blocks that are needed for net zero are being put into place** for the crucial shift to the mainstream consumer. There is certainly more to be done but progress is being made.

Green bond issuance per region ($bn)



Source: ICMA

We are seeing an increasing number of investors assessing the transition plans of companies, analysing which firms will succeed as the world moves to net zero. The capital markets, both through green bonds and other financial instruments, are playing a vital role in the energy transition.

Dr. Arthur Krebbers, Head of Corporate Climate & ESG Capital Markets, NatWest

Second Pillar

Consumer Affordability (1 of 2)

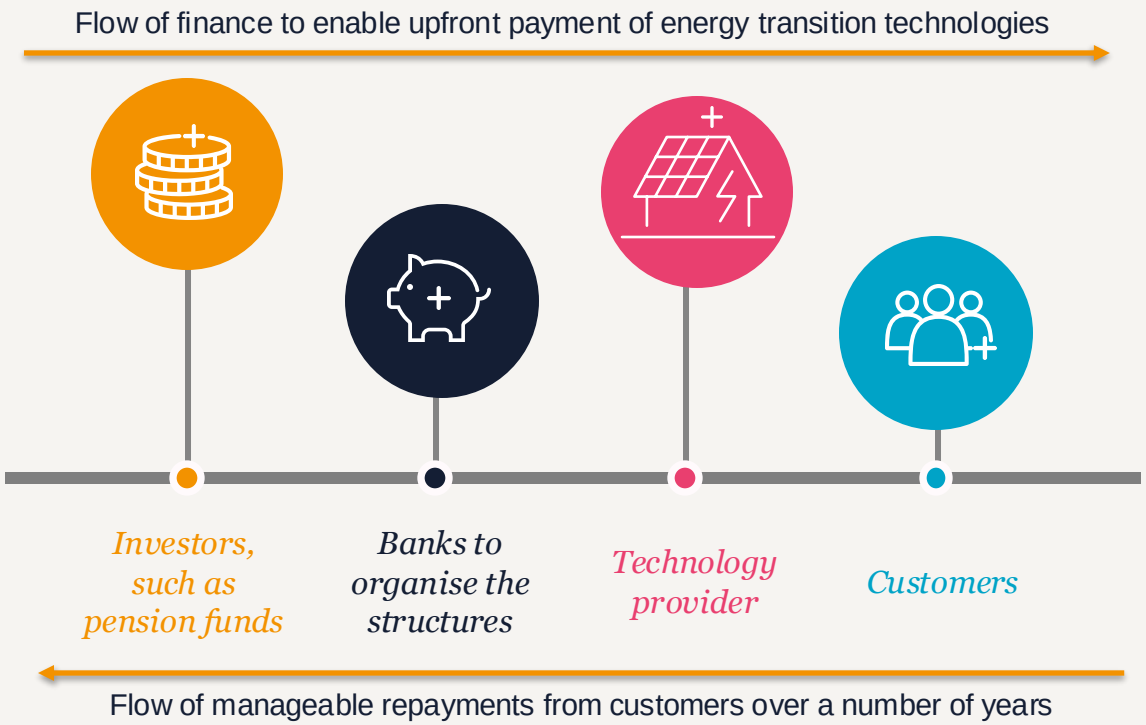
For long term, sustainable success, the residential technologies involved in the energy transition need to be affordable to consumers. Indeed, OVO has found that 75% of homeowners who were keen to install green technology were put off by the upfront cost. One of the most likely routes to affordability will be in the form of consumer finance agreements at attractive borrowing rates, ideally the 0% that many car finance terms have offered over the years.

Positively, consumers are beginning to see an increasing selection of product offerings that are making their personal journey to net zero more affordable. **This affordability is being brought about by partnerships between net zero technology providers and the banks**. OVO itself, spurred on by the above statistic, has recently announced a partnership with HSBC where their customers will be able to spread the cost of solar panels and batteries over a number of years. Another example is Thermondo, which has partnered with Consors Finanz of BNP Paribas to enable its customers to avoid the upfront cost of their heat pumps and instead pay for them through monthly instalments. These are promising developments.

However, to scale these offerings to the level that they need to be at to finance the whole of the mainstream consumer market is going to require the various players of the financial markets to fulfil their roles. Fortunately, the players needed for the scale of finance required have already spent decades developing the financial instruments that can become the sources of financing for net zero homes. We explore one of these instruments in this paper:

The Asset Backed Securities (ABS) market began in earnest in the 1980s and since then has been the **provider of investment returns for investors and affordability for consumers looking to buy products**. LCP Delta's New Energy Strategies service provides a detailed introduction to the ABS market. For this whitepaper, we provide a simplified diagram of the ABS market below, with investors (often pension funds) providing the money for the upfront purchase of the technology and the customers repaying the money in affordable monthly instalments over time.

Overview of Asset Backed Securities



Second Pillar

Consumer affordability (2 of 2)

The ABS market is well understood by investors and banks. In 2024, there was €143bn of issuance across Europe, which enabled the provision of finance to consumers in numerous sectors of the European economy, including the housing and car market.

To look at the development of one of the most developed ABS markets in the world, the chart shows how the US automobile ABS market has nearly quadrupled since 2008. Last year the market issued $160bn in the US market to investors and close to $250bn globally. In doing so the market provided affordable car finance to consumers.

The chart also includes the figures for the US solar ABS market which, in a similar way, has provided affordable finance for consumers to install solar on their homes. Clearly the figure is dwarfed by the automobile figure, with only $5.2bn issued last year. However, the point is that the foundations of the market are in place and can be built upon in the years ahead. Indeed, we are already seeing **positive signs in Europe, with companies such as Aira, Hometree and Enpal all setting up asset backed debt facilities** that enable the provision of affordable customer offerings for heat pump, solar, battery and EV charging point installations in their homes.

It will take time but there is every reason to expect that **energy transition technologies can become a huge ABS asset class**, as banks and technology providers forge relationships to supply the issuance for the investor base at one end of figure 1 and supply attractive, affordable product offerings to consumers at the other end of the chain.

In time, the net zero ABS market could become as established as the global auto ABS market is today. If it does, **it would be providing consumers with the finance to enable millions of homes a year to move to net zero**. A heartening thought and one the market can work towards.

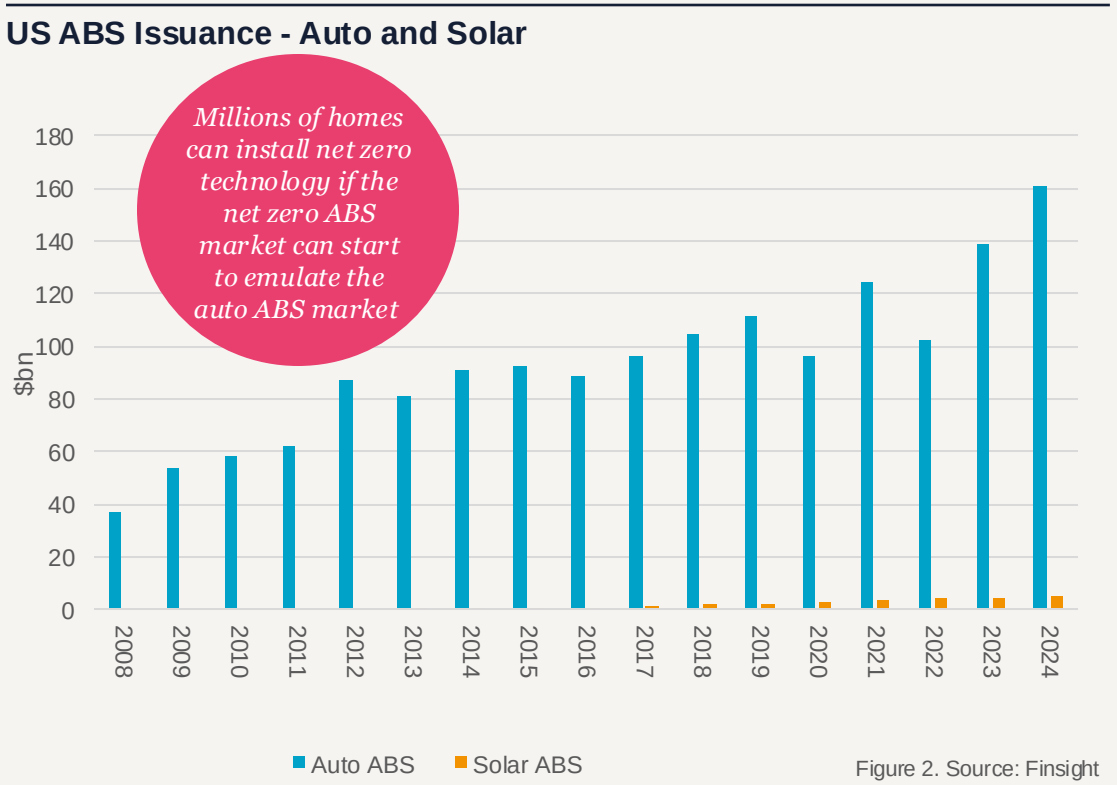


Figure 2. Source: Finsight

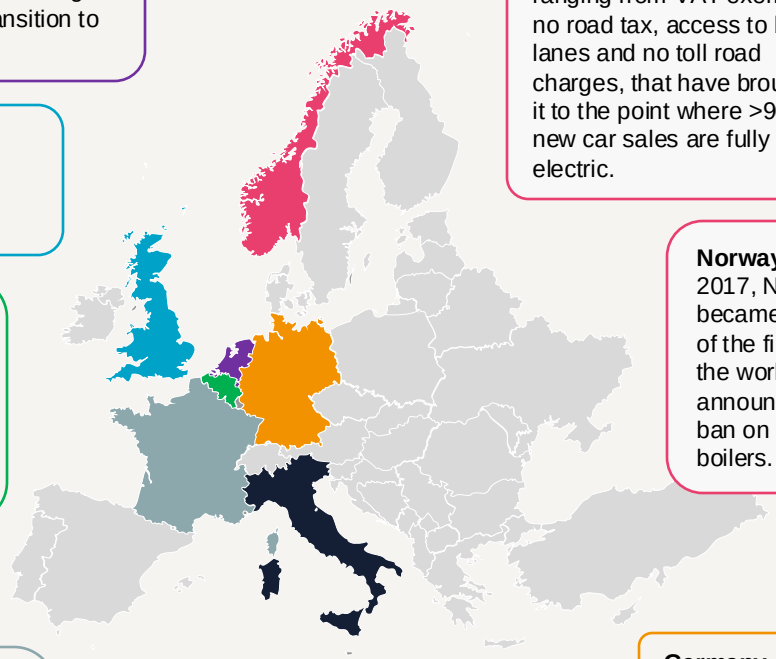
Third Pillar

Government policies that enable investment

The car industry benefitted hugely from government spending on the motorway networks in the last century and energy transition technologies can also benefit from government support to push into the mainstream consumer market. Long-term, sustainable policies will create a **virtuous circle whereby investors gain increased confidence to invest, providing companies with the capital to offer compelling products, which encourages the consumer to move to the technologies**. In time this will create a more self-sufficient market without need of material subsidies.

Here we provide a map showing the government policies that our research services view as among the strongest in Europe from the past twenty years. Importantly, whilst these are policies that have shown promise, that promise can only be fulfilled if they are implemented for the long-term to enable the investor confidence that leads to the more self-sufficient market detailed above.

If policies are put in place for the long-term, they will be the most efficient and effective use of public money. **Paradoxically, by being long-term, the more self-sufficient market will be reached sooner** and consequently, these long-term policies will cost less than the stop-start policies that have been all too common so far. Even more positively for governments, they will also result in **strong growth and create the jobs of the 21st century**.



Netherlands: 'Spark gap' reduction, the energy price realignment which lowered electricity and increased gas prices can stimulate the transition to electric heating.

UK: ZEV mandate, with OEMs needing to achieve higher share of new cars being fully electric.

European Commission: Energy Performance of Buildings Directive for no financial incentives for stand-alone fossil fuel boilers.

France: Focused on providing funding for EVs to those on lower incomes which proved popular. To reach the mainstream consumer this type of policy could be highly effective.

Italy: Superbonus, covered up to 110% of installation costs for solar PV and energy efficiency upgrades through tax deductions, aiding several aspects of net zero homes, including heat pump installations.

Germany: New heating systems required to use at least 65% renewable energy.

Norway: Has had a plethora of policies since the 1990s ranging from VAT exemption, no road tax, access to bus lanes and no toll road charges, that have brought it to the point where >90% of new car sales are fully electric.

Norway: In 2017, Norway became one of the first in the world to announce a ban on oil boilers.

LCP Delta's Role

Insightful Research

Our research services analyse the latest developments in the market, ranging from ABS research (link on page 9), through to the below 'Follow the Money', which details where the money is being invested in the energy transition.

VIEW RESEARCH

Bespoke Consulting

We provide bespoke consulting work for those looking to invest in the energy transition. Due diligence is vital for successful investment and here we outline the due diligence we carried out for a client looking at the home energy management market.

READ CLIENT STORY

Webinars

Current market and outlook

Understanding a market is key to investing in it. Here our experts discuss the outlook for the residential solar market.

WATCH NOW

Our insights

We have a wide range of energy podcasts, blogs, whitepapers, events and on demand webinars available on our website.

LEARN MORE

Podcasts

Talking New Energy

As we aim for net zero, start-ups that disrupt markets with affordable solutions are crucial. In this episode, we explore and discuss the offering of Wondrwall.

LISTEN NOW

Investment Uncut

LCP's Investment Uncut podcast covers developments in financial markets. In this episode we discuss the opportunities for institutional investors in the energy transition.

LISTEN NOW

Conclusion: Regain momentum through product innovation, upskilling the workforce and strengthening the three pillars for financing

We conclude our series of whitepapers with a light-hearted look into the future, a discussion of the hugely positive tipping point that can be achieved in the net zero homes market and an invitation to our virtual roundtable event.

The Crystal Ball

We began this whitepaper by imagining what Karl Benz might have thought if he had a crystal ball when he invented the car. As listeners of LCP Delta's 'Talking New Energy' podcast will know, we end each episode by asking what the guests see in the crystal ball. Here we provide our answer:

For the period between 2035-2040 we see scenes similar to this one being played out in households across the world:

Child: "Our teacher talked about energy today. They said it is different now to what it used to be, can you explain what they meant?"

Parent: "Of course. If we go a decade back in time, to a few years before you were born, people would get all of the energy they needed to heat and power their home from a company, which at times was hugely expensive. Energy bills were often some of the highest bills each household had."

Child: "What? Really? But you're always saying how cheap our energy is."

Parent: "Yeah, it seems weird now, but energy used to be really expensive. For a while when we were paying for our solar panels, battery and heat pump our monthly bills were similar to the old-fashioned energy bill but now we've finished paying for those, our energy bills are very small, partly due to the energy management company that organises our energy for us. They make our bills as cheap as possible."

Child: "Is that the company with the app I like to play with on your phone?"

Parent: "Yup."

Child: "Why else is our energy so cheap?"

Parent: "We get a good amount of our energy from our own solar panels and can store it in the battery to use when electricity is at its most expensive. So, when we put the lights on, heat our home, or cook a meal, the electricity we're using has been partly generated by us and the extra energy we need we get from the energy management company. Do you want to hear something else that's weird about the old days?

Child: "Yup, but make it quick, I want to play on your phone."

Parent: "In the old days, to power their cars people would need to drive to a special station to get fuel. Now, as you know, we charge our car from the comfort of our home and if we're travelling, recharge it at almost any car park or street across the country."

Child: "The old days sound like quite a hassle. Actually, one more thing. Our teacher said that the energy system changed to help prevent climate change. Is that true?"

Parent: "That's how the system started to change, and a good number of people changed the car they drive and the way they power their home for that reason, but **an enormous number of people changed to the new technologies and way of living for the simple reason that it is better than the old ways. For a lot of people, the fact it is also good for the climate is just an added bonus."**

Child: "Okay. Thank you. Can I have your phone please?"

Regaining Momentum

A positive tipping point

After the relatively light tone of the previous page, we wanted to conclude this series of whitepapers by turning to the serious subject of tipping points.

A tipping point can be defined as "**the time at which a change or an effect cannot be stopped**". Research has shown that it may only take 25% of the population to cause a tipping point for society as a whole.

The **residential market is at a crucial stage where it can reach its own tipping point**. A hugely positive one that brings net zero technologies to the mainstream consumer.

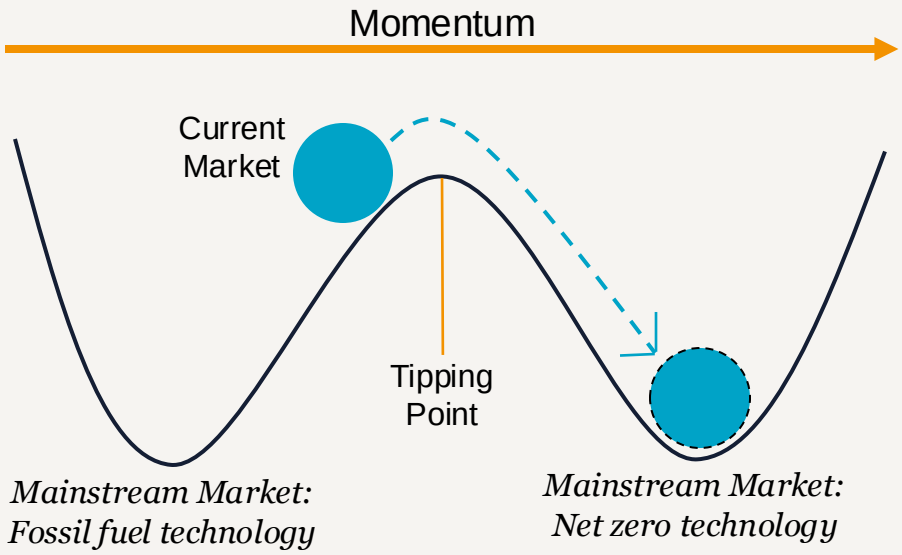
Through a combination of the topics discussed in this series:

- Innovative customer offerings to shift the status quo
- Increased skills for installing and understanding the new technologies
- Strengthening the three pillars for financing the mainstream market:
  - Capital for companies
  - Customer affordability
  - Policies that enable investment

The momentum in the sector can be regained and take the residential energy sector to the tipping point where it reaches the mainstream market. **A tipping point that can enable the world to look forward to net zero with genuine confidence.**

Positive tipping point for Residential Technology

Momentum builds through product innovation, upskilling and the three pillars for financing, moving the market to the tipping point



Regaining momentum: Growing Europe's net zero home market

Virtual roundtable invite

We hope you have enjoyed reading this final whitepaper in the series.

On Tuesday 1st April at 10:30 GMT, we will be holding a virtual roundtable event where we will be hosting OEMs, energy suppliers, policymakers and investors to discuss the topics raised in the series.

If you would be interested in taking part in this virtual roundtable, please register your interest using the link on this page.

Register interest

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