

Retail Energy Markets Under Stress: Lessons Learnt for the Future of Market Design

Authors	Willems,Bert; von der Fehr,Nils-Henrik; Banet,Catherine; Pollitt,Michael et al
Publication Date	2022-07
Document Version	publishersversion
Link	https://research.tilburguniversity.edu/en/publications/a0d3ecbd-bad2-4bdd-a0cf-2e786f336d81
Citation	Willems, B, von der Fehr, N-H, Banet, C, Pollitt, M & Le Coq, C 2022, Retail Energy Markets Under Stress : Lessons Learnt for the Future of Market Design. Centre on regulation in Europe (CERRE), Brussels.
Download Date	2025-09-21 17:25:39
Rights	General rights Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights. - Users may download and print one copy of any publication from the public portal for the purpose of private study or research. - You may not further distribute the material or use it for any profit-making activity or commercial gain - You may freely distribute the URL identifying the publication in the public portal" Take down policy If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.



RETAIL ENERGY MARKETS UNDER STRESS

LESSONS LEARNT FOR THE
FUTURE OF MARKET DESIGN

ISSUE PAPER

July 2022

Nils-Henrik M. von der Fehr
Catherine Banet
Chloé Le Coq
Michael Pollitt
Bert Willems



As provided for in CERRE's bylaws and procedural rules from its “Transparency & Independence Policy”, all CERRE research projects and reports are completed in accordance with the strictest academic independence.

The project, within the framework of which this report has been prepared, received the support and/or input of the following CERRE member organisations: ARERA, EDF, EI, ENEL, Norsk Hydro, Ofgem, PPC, Terna, UREGNI. However, they bear no responsibility for the contents of this report. The views expressed in this CERRE report are attributable only to the authors in a personal capacity and not to any institution with which they are associated. In addition, they do not necessarily correspond either to those of CERRE, or of any sponsor or of members of CERRE.

© Copyright 2022, Centre on Regulation in Europe (CERRE)

info@cerre.eu – www.cerre.eu



TABLE OF CONTENTS

About CERRE	4
About the authors.....	5
1. Introduction	6
2. Retailing in energy markets	8
2.1. Contracts.....	8
2.2. Risk.....	9
2.3. Competition	9
2.4. Regulation.....	12
3. Country case studies.....	15
3.1. France	18
3.2. Norway.....	23
3.3. The Netherlands	29
3.4. Great Britain	35
3.5. Summary.....	41
4. Lessons learnt.....	42
5. Challenges and opportunities.....	44
References	47



TABLE OF FIGURES

Figure 1: Average annual mark-ups for household consumers, euros/MWh. Source: ACER (2021).....	12
Figure 2: Average electricity and gas consumption, households, 2019. Source: ACER (2021).....	15
Figure 3: Final electricity price, 2020. Source: ACER (2021).	16
Figure 4: Final gas price, 2020 , including network cost, and all taxes and levies. Source: ACER (2021).	16
Figure 5: Household switching rates, 2019-2020. Source: ACER (2021).....	17
Figure 6: Price intervention, household consumers. Source: ACER (2021).	17
Figure 7: Annual consumption by type of supply as of December 31, 2021. Source: CRE (2021).....	19
Figure 8: Requested ARENH volume, 2012-2022. Source EnergiesDev (2022).	20
Table 1: Share of contract types, first quarter 2022. Source: SSB, 2022.	24
Figure 9: Daily spot prices by Norwegian zones, first quarter 2022. Source: NVE, 2022.	25
Figure 10: Cost of electricity for households in Southern Norway, Q1 2020-22. Source: NVE (2022).	27
Table 2: Share of contract types, and typical energy bills, January 2021. Source: ACM (2021).	30
Table 3: Average household cost components, January 2021 and 2022. Source: ACM (2021,2022f).	31
Figure 11: Average energy costs for households EUR/year, 2018-2022. Source: CBS own calculations.....	32
Figure 12: GB wholesale gas prices, forward delivery, weekly average. Source: Ofgem.	36
Figure 13: GB wholesale electricity prices, forward delivery, weekly average. Source: Ofgem.....	37



ABOUT CERRE

Providing top quality studies and dissemination activities, the Centre on Regulation in Europe (CERRE) promotes robust and consistent regulation in Europe's network and digital industries. CERRE's members are regulatory authorities and operators in those industries as well as universities.

CERRE's added value is based on:

- its original, multidisciplinary and cross-sector approach;
- the widely acknowledged academic credentials and policy experience of its team and associated staff members;
- its scientific independence and impartiality;
- the direct relevance and timeliness of its contributions to the policy and regulatory development process applicable to network industries and the markets for their services.

CERRE's activities include contributions to the development of norms, standards and policy recommendations related to the regulation of service providers, to the specification of market rules and to improvements in the management of infrastructure in a changing political, economic, technological and social environment. CERRE's work also aims at clarifying the respective roles of market operators, governments and regulatory authorities, as well as at strengthening the expertise of the latter, since in many Member States, regulators are part of a relatively recent profession.



ABOUT THE AUTHORS



Professor Nils-Henrik von der Fehr is Head of the Economics Department at the University of Oslo. In addition to numerous academic positions, Nils-Henrik is a member of the European Energy Institute, and served as a Member of the Dutch Electricity Market Surveillance Committee. His research interests include microeconomics, industrial economics, regulation and competition policy.



Catherine Banet is a Professor at the University of Oslo, Faculty of Law, Scandinavian Institute of Maritime Law, Norway. Her fields of expertise include energy law, environmental law, competition law and EU/EEA law. Her research focuses on renewable energy, support schemes and alternative financing models, energy market design, energy infrastructures regulation, climate change mitigation measures, including carbon capture and storage (CCS).



Michael Pollitt is Professor of Business Economics at the Judge Business School, University of Cambridge. He is an Assistant Director of the university's Energy Policy Research Group (EPRG) and a Fellow and Director of Studies in Economics and Management at Sidney Sussex College, Cambridge. His research interests include productivity analysis, measurement of economic reform impacts and future electricity and carbon market design and regulation.



Chloé Le Coq is Professor of Economics at the University Paris-Panthéon-Assas, a Research Fellow at the Stockholm School of Economics and a DIW fellow in Berlin. Her research interests include industrial organisation and behavioural economics, especially topics related to energy markets, anti-trust policy and social innovation.



Professor Bert Willems is a CERRE Research Fellow and an Associate Professor of Economics at the University of Tilburg. He is also a Research Fellow of the CentER for Economic Research, Tilburg University, and a Senior Member of Tilburg Law and Economics Center (TILEC). He is also vice-chairman of the Benelux Association for Energy Economics (BAEE).



1. INTRODUCTION

The rise in the cost of energy has put retail markets under considerable stress. The most obvious implication is the increase in consumer bills, but, more fundamentally, retail markets have been shaken in their foundations. Contracts have been broken, suppliers¹ have gone bankrupt and governments have rushed in strong measures to support the market and compensate those who have been adversely affected.

This unprecedented increase in energy prices, caused by external shocks, was difficult to predict. Therefore, it may seem unfair to criticise anyone for being ill-prepared, be it consumers on variable-price contracts, suppliers that had not hedged their exposure to wholesale prices, or regulatory authorities that were unprepared for a market failing to deliver what it was supposed to.

It may also be too early to draw conclusions about the need for changes to retail market design. Surely, we will be better prepared when the next shock comes: more consumers will be on fixed-price contracts, suppliers will, to a greater extent, hedge their positions and regulatory authorities will have devised better tools for handling market failures and protecting vulnerable consumers.

Although we are still living this crisis and many questions remain open, enough time has passed to draw preliminary lessons. The crisis has mobilised European Union (EU) policymakers and national governments since the autumn of 2021. Throughout winter, and with the additional shock of the Ukrainian war, governments stepped in with various national-level measures aimed at cushioning the short-term impact of the price hike, and have turned to European institutions to request guidance on how to address the crisis or, at times, to request exemptions to the single market's rules or formulate criticisms of its design and rules.

The European Commission first responded with a “toolbox” published in October 2021, reminding which types of measures could be taken in line with existing EU legislation. This was followed by an assessment of the EU wholesale electricity market design by the Agency for the Cooperation of Energy Regulators (ACER), two “REPowerEU” communications in March and May, and the Commission's announcement that it would look into possible updates to wholesale market design.

Much of the political debate has been concerned with the design and performance of energy wholesale markets. This research project focuses on both wholesale and retail markets, but in this paper we limit our attention to retail markets. This is not to suggest that wholesale and retail markets can be analysed in isolation; clearly there are important linkages between the two, and the design of either may have important implications for the other. However, many issues in retail markets can be analysed without taking direct account of the wholesale market, and for analytical convenience we therefore concentrate on retail markets here. We will return to the wholesale market and draw out in detail the linkages between various markets in further publications.

¹ Although the term “retailer” is often used, throughout we use the term “supplier” for those involved in the supply of retail services. This is consistent with the usage in EU legislation.



Although prices have increased all over Europe, the impact of the price shock and the reaction by the regulators and governments at national level have differed. This can to a large extent be explained by differences in the design and regulation of the retail markets. Some retail-market elements seem to have worked as intended while others did not. In some markets, the overall design appears consistent, while in others it does not. By comparing experiences across retail markets, we can learn how different designs performed under the test.

This is not to suggest that there exists one ideal retail market design. European countries differ so much – in terms of energy mix, market structure and political priorities – that it is unlikely that any one design would be ideal for all countries. Nevertheless, lessons can be learnt across countries that may help improve the design of individual markets.

In this paper, we present our initial take on these issues. In particular, we aim to cast light on the following questions:

- How well have European retail electricity markets been coping with the current energy crisis? How have governments responded to increasing prices?
- What short-term measures can governments take to soften the impact of high energy prices?
- What long-term measures can governments take to protect consumers from high energy prices?
- What should be the role of the EU vs. Member States? What legal constraints are imposed by EU directives and regulations?
- Do we need to regulate the risk exposure of suppliers? What are the options for doing this?

The paper is organised as follows. We first provide a brief, general discussion of energy retailing. We then present four country experiences – France, Norway, the Netherlands and Great Britain. Based on these experiences, we subsequently attempt to draw some more general lessons before concluding with a discussion of opportunities and challenges going forward. We will further explore these in forthcoming work.



2. RETAILING IN ENERGY MARKETS

Energy retailing includes a range of services, including selling energy and offering hedging possibilities, as well as, the sale of energy equipment, advice on energy efficiency, boiler maintenance and other services². Retailing also includes aggregation³. In practice, retailers represent the interface between final consumers and the energy value chain.

At the core of retailing is the activity of collecting payments from consumers and transferring them to producers or generators, possibly via wholesale.

In electricity or gas networks, it is not possible to physically link individual producers and consumers in any meaningful way. Generators are supplying energy at their points of connection and consumers are taking energy at their connection points; it is as if generators are pouring energy into a common pool, and consumers are drawing energy out of it. It is impossible for any specific generator to say which consumers physically took its energy, or for a consumer to say which generators supplied them physically.

This implies that, unlike in most other industries, retailing does not include handling the good being produced and consumed. Electricity and gas flow through the networks from generators to consumers irrespective of how retailing is undertaken, including who is responsible for it and the specificities of retail contracts. In particular, retailing does not encompass the quality of energy supply, such as interruptions, composition of gas and frequency of electricity.

Retailing consists of writing contracts, collecting payments and paying wholesalers or generators, as well as dealing with customers who do not fulfil their contractual obligations, including not paying their bills. Retailing requires matching the payment streams from consumers to the revenue streams of wholesalers or generators, i.e. ensuring that the energy consumption of retail customers is backed by supplies from wholesalers or generators. Retailing therefore necessitates access to metering data on consumption. To the extent that payment streams from retail customers are not perfectly aligned with the streams of payments to wholesalers or generators, retail also needs to handle liquidity, including risk⁴.

2.1. Contracts

Retail contracts may differ in a number of dimensions, including whether payments are due before or after consumption takes place, the frequency of payments and what happens in the case of non-

² Directive (EU) 2019/944 of 5 June 2019 on common rules for the internal market for electricity (Electricity Directive) defines supply as "the sale, including the resale, of electricity to customers (Article 2(12)).

³ Retailing services can also include aggregation. Pursuant to the Electricity Directive, aggregation means "a function performed by a natural or legal person who combines multiple customer loads or generated electricity for sale, purchase or auction in any electricity market".

⁴ For an early discussion of retailing in electricity markets, see Littlechild (2000) and Joskow (2000).

⁴ Directive (EU) 2019/944 of 5 June 2019 on common rules for the internal market for electricity (Electricity Directive) defines supply as "the sale, including the resale, of electricity to customers (Article 2(12)).

⁴ Pursuant to the Electricity Directive, aggregation means "a function performed by a natural or legal person who combines multiple customer loads or generated electricity for sale, purchase or auction in any electricity market".



payment. Perhaps the most important dimension is the extent to which retail prices vary over time in response to wholesale prices.

At one end of the spectrum are "real-time" retail prices that are directly linked to underlying short-term wholesale prices; an example is so-called "spot-price" contracts, where the retail price equals the spot price at any given time (typically, 15 minute, half-hourly or hourly period), possibly with a mark-up. At the other end of the spectrum are fixed-price contracts with durations of one or more years, where the retail price remains fixed over the contract period. Contract prices may also be adjusted at shorter intervals or be linked to average wholesale prices over a certain period, and there may be ceilings (and floors) limiting the extent of price variation over the contract period.

The Electricity Directive provides for harmonised provisions on retailing, notably free choice of supplier, basic contractual rights for final consumers, entitlement to dynamic electricity price contract, supplier of last resort and billing information. As we shall see below, the availability and uptake of different types of contracts vary considerably between countries.

2.2. Risk

Retail contracts that involve prices that do not vary as much as the underlying wholesale price provide retail customers with protection against price volatility. More precisely, such contracts move the price risk from customers to suppliers (who may choose to transfer it further). In particular, when energy is sourced from a wholesale market where prices vary "continuously" and sold on retail contracts in which prices are adjusted infrequently, suppliers face varying or risky net revenues. This risk may be hedged by entering into wholesale contracts with price developments that match those of the retail contracts; sometimes this is done by the use of financial derivatives.

Energy retailing therefore shares many of the characteristics of financial intermediation. In particular, an important part of energy retailing is handling liquidity and risk. This involves managing the maturity mismatch of assets and liabilities, dealing with consumer switching, counter-party risk, and predicting risk premia for different contract durations and transmission costs. As will be evident from the country studies below, this is also where some suppliers failed; they had not taken the necessary measures to handle the liquidity and financial risk they were facing. The fact that energy retailing resembles financial services may have implications for how the activity should be regulated.

2.3. Competition

The economies of scale are not especially large in energy retailing. Many of the costs are fixed, such as those of administration, computer systems and (where relevant) marketing, but these are relatively modest⁵; it does not take very much to set up a retailing business⁶. In the EU, the average number of

⁵ Short Term Energy Market Interventions and Long Term Improvements to the Electricity Market Design, COM(2022) 236, 18 May 2022.

⁵ The economies of scale in marketing and the building of reputation may in some cases be considerable. Many markets for consumer products (eg. banking and telecom) are dominated by a small number of larger consortia that often operate a number of brands. Notwithstanding the fact that in the energy retail sector there are often many participants, a considerable number of European markets are highly concentrated (ACER, 2021).

⁶ The easiness of entry in the retail market depends on the liquidity of the wholesale market, which varies across Europe.



nationwide suppliers in electricity is above 50 – slightly less so in gas – many of which are relatively small. As such, retailing is suitable for competition.

Competition can be over multiple dimensions. Most importantly, there may be competition over the mark-up of retail over wholesale prices. Competition could also be over the characteristics of the retailing contracts, such as the billing or payment scheme, price determination and amount of hedging.

In practice, competition often takes place over whether energy products are offered in stand-alone contracts or in contracts that bundle different products; in many countries, it is common to offer gas and electricity in a single contract. Energy may also be bundled with other products, such as mobile telephony. Some suppliers offer additional products or services, such as electric appliances or help to reduce energy consumption (such as "smart" energy solutions).

A specific phenomenon in the electricity market is the ability of suppliers to market specific "types" of energy, notably "green electricity" generated from renewable energy sources. What these suppliers do is bundle electricity as such with contributions or donations to specific forms of generation. As pointed out above, suppliers have no way of guaranteeing where the energy consumed by their customers is actually generated, but through the use of tracking mechanisms, such as guarantees of origin (GOs), it is possible to direct payment streams to generators of renewable energy, thereby adding to the revenues of these generators⁷.

The guarantees inform consumers about where their payments will go ("consumer empowerment") and help obligated consumers to comply with disclosure obligations, if any⁸. The revenues generated by the sale of guarantees of origin as part of the electricity offer will support generators who have been given the right to sell such guarantees. This is largely done through suppliers, who thereby can give consumers an opportunity to contribute to renewable generation. The guarantees are sold at a premium, with local or domestic generation typically receiving higher premia. While it is not entirely clear how much the guarantees of origin contribute to the development of renewable energy, they have become quite popular in some countries (Mulder and Zomer, 2016; Hulshof, Jepma and Mulder, 2019)⁹. Additionally, the reinforced EU requirements concerning disclosure obligation and the use of guarantees of origin are contributing to harmonised practices on electricity disclosure in billing to consumers.

The evidence on how well competition has worked in energy retailing is mixed. In some places, it seems to have worked quite well (see e.g. von der Fehr and Hansen, 2010; Mulders and Willems,

⁷ The Renewable Energy Directive (EU) 2018/2001 (REDII) defines a guarantee of origin as "*an electronic document which has the sole function of providing evidence to a final customer that a given share or quantity of energy was produced from renewable sources.*" (Art. 2). A guarantee of origin is a so-called Energy Attribute Certificate (EAC). The regime for guarantees of origin has been progressively reinforced in secondary EU legislation, where the Electricity Directive defines an obligation to ('shall') use guarantees of origin to comply with the disclosure obligation when electricity is generated from renewable energy sources, except in a few circumstances (Banet, 2021).

⁸ The Electricity Directive (EU) 2019/944 defines the 'electricity disclosure' obligation as part of the billing information. Note that tracking of generation attributes can also apply to gases or heat. However, there is no corresponding disclosure obligation for other energy carriers than electricity in EU law, corresponding to a general 'energy disclosure' requirement.

⁹ The impact on the energy mix would be strong in the case that so many consumers signed up to such contracts that their combined consumption exceeded the available output or capacity of the specific type of energy.



2018), while in other places the experience has been less favourable. Even in markets where it has worked well (such as Great Britain), it has been subject to detailed criticism. A common criticism has been a lack of market transparency, or difficulties in switching, with the consequence that consumers are not able to take sufficient advantage of the opportunities that the market has to offer and hence end up with a worse deal than they could have got (Giulietti, Waddams Price and Waterson, 2005; Giulietti, Waterson and Wildenbeest, 2014). According to ACER (2021), the most common reasons for consumers to complain about suppliers are invoicing, billing and debt collection.

The overall importance of competition in retail for consumer costs of energy is limited by the fact that energy bills to a large extent contain items over which suppliers have no influence. According to ACER (2021), in 2020 31% of the final price to European electricity household consumers consisted of the energy component ("contestable charges"), while 69% consisted of non-contestable charges such as network costs, taxes, levies and other charges. For gas, the energy component was somewhat higher at 44%, while other costs amounted to 56%. There are considerable differences across countries, depending on energy supply and national energy and taxation policies; in electricity, the energy component varied from 14% in Denmark to 75% in Hungary; in gas, the energy component varied from 21% in Germany to 73% in the Czech Republic.

Although the contestable charges make up a limited part of energy bills, retail mark-ups are not insignificant in many countries. ACER (2021) provides information on average annual differences between retail and wholesale prices for household consumers; in 2020, this was on average 20 euros/MWh for electricity and 13 euros/MWh for gas. Figure 1 shows the variation across countries; for example, the mark-ups in electricity were above 65 euros/MWh in Great Britain, at 30 euros/MWh in the Netherlands, 25 euros/MWh in France and 15 euros/MWh in Norway (the negative mark-ups in some countries are due to regulated prices being set below wholesale energy costs). Mark-ups in gas were generally lower, around 15 euros/MWh in both France, Great Britain and the Netherlands.

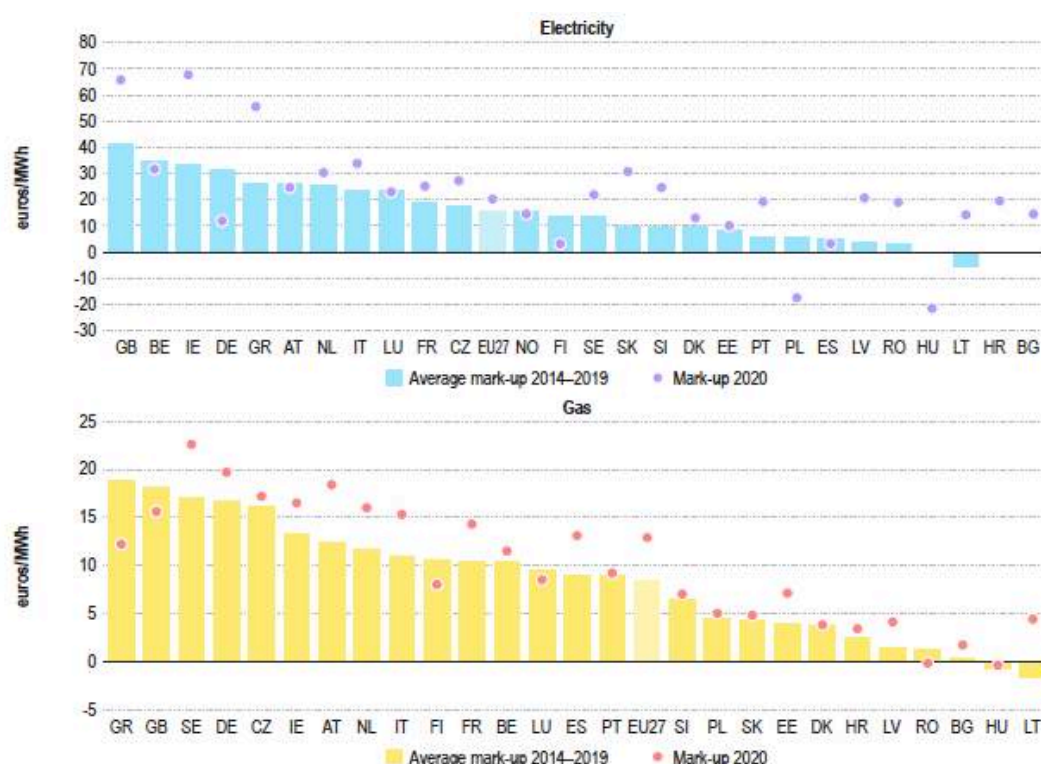


Figure 1: Average annual mark-ups for household consumers, euros/MWh. Source: ACER (2021)

Retail competition is not only about lowering the mark-up between the retail price and the wholesale prices through competition, but also about innovation in contract types, educating consumers about their energy consumption through marketing, and providing complementary services. A well-functioning supply market has positive spill-overs in the wholesale market. Vertically integrated suppliers will compete more fiercely in the wholesale market¹⁰.

2.4. Regulation

Naturally then, much of the regulatory effort in energy retail markets has been directed at free choice of supplier, transparency and consumer protection. The EU and national legislation contain rules on how electricity supply contracts should be marketed, what information consumers should be offered, and how suppliers must inform their customers about price changes or other contractual adjustments¹¹. This is accompanied by a right to switch supplier and access to comparison tools¹². Sometimes there are explicit rules on the contractual content (e.g. standardised contractual terms) and invoicing or billing. In some countries, regulatory authorities provide information on available suppliers and their products. EU legislation also requires that effective, independent out-of-court

¹⁰ The procurement strategies of Regulated public utilities is often plagued by a lack of long-term hedging. If wholesale prices drop those long-term contracts look like business mistakes ex-post.

¹¹ For harmonised EU rules for electricity supply contracts, see the Electricity Directive, Art. 10 – Basic contractual rights.

¹² Electricity Directive, Art. 12 and 14, respectively.



dispute settlement mechanisms for all consumers are in place in case of disagreement. The Electricity Directive encourages moving toward dynamic electricity price contracts¹³, supported by the development of smart metering systems.

Regulation has also been directed at how consumers who find themselves without a regular supplier should be handled. Often this is addressed by the appointment of a "supplier of last resort", which is obliged to take on consumers in cases when their current supplier has had to leave the market, or when other suppliers refuse to deal with them. The Electricity Directive leaves discretion to Member States as to the adoption of a supplier of last resort requirement in the regime for universal services, as well as how to structure it¹⁴. In practice, most Member States have a form of supplier of last resort mechanism in place (ACER-CEER, 2018)¹⁵. In some countries, the supplier of last resort are other suppliers; in other countries, it is the local distribution company. If the supplier of last resort happens to be the sales division of a vertically integrated undertaking which also performs distribution functions, the unbundling requirement must be met¹⁶. The contractual terms of the "supplier of last resort", including the retail price, are typically regulated.

Retail market structure is subject to regulation. First, access to the retailing market can be regulated, with rules about who may, and who may not be involved in energy retailing. Then, the structure of companies involved in retail will be influenced by the unbundling rules that define which activities, between retailing and other energy market activities, that can or cannot be combined. Particular attention is paid to the separation of monopolistic activities, such as transmission and distribution, and competitive activities, such as production and supply. At one extreme, regulation may require that all retailing is done by one designated company, the so-called "single-buyer model" (this model is no longer present in the EU). All suppliers must be "in balance" at all times; that is, obligations to supply energy must be backed by access to the warranted resources, through ownership or contract.

Regulation may also encompass the terms on which energy is offered, specifically retail prices. Such regulation may provide limits on how often and by how much prices may be changed, or they may regulate price levels directly. Price regulation may be limited to specific groups of consumers or it may cover the entire market. Sometimes regulation requires that prices depend on the amount of energy consumed, with higher consumption levels being charged at higher prices. In specific circumstances, the EU legislation allows for public intervention in the price setting for the supply of electricity¹⁷.

Both primary and secondary EU legislation set certain restrictions on the extent to which national governments can intervene in electricity markets, including at the retail level. In order to guide the action of Member States in their response to high energy prices (emergency measures), the European

¹³ Electricity Directive, Art. 11 on entitlement to a dynamic electricity price contract.

¹⁴ Electricity Directive, Art. 27.

¹⁵ An exception is Finland, where consumers have to find suppliers themselves; however, suppliers are obliged to serve all customers irrespective of where they live or their financial status.

¹⁶ Electricity Directive, Recital (27).

¹⁷ Electricity Directive, Art. 5.



Commission published a so-called "toolbox" in October 2021 (EC, 2021). This was supported by two additional communications in March and May 2022 (EC, 2022a; EC, 2022b).

The national measures concerning the retail market that will be deemed compatible with EU legislation include direct income support to vulnerable end-users, financial support to companies (which could involve state aid elements) and targeted tax reductions. These measures are already enabled under current EU legislation (state aid rules, Energy Taxation Directive, retail price regulation in exceptional circumstances).

As a matter of example, Spain and Portugal made use of the existing flexibility left to Member States under the EU state aid rules to develop temporary support measures (until 31 May 2023) to lower the input costs of fossil fuel power stations (EC, 2022c)¹⁸. The aim is to reduce production costs and, ultimately, the price in the wholesale electricity market, to the benefit of consumers¹⁹. Such measures do of course carry a number of inefficiencies, including distortion of competition (internally and externally) and encouraging consumption in a period of scarcity.

¹⁸ The support takes the form of a payment that operates as a direct grant to electricity producers aimed at financing part of their fuel cost.

¹⁹ The measures were approved by the European Commission on 8 June 2022: State Aid SA. 102454 (2022/N) – Spain and SA.102569 (2022/N) - Portugal – Production cost adjustment mechanism for the reduction of the electricity wholesale price in the Iberian market.



3. COUNTRY CASE STUDIES

Before moving on to the case studies, we provide a brief overview of retail markets in Europe, including levels of consumption, prices, switching rates and extent of government price intervention. The information is drawn from ACER Market Monitoring Report 2020 (ACER, 2021) and therefore presents pre-crisis data.

The average household energy consumption across EU Member States was 3,570 kWh for electricity and 4,662 kWh for gas in 2019, but with considerable variation, both with respect to overall energy consumption and the relative importance of electricity and gas. Figure 2 shows the average consumption of household consumers of electricity and gas in different countries. Energy consumption is highest in Norway (15,065 kWh), where it consists almost entirely of electricity. At the other end of the spectrum is Latvia, with an average energy consumption of 3,518 kWh, split almost equally between electricity and gas.

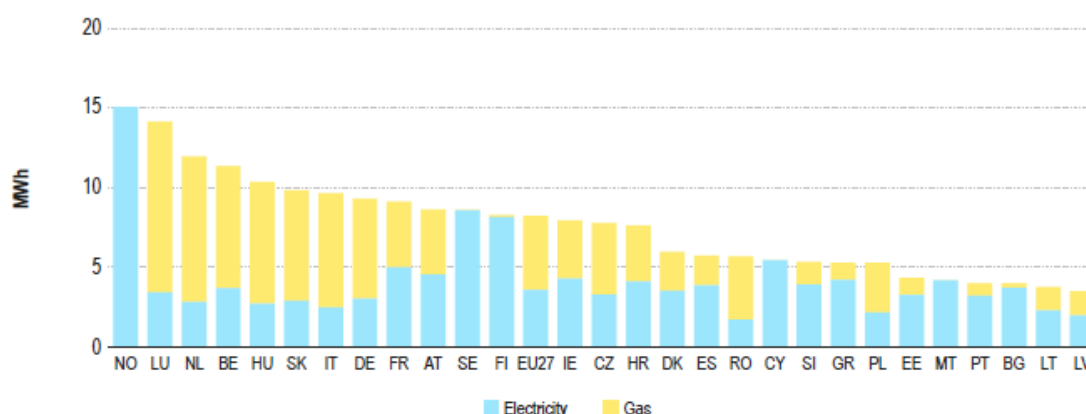


Figure 2: Average electricity and gas consumption, households, 2019. Source: ACER (2021).

Energy prices also vary considerably across Europe. Figure 3 shows final electricity prices and Figure 4 shows final gas prices, for households and industry, respectively. Prices vary considerably across Europe and across types of consumers. For example, household prices in Germany were three times as high as those in Bulgaria, while industry prices were four times higher in Denmark than in Lithuania. Price differences reflect differences in generation technologies, network costs, and taxation levels.

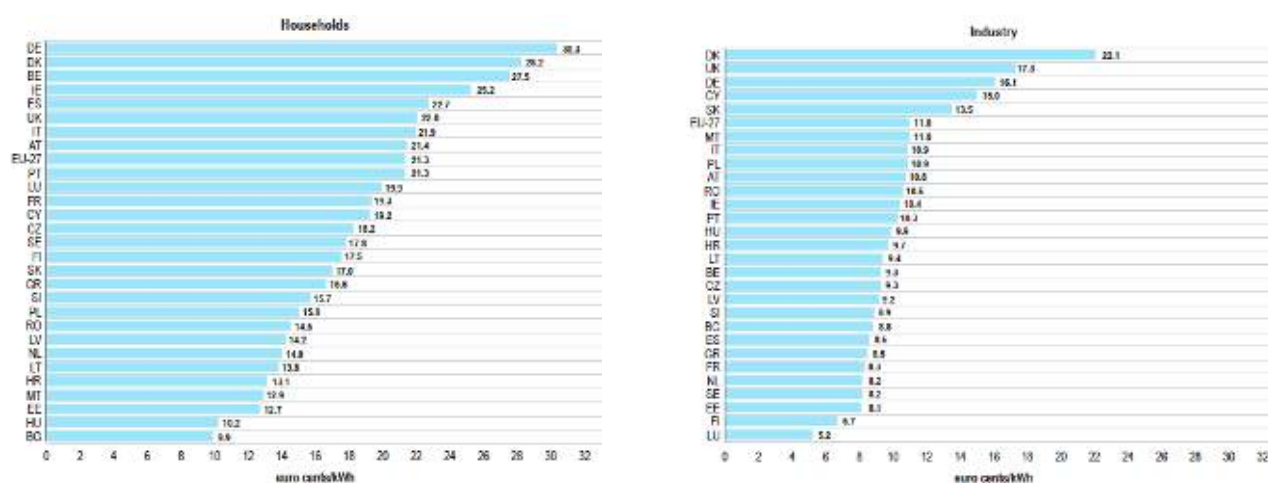


Figure 3: Final electricity price, 2020. Source: ACER (2021).

Prices are generally higher for the industry than for households, sometimes by considerable amounts. For example, in France, household electricity prices were more than double those of industry, whereas gas prices for households were almost four times as high as those of industrial customers.

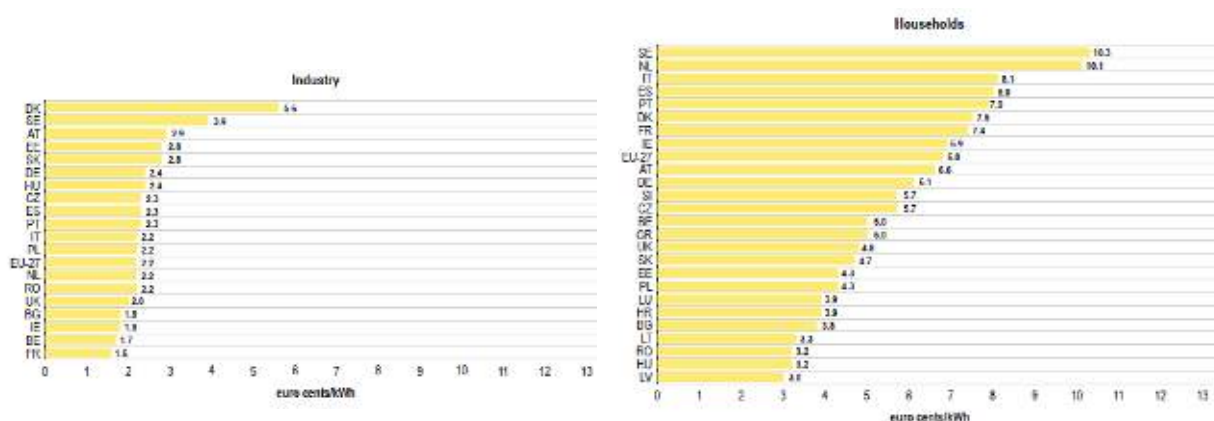


Figure 4: Final gas price, 2020, including network cost, and all taxes and levies. Source: ACER (2021).

Figure 5 shows rates of household consumers switching from one energy supplier to another, an indication of consumer activity and competition in the retail market. The switching rates were around 20% in Norway (electricity only), Belgium, Great Britain and the Netherlands. In a number of countries, switching rates were very low or negligible; many of these countries have tightly regulated retail markets.

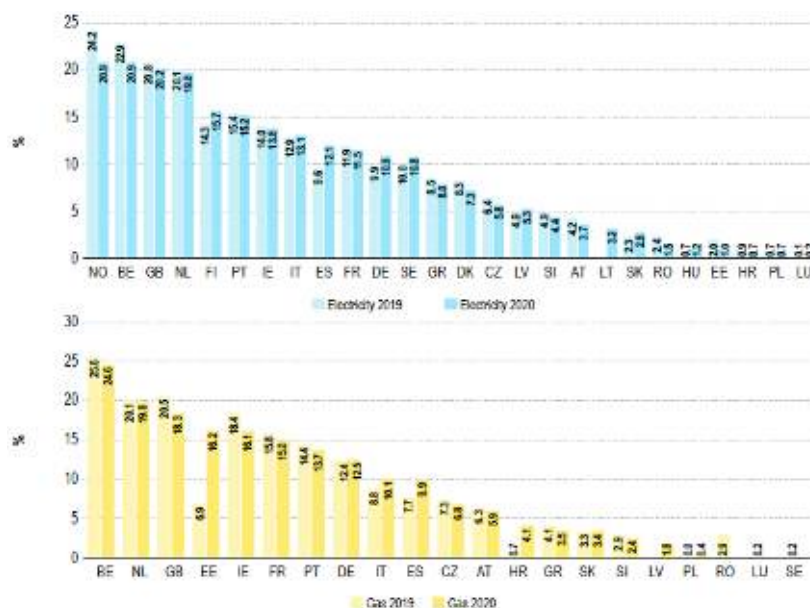


Figure 5: Household switching rates, 2019-2020. Source: ACER (2021).

Figure 6 shows that in 2020, 15 countries had some form of public price intervention to protect household consumers in the electricity market; 14 countries intervened in the gas market. In some of these countries – such as France, Great Britain, Greece, Latvia and Spain for electricity, and France, Great Britain and Lithuania for gas – interventions were restricted to vulnerable consumers. In the non-household market, such interventions are less common but did exist in nine markets for electricity and four for gas.

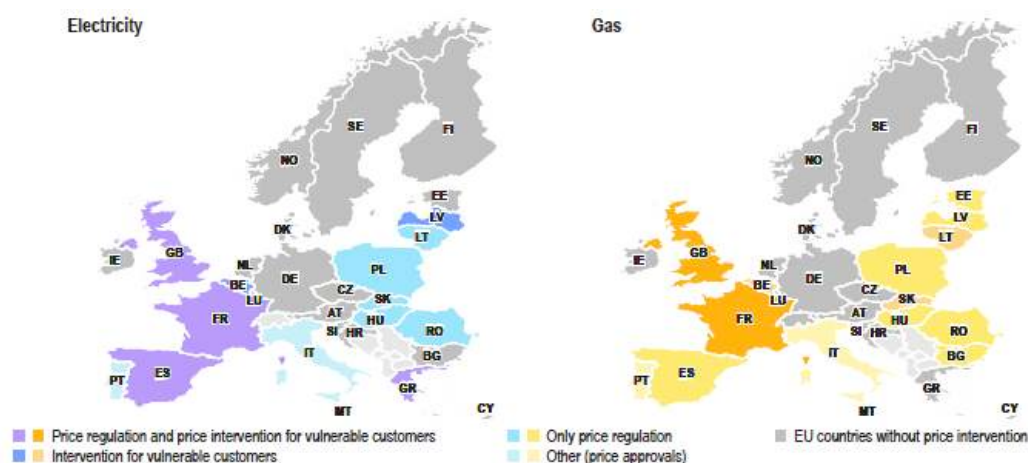


Figure 6: Price intervention, household consumers. Source: ACER (2021).



3.1. France

A mix of regulation and competition characterises the French retail market. Since the market's opening in 2007, the country's main electricity supplier EDF's dominant position is limited. In particular, households can buy electricity from EDF at a regulated price and alternative electricity suppliers get a share of EDF's nuclear energy at a relatively low fixed price. In the context of globally rising energy prices, the French government has taken some drastic support measures, setting a low cap on regulated tariffs, and forcing EDF to sell more electricity to its competitors at a below-market price. These measures have reached their primary objective; the regulated electricity tariffs will only increase by 4% in 2022, while the energy regulator, Commission de régulation de l'énergie (CRE), had predicted a 45% increase. However, these costly measures are not viable in the long run. Moreover, they may restrict EDF's investment strategy, foreshadowing the inevitable energy price increase due to rising CO₂ costs and a slowdown of the energy transition in France.

3.1.1. *The retail market*

The historically dominant incumbent EDF competes with more than 80 non-incumbent retail suppliers, known as alternative suppliers (e.g., Total Direct Energie, Engie and ENI). A hybrid market structure was implemented in 2011 to limit EDF's dominant position. Market players compete for the whole retail market, but small consumers can choose a regulated tariff and alternative suppliers have access to subsidised electricity capacity.

Residential and professional consumers (with a subscribed power level less than 36 kVA) can choose a regulated price, Tarif Réglementé de Vente (TRV), offered mainly by the incumbent EDF (and the local distribution companies (LDC) which supply 5% of residential consumers). The TRV is set twice a year by the French government and depends, among other things, on electricity transmission and wholesale market prices.

The principle of reversibility makes it possible to switch from the regulated price to market offers and *vice versa* without limitation. Since December 31, 2015, medium and large professional consumers (with a subscribed power level greater than 36 kVA) cannot access the regulated tariffs.

The regulated tariff works as a reference price for the entire market. Most alternative electricity suppliers offer discounts on the regulated electricity tariff (reductions range from 2% to 12%). Other suppliers offer the option of locking in electricity prices (or fixed price offers) for a specific duration (from 1 to 4 years). Still, the regulated tariff is used as a base. Like most other European retail markets, all suppliers (incumbent and newcomers) offer these non-regulated price contracts.

As illustrated in Figure 7, at the end of 2021 approximately 72% of consumption was supplied by non-regulated price offers, of which 44% was from alternative suppliers.

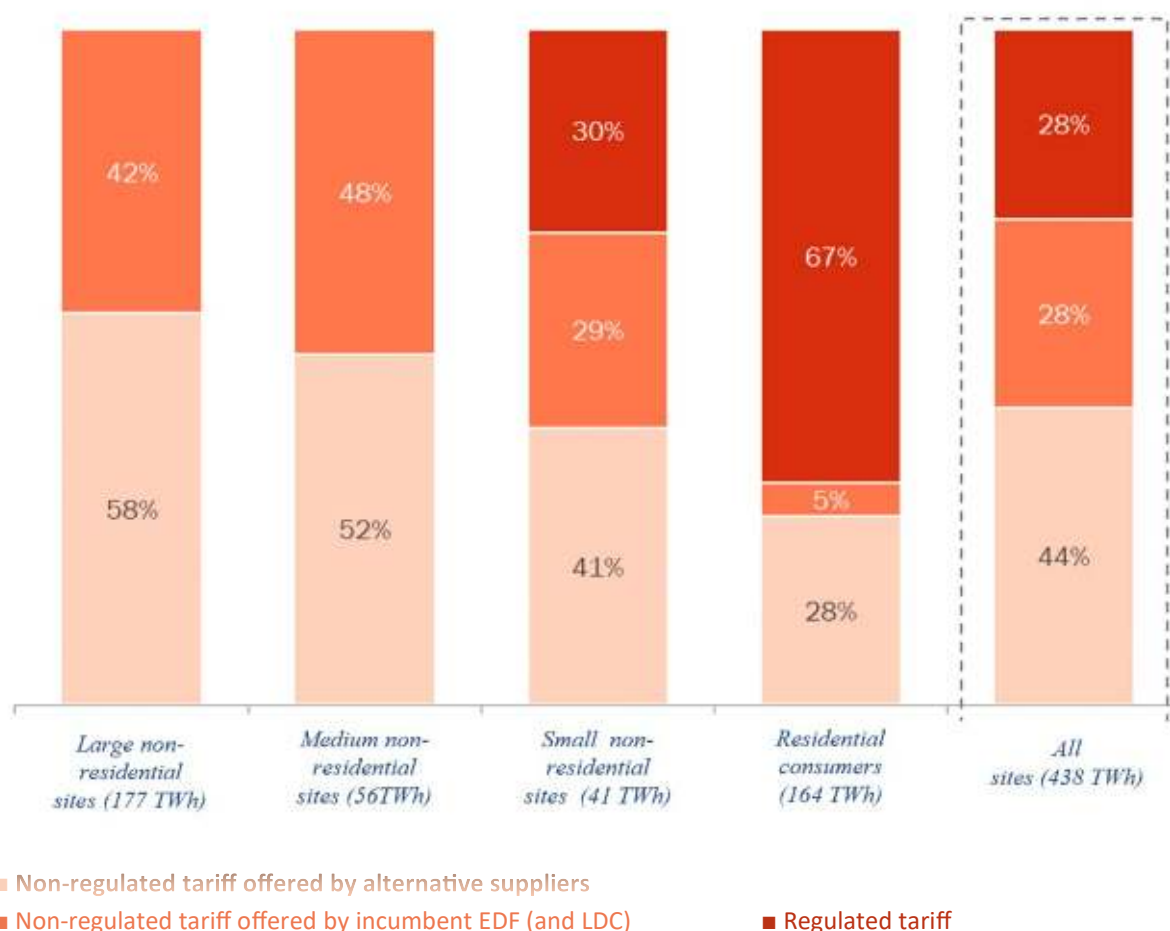


Figure 7: Annual consumption by type of supply as of December 31, 2021. Source: CRE (2021).

To ensure fair competition between asymmetric market players, the regulated access to nuclear electricity allows alternative electricity suppliers to purchase electricity produced by EDF's nuclear power plants at a regulated price for volumes determined according to the consumption of their customer portfolio in France, within the limit of a maximum overall volume. This so-called ARENH (Accès régulé à l'énergie nucléaire historique or Regulated Access to Incumbent Nuclear Electricity) mechanism has been in place since July 1, 2011, and will continue until 2026. Until February 2022, the total capacity allocated to the alternative suppliers could not exceed 100 TWh over a year, i.e., approximately 25% of the production of the historical nuclear power plants, and the price cap was 42 euros per MWh.

As illustrated in Figure 8 (which displays requested vs. available ARENH volumes), the ARENH volume was not always requested by the alternative suppliers. If the price cap exceeds the wholesale electricity market price, none of the suppliers exercise the ARENH option. This was the case in 2016 when the demand for ARENH was zero. However, since 2019 the total demand of suppliers has exceeded the limit set by the public authorities. In this case, the energy regulator applies a supply



reduction coefficient (taux d'écrêtement) to each supplier, taking into account the competition in all retail market segments.

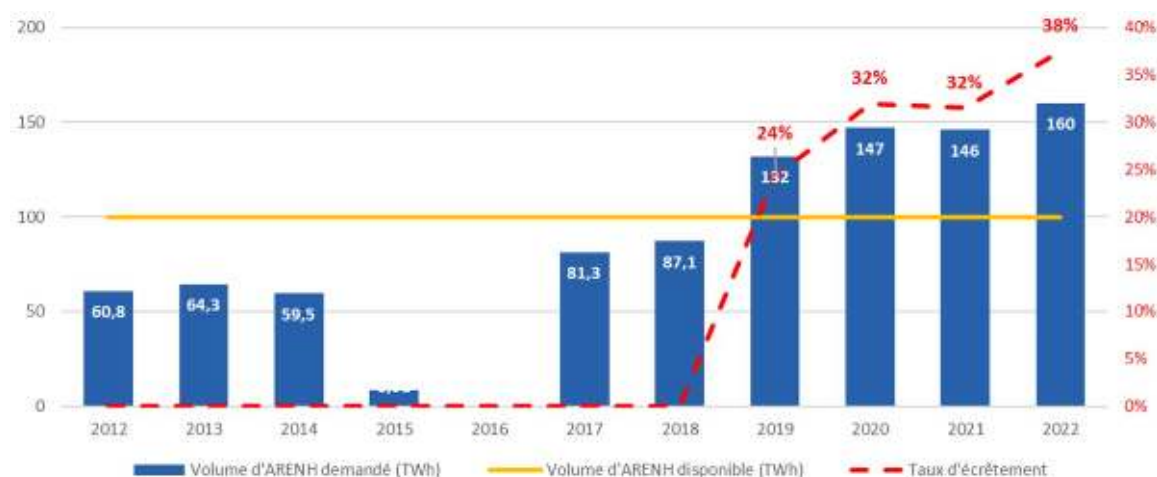


Figure 8: Requested ARENH volume, 2012-2022. Source EnergiesDev (2022).

The ARENH limit was nearly reached in 2017 and 2018, and exceeded in 2019. Since the energy price crisis, the ARENH volume requested by the alternative suppliers was consistently well-above the limit. Since 2017, alternative suppliers (who are not generators) have to buy more considerable capacity on the wholesale market at a price above the ARENH price.

However, despite non-incumbent players facing larger supply costs, their market shares kept increasing. They covered 15.5% of the residential consumer segment in 2017, 19.5% in 2018, and 23.4% in 2019. Note however that 23 million of French households are on EDF's 'regulated' tariffs. Alternative suppliers served 39% of the non-residential consumer sector 2017, 43% in 2018, and 46% in 2019.

3.1.2. Government response

The government responded to the rising prices by a so-called "Bouclier tarifaire" (or tariff shield policy), which limited the increase in France's electricity prices to 4% from February 1, 2022, onwards. This limited price increase is completely disconnected from the 45% regulated price (TRV) increase initially forecasted by the French energy regulatory commission (CRE, 2021).

Two drastic measures have been implemented to limit the increase in electricity prices. First, EDF's obligation to supply competing suppliers with cheap electricity has been reinforced. By April 1, 2022, the maximum of 100 TWh of electricity produced by EDF's nuclear power plants which is available to alternative suppliers was increased by 20%, obliging EDF to sell 20 TWh more electricity to its competitors.

Second, the government has nearly removed the domestic tax on final electricity consumption, drastically cutting the tax from €22.5 per MWh to €0.5. Half of this decrease is due to a tax cut, and half to a postponement to 2023 of part of the rate increase applicable in 2022.



3.1.3. Conclusions

Limiting the increase in electricity prices had a direct and immediate effect on the purchasing power of French consumers. The price increase will be limited to approximately €38 per year for a residential consumer and €60 per year for a professional consumer. In the absence of intervention, a residential consumer (or a small enterprise) would have faced an increase of €330 (€540) per year (CRE, 2021). In addition, the tax cut applies to all customers (regulated electricity tariff and market offers, regardless of the electricity supplier). Finally, increasing the ARENH volume with a price cap at below-market price has allowed alternative suppliers who do not operate nuclear power plants to sell electricity at “competitive” prices. Indeed, the number of alternative suppliers was not reduced drastically. Only a few suppliers went bust (e.g. Hydroption, Bulb Energy), left the market (e.g. Cdiscount énergie, GreenYellow) or were bought by competitors (Plüm Energie). Nevertheless, the market is less liquid, with the number of offers divided by half and almost no more contract prices indexed to the regulated gas and electricity tariffs.

However, this tariff shield policy also comes at a cost. The energy tax cut amounts to a total cost of approximately €8 billion for the government. The price caps limit EDF's revenue. Indeed, EDF's lost revenue is estimated at €10 billion and is likely to increase further. The energy regulator (CRE) has recently (June 1, 2022) recommended increasing the maximum volume that EDF has to make available to competitors to 130 TWh at a price no higher than €49.50 per megawatt-hour for the entire volume.

There are concerns that this policy will restrict EDF's nuclear investment strategy and slow down the energy transition. It is worth noting that on July 6, 2022, the French government announced its intention to nationalise EDF in order to “succeed” in the energy transition²⁰.

In addition, the policy entails uncertainties. The government announced on January 13, 2022, that it would implement a control system to ensure that the additional ARENH volume granted to each supplier is properly reflected in the prices offered to consumers. This system has yet to be implemented and the extent to which the discounted price will be passed on to consumers remains to be seen.

Some analysts fear that the policy results in a “catch-up effect” to compensate for current losses, whereby EDF is compensated through higher electricity prices when/if the market price becomes more stable.

Finally, as with any price control, the price signal is distorted, thereby not providing consumers with an incentive to adapt their electricity consumption up or downward in reaction to market dynamics. In the context of the needed energy transition, this measure might be counterproductive in the long run.

²⁰ <https://www.euractiv.com/section/energy-environment/news/french-move-to-nationalise-edf-reopens-restructuring-debate/>



A slightly different cost-benefit analysis could be made for the retail gas sector. Like the retail electricity market, the incumbent Engie faces alternative suppliers (which account for 22% of the residential customer segment and 65% of the non-residential customer segment). The government has introduced a tariff shield and frozen gas prices. Engie's regulated gas tariffs are blocked since November 1, 2021, (and until December 31, 2022) at the level of October 2021 tariffs.

Contrary to the retail electricity market, government intervention had much less impact. First, only 28% of residential customers currently benefit from this tariff (i.e. representing only 7.5% of national gas consumption). Second, the regulated tariff will disappear on July 1st 2023, and customers are already encouraged to switch to market price contracts. Additionally, half of the customers are on fixed-price contracts, where more than 67% have 3- or 4-year contracts. Finally, Engie has no obligation towards its competitors.

Compared to the electricity market case discussed above, the benefits but also the costs of government intervention are lower. Only a small share of customers is on regulated tariffs and can benefit from the frozen price. In addition, many customers with fixed-price contracts are already protected from market price fluctuations (at least over the contract's duration) and will not be impacted by setting a cap. The government intervention on purchasing power might be relatively small. However Engie, contrary to EDF, has no “selling” obligation so alternative suppliers rely exclusively on the wholesale market and a significant share of customers are on variable spot price. The intervention is also less costly in terms of market competition and demand response.



3.2. Norway

In Norway, the retail market has been quite resilient to the price spike, in the sense that the market has continued to operate as usual and suppliers have generally not experienced serious financial difficulties.

The main reason for this resilience is that most consumers are on spot- or variable-price contracts – i.e. where retail prices are directly or indirectly linked to wholesale prices – and for these customers suppliers bear no real price risk. For consumers who are on fixed-price contracts, or contracts with some sort of price ceiling, suppliers appear to have hedged sufficient parts of their risk, or have been sufficiently solid, to avoid financial difficulties.

As a consequence, the public debate and main political concern have concentrated on the high consumer prices.

3.2.1. *The retail market*

In Norway, gas is not used much, there are no networks serving retail consumers, and hence not really a gas retail market. Below, attention is concentrated on the electricity market.

Suppliers need a licence to trade in electricity ("omsetningskonsesjon"). If the supplier has a link to a network company, the retailing business must be kept organisationally separate (separate management and accounts); the retailing business must also be run under a different name and logo than the network business, and network companies must not discriminate between their own retailing business and other suppliers. Retailing may be integrated with generation, and often is.

By June 2022, there were 279 companies with a licence to trade in electricity (nve.no). Of these more than 100 were active in retailing. In March 2022, on average the largest supplier in each distribution area had a market share of 64.9% of household consumers and 60.6% of industrial consumers. The largest supplier is often linked to the local distribution company; hence – 30 years after the market was opened to competition – it seems that the local supplier still has a competitive advantage. The numbers exaggerate the degree of concentration somewhat, as the average is unweighted and concentration tends to be especially high in the smaller of the more than 120 distribution areas. In the Norwegian market overall, the five largest suppliers have a combined market share of 65%.

Meters allowing for a registration frequency of 15 minutes are mandatory for all consumption metering points. Metering values are kept at a data hub ("Elhub") which is accessible to suppliers on non-discriminatory terms. The format and content of invoices are regulated. In many cases, distributors and suppliers have agreed to a common invoice for network tariffs and energy costs.

Retailing contracts are not regulated, but The Norwegian Consumer Authority ("Forbrukertilsynet") has, in cooperation with the industry, developed a "standard" contract that is often used. Suppliers are obliged to report their contractual terms, including price per kWh and any fixed payments, to the contract comparison site of the Norwegian Consumer Council ("Forbrukerrådet") (strompris.no). Suppliers are obliged to inform their consumers directly about changes in contractual terms, including price.



When a consumer signs up with a new supplier, the supplier is responsible for terminating any previous contract on behalf of the consumer and informing the relevant distribution company of the new contract. A new contract is typically made effective within two weeks. In 2021, 24.1% of household consumers and 9.1% of industrial consumers switched suppliers.

A consumer who is without a retailing contract will be supplied by the relevant distribution company but at terms so that "the consumer is given an incentive to obtain a regular retailing contract"²¹.

There are essentially three categories of contracts – spot price, variable price and fixed price. Spot price is directly linked to the underlying wholesale price, with a fixed and/or variable mark-up set by the supplier²². With a variable price the consumer is initially offered a given price that is subject to changes; the supplier has to inform customers about any such changes at least two weeks before they take effect. Fixed price is typically offered with a duration of one, two or three years. Hybrid forms of contracts also exist, such as spot price combined with a price ceiling.

Table 1 shows that three-quarters of household consumers were on spot-price contracts in the first quarter of 2022; among industrial consumers, the share was above 90%. Less than 5% of household consumers had a fixed-price contract; the share was even lower for industrial consumers (energy-intensive industries are on very long-term contracts).

Consumer group	Spot price	Variable price	Fixed price
Households	75.9%	18.9%	5.2%
Service industries	91.4%	4.9%	3.7%
Manufacturing industries (excl. energy intensive)	93.5%	3.2%	3.3%

Table 1: Share of contract types, first quarter 2022. Source: SSB, 2022.

3.2.2. Implications of the price spike

While Norwegian electricity prices have tended to be lower than elsewhere in Europe, they have now reached levels that have never before been seen in Norway (as may be seen from Figure 9 below, prices in Norway vary considerably, between seasons and years, to due to changes in temperature and availability of hydro resources). For consumers in the Southern part of Norway, the average

²¹ In the first six weeks price should equal the relevant spot market price plus a maximum of five øre/kWh (0.5 euro cent per kWh); thereafter the price should be increased so as to encourage the consumer to find a regular supplier, cf. forskrift om kraftomsetning og nettleiester (Bylaw on power trade and network services) §2-1a.

²² Since consumers are on hourly meters, this means they have an incentive to move consumption from high- to low-price periods.



energy price (excl. network tariffs and taxes) in December 2021 was almost ten times as high as in December 2020 and about five times as high as the average prices in the December months over the period 2016-2020.

Given that most consumers are on contracts where the price is either directly – as with spot-price contracts – or indirectly – as with variable-price contracts – linked to the wholesale price, suppliers have generally not been much affected. Some suppliers have attempted to get out of loss-making contracts in which prices could not be adjusted, sometimes by illegally breaking contractual terms. Some suppliers have also experienced substantial losses. But, all in all, it has been business as usual and the retail market has proven quite resilient to the price spike.

Figure 9 shows average daily spot prices in the first quarter of 2022 by price zone, as well as the range of price variation over the period 2000-2020. Prices are given in Norwegian kroner per MWh; the (approximate) corresponding price in euros is found by dividing by ten. The Norwegian spot market is divided into five price zones, where zones NO1, NO2 and NO5 cover the Southern part of the country where more than three-quarters of the population lives. Prices in these three zones have not differed much lately. Prices in the two zones NO3 and NO4, covering the Northern part of the country, have also been very similar. The price difference between North and South is caused by limits on the capacity of the North-South transmission lines.



Figure 9: Daily spot prices by Norwegian zones, first quarter 2022. Source: NVE, 2022.

Two features stand out from this figure. The first is the unprecedented high prices in the Southern part of the country. The second is the very low prices in the Northern part. Both of these features have been important in shaping the public debate.

In fact, there has been something of an uproar among the general public. The anger has mainly been caused by the high prices, but it was further fuelled by the unequal ways in which consumers were affected in different parts of the country and the increase in government revenues. The price differences across the country were essentially caused by capacity constraints on transmission lines, although geographical differences in precipitation and filling of hydro reservoirs also contributed. The fact that most Norwegian electricity generation is hydro-based and most hydro facilities are publicly owned, meant that most of the gain has accrued to local and central governments. Some observers have therefore likened the rise in consumer prices to an (unjustified) tax increase.



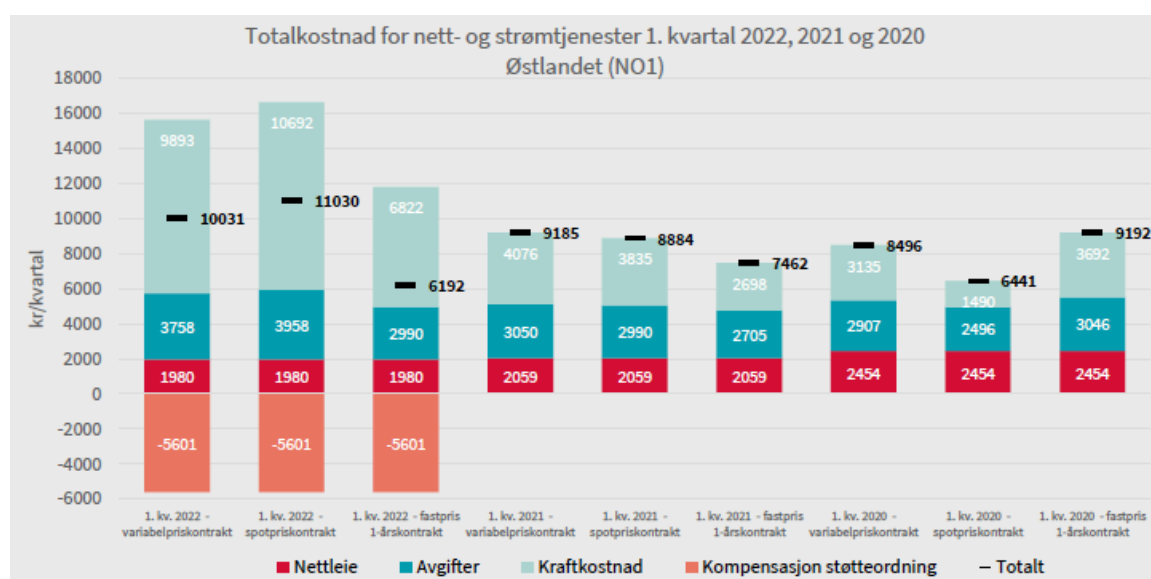
3.2.3. Government response

The government first responded by reducing the specific electricity tax and by introducing extraordinary cash payments to groups on various forms of income support. The electricity tax was halved, from 15.41 øre (1.5 euro cent) to 8.91 øre (0.9 euro cent) per kWh. Households eligible for housing benefits or on social support were given an extra payment in the winter months of 1,500 kroner (€150) per month; the scheme was later prolonged with monthly payments of 1,000 kroner (€100) from March to May and October and again 1,500 kroner (€150) for the coming winter months.

These measures were not considered enough and subsequently, a rebate to household consumers was put in place. In effect, the government pays 80% of electricity prices in excess of 70 øre (7 euro cent) per kWh for up to 5,000 kWh per month. The basis for calculation is the hourly spot price in the relevant zone. The scheme is administered by the distribution companies and financed by government transfers.

The support scheme has been debated in the Norwegian Parliament on a number of occasions, and it has gradually been made more generous, both with regard to the size of the refund and the coverage of the scheme. The support scheme is now extended to March 2023, with a support share of 90%, rather than 80%, from October to December.

Figure 10 shows the cost of electricity for a typical consumer with an annual consumption of 20,000 kWh²³ in the first quarters of 2020, 2021 and 2022 depending on their type of contract, variable price ("variabelpriskontrakt"), spot price ("spotpriskontrakt") and one-year fixed price ("fastpris 1-årskontrakt"). Cost is divided into network tariffs ("nettleie"), taxes ("avgifter"), energy cost ("kraftkostnad") and (the negative) support ("kompensasjon støtteordning"). Energy costs are estimated based on the average of prices in contracts offered during this period.



²³ Since heating is typically by electricity, and the climate is cold, annual consumption of electricity is high by European standards.



Figure 10: Cost of electricity for households in Southern Norway, Q1 2020-22. Source: NVE (2022).

The figure shows that for all types of contracts, energy costs have increased markedly, although less for fixed-price contracts than for variable-price and (especially) spot-price contracts. The (regulated) network tariffs have gone somewhat down over the period, while taxes have increased, mainly because of the value-added tax (the specific electricity tax was reduced, as explained above). Without the compensation scheme, electricity costs would have increased from the first quarter of 2021 to the first quarter of 2022 by (approx.) 70% for consumers on variable-price contracts, 90% for consumers on spot-price contracts, and 60% for consumers on fixed-price contracts. Due to the support scheme, actual increases were instead 10%, 24% and -17%, respectively.

The fact that consumers on fixed-price contracts actually had their electricity bills reduced, is due to the fact that the support scheme does not depend on the actual energy price that the consumer is paying, but on the spot price; hence support is the same for all contract types, at 5 601 kroner (EUR 560) over the three first months of the year. While having the virtue of being administratively simple, the support scheme has produced some odd results; some consumers have experienced negative energy bills due to a combination of a favourable contract price and high spot prices.

3.2.4. Conclusions

The unprecedented rise in wholesale electricity prices – which, due to the fact that Norwegian consumers are mostly on retail contracts with prices linked to wholesale prices, hit consumers directly – forced the government to take measures to reduce the cost of electricity. This was done, not by intervening in the electricity market as such, but by offering economic support linked to wholesale prices and financed by general taxation.

While the support scheme provided relief from the main concern of high energy costs for households, a more general debate about the organisation and design of the electricity market, both at the retail and wholesale level, has continued.

The fact that most consumers are on spot-based contracts is not for the lack of choice or experience of varying prices (cf. Figure 9). As explained above, other types of contracts, including fixed-price contracts for up to three years, are widely available, but have not been very popular. Some observers have argued that consumers have been misled by "experts", including the Norwegian Consumer Council, who have advised that spot-based contracts have been cheaper than other types of contracts. While not contesting the fact that over time spot-based contracts have been cheaper, the critics argue that when concentrating on average prices, one may forget the benefit of being insured from high prices. Some political parties on the left have suggested getting rid of the retail market altogether and instead offering electricity at fixed prices on government-backed contracts.

Much attention has been directed at the role of interconnectors to neighbouring countries and integration with the wider European market. Two new interconnectors – to Germany and the UK, respectively – have been widely blamed for the high prices and many have argued for a moratorium on further cables, as well as restrictions on the use of existing ones. Of course, this argument overlooks



the benefits of interconnection, including gains from trade and the opportunity to import in periods of insufficient availability of national hydro resources.

In addition, many have questioned the fact that, due to limits on internal transmission capacity, only the Southern part of Norway experienced high prices and did not benefit from the abundance of energy supplies in the North. For some, this also represents an unfortunate – and unfair – consequence of how the market is organised and operated, especially the use of internal price zones. Others have pointed out that transmission capacity is costly, and that the current market set-up contributes to efficient use of available resources on either side of the constraints.



3.3. The Netherlands

The Netherlands has weathered the high energy prices relatively well from a market design point of view. In 2021, it experienced six bankruptcies of smaller suppliers. Those suppliers offered fixed-price contracts and were insufficiently hedged. The social impact of those bankruptcies was relatively small, as there were no supply interruptions and it concerned about 2% of households, but it received significant media attention as consumers had to sign new contracts at higher prices. Changes in the regulation of the financial health of suppliers are likely²⁴.

The liquidity of the retail market dried up during the winter months and several suppliers were no longer accepting new customers. Liquidity has been restored for variable-price contracts, but fixed-price contracts are still hard to come by. This is probably due to regulation that limits the penalty that consumers pay for terminating their contract early, making it too risky for suppliers to offer those fixed-price contracts.

The current political debate has shifted towards softening the impact of high consumer prices and restoring the purchasing power of poorer households which might go beyond energy markets. There are also some wholesale market issues, such as the potential increase in the production in the Groningen gas field, the increasing cost of congestion management, and a temporary stop of network connections for large energy consumers.

3.3.1. *The retail market*

In the Netherlands, suppliers require a licence to operate, which is granted by the Authority for Consumers and Markets (ACM), and contains checks on the financial situation of the firms, the internal organisation of the company, the quality of retail contracts offered and organisation of energy procurement (ACE, 2022a). Those checks normally take place each year before the winter months, and the level of scrutiny might be based also on complaints received by ACM or in response to structural changes, such as customers from one supplier being taken over by another one. Since 2008, suppliers have to be fully unbundled from distribution companies.

There are 54 licenced retail companies (ACM, 2022c), but the market is dominated by brands that are owned by vertically integrated international utilities. Those companies are active both in generation and retail. The retail market has become national in scope and most contracts are dual fuel; they cover both gas and electricity. Gas is used for heating and cooking²⁵. Switching rates are healthy in comparison to other European countries. About 51% of consumers switched in the last three years. There remains a significant part of the market (23% of consumers) that has never switched since the liberalisation of the market, but the number of “sleepers” decreases each year. The switching process runs rather smoothly. The new supplier is responsible to cancel the contract with the previous supplier

²⁴ Tweede Kamer der Staten-Generaal (2022).

²⁵ Many new houses no longer have a gas connection and rely on heat pumps or district heating. The government’s goal is to stop gas delivery in 2050.



and consumers only have a contractual relationship with their own supplier and not with their local distribution company.

There are two types of price structures for retail contracts: fixed price and variable price. Variable price contracts are subject to price changes by the supplier, and suppliers have to inform consumers before any price changes. Consumers have then the right to switch to alternative suppliers. The price adjustments typically happen every six months. With fixed-price contracts, the price is fixed for the duration of the contracts. Those contracts are typically signed for 1 to 5 years. At the end of a fixed-price contract, consumers are automatically transferred to a variable price contract of the same supplier.

Table 2 shows that 56% of consumers are on fixed-price contracts.

Contract types	Share of contracts (January 2021)	Yearly bill, avg cost (May 2021)	Yearly Bill. Δ highest-lowest (May 2021)
Variable price	44%	€1560	€359
Fixed price	56%		
1yr	17%	€1554	€318
3yr	28%	€1565	€244
5yrs	9%	€1635	€96

Table 2: Share of contract types, and typical energy bills, January 2021. Source: ACM (2021).

There is considerable variation between the cheapest and most expensive contracts available on the market, and consumers therefore have to switch or renegotiate contracts with their existing supplier to benefit from the lowest prices. The variance of prices for the fixed-price contracts is smaller than for the variable price contracts, and the fixed-price contracts are seen as somewhat more competitive.

In addition to competition on prices, there is also competition in other contract dimensions, in particular, on the origin of energy. Suppliers offer for instance contracts for Dutch wind, European wind, European hydro, and grey electricity (Mulder and Willems, 2019). About 80% of households buy green energy.

In January 2021, before the energy crisis, the retail component of the household bill was 41% of the final bill, while taxes and network costs counted for 21.3% and 38%, respectively, cf. Table 3.



Contract types	Percentage	Percentage
	January 2021	January 2022
Distribution and metering costs (Gas and Electricity)	21.3%	18%
Energy Tax	20.8%	0.4%
VAT	17.4%	17.4%
Electricity	11.4%	26.9%
Gas	29.3%	37.5%

Table 3: Average household cost components, January 2021 and 2022. Source: ACM (2021,2022f).

The Netherlands is rolling out smart meters for gas and electricity on a voluntary basis. Households have the right to a smart meter but can refuse it. In January 2021, 85% of the households had a smart meter. Smart meters allow network companies to better manage their networks and provide a remote meter reading. They also provide a physical and a remote interface for energy consumption managers that can offer services to end-users. Currently, there are about 30 companies with apps and/or physical devices for energy consumption management. These can be independent companies or offer their services in cooperation with one of the suppliers²⁶.

The regulation of the retail market consists of structural measures (unbundling requirements and licencing), contracting restrictions (limits on the penalties that consumers pay for early contract termination, the prohibition of automatic renewal of contracts, and an obligation to offer at least one standardised contracts), a price surveillance process (the so-called safety net) where the regulator checks whether new retail prices are reasonable given wholesale market conditions. The different stakeholders – consumer organizations, suppliers and regulators – have agreed on a number of codes of conduct with respect to information provision (information on bills), and to prevent too aggressive marketing campaigns (eg. telemarketing); see also Mulder and Willems (2019).

For suppliers that go bankrupt, or lose their licence for other reasons, specific measures are in place. For a period of 20 working days, consumers are not allowed to switch to other suppliers while an administrator (bankruptcy trustee) tries to sell the whole consumer portfolio to another supplier. If

²⁶ The Dutch smart meters allow for remote monitoring via the mobile phone network by the network operator of actual and average voltage levels, voltage interruptions and voltage drop and voltage surge. The meter also measures daily electricity and gas consumption, as well as electricity consumption levels every 15 minutes and gas consumption every hour. The amount of data that is read by the network operator depends on permissions that consumers give to the network operator and suppliers. The smart meter is also a physical serial port which provides information on electricity consumption every 10 seconds. It uses a standardized protocol, which can be used by energy consumption managers.



no supplier is willing to take over the consumer portfolio, the distribution companies allocate consumers to existing licenced suppliers in proportion to the number of households they have. The reallocated households then receive a new retail contract that conforms with the market conditions of the new supplier (ACM, 2022).

3.3.2. Implications of the price spike

As in all European wholesale energy markets, prices in the Netherlands increased drastically from the second half of 2021 onwards. Wholesale electricity prices (the APX spot market) increased from about €50/MWh in Q1 2021 to around €200/MWh in Q4 2021-Q2 2022. Over the same period, future prices for gas (TTFs) increased from about €25/ MWh to more than €80/MWh.

With some delay, those wholesale price increases were passed on to consumers. Consumers that had signed up for a long-term contract were hedged for the duration of the contract, but would see a price increase when the contract period finished. Consumers on a variable-price contract would see price adjustments on a regular basis, for instance after a six months period. Figure 11 shows the yearly energy cost for an average household with a yearly consumption of 3,500 kWh electricity and 14,500 kWh gas, based on data from the statistical office CBS. The blue line represents the sum of VAT and the energy tax minus an energy-related rebate in the income tax. Total energy costs increased from about €2,000 per year to €5,000 per year.

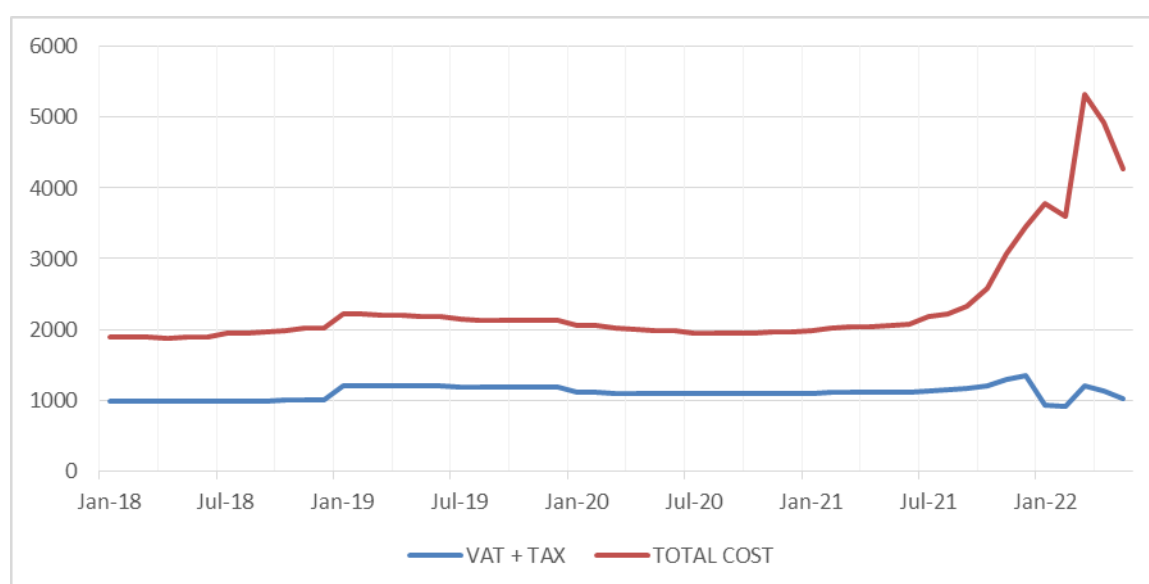


Figure 11: Average energy costs for households EUR/year, 2018-2022. Source: CBS own calculations.

As a first reaction to high spot prices, some suppliers tried to renege on their obligations under the fixed-price contracts and pass on higher energy prices to end-users or cancel delivery completely. The regulator quickly indicated this was not allowed.

Six suppliers which were not vertically integrated with generation, but bought their energy on the spot market, had to declare bankruptcy before winter 2021-2022 actually started. Their consumers were reallocated to other suppliers and received a new contract at market rates. None of the consumers



experienced a supply interruption, but they often ended up paying considerably more than with their original contracts. This has been considered unfair by some observers. An additional supplier went bankrupt due to a counter-party not-fulfilling its supply obligation.

The market for fixed-price retail contracts has almost dried up completely, and only variable-price contracts remain available. One of the reasons is that the regulator has capped the penalty for breaking a contract at €250 to reduce switching costs for households. This has been done in the hope of obtaining a more dynamic retail market with higher switching rates. However, suppliers fear that if they offer a long-term contract, consumers will switch away once wholesale prices drop and cheaper products become available. Hence, suppliers would end up making losses on those fixed-price contracts. The suppliers have argued for an increase in the penalty, while consumer associations have been against it. The market for a variable-price retail contract also saw a drop in liquidity during the winter months, but supply seems to have restored itself in recent months.

3.3.3. *Government response*

The government responded by reducing the energy tax and the VAT and by introducing cash payments and insulation premiums for low-income households (Ministerie van Algemene Zaken, 2022).

The energy tax on electricity was reduced by 6.9 ct/kWh (average benefit of €160/yr). The deduction on the income tax for energy tax expenditures increased by €265/yr for all households²⁷. The VAT is likely to temporary decrease from 21% to 9% on July 1, 2022 (average benefit €140/6 months). Figure 11 shows the effect of the measures taken on the taxes and VAT over time. By adjusting tax rates, total tax payments have been kept more or less constant over the last years, but that did not compensate the average household for the higher energy prices. The additional VAT reduction which will start from July onwards, will reduce the energy-related taxes that the government will collect. Table 3 shows the change in the composition of the energy bill and compares the situation for January 2021 and January 2022.

Low-income households receive a one-off cash payment of €800 from the local municipality, and €300 million is reserved to help them save energy expenditures for instance by improving insulation. The target group consist of about 800,000 households (about 10% of Dutch households).

In response to the bankruptcy of some suppliers, the ACM decided in February 2022 to conduct additional checks on the financial positions of suppliers after the winter period. ACM's concerns were not only the effect of higher wholesale energy prices but also of decreasing prices, where consumers might break their fixed-price contract and switch to alternative suppliers. A supplier could then face the risk that it has to resell what it bought in excess of its customers' demand on the wholesale market at a lower price (ACM, 2022b).

ACM also ordered a study to check whether the regulation of the retail markets needed to be adjusted with respect to bankruptcies of suppliers. The regulator had earlier indicated that it could not report

²⁷ Note that the energy tax on gas was not adjusted in response to the high energy prices and increased with 2 ct/m³ (ca. €23/yr). This reflects the fact that the government wants to provide incentives for households to switch from away from natural gas.



or comment on the financial healthiness of individual suppliers, as this could lead to "bank runs" and a self-fulfilling prophecy. Some commentators have argued that additional regulation could be introduced, to prevent consumers from being hurt by retail bankruptcies. This could for instance be in the form of an insurance scheme organized by the sector. In addition, regulation of the suppliers' risk has been proposed.

Lavrijssen and de Vries (2022) indicate that the current licencing procedures of the ACM do not demand specific financial requirements for suppliers regarding solvency, liquidity, and capital structure. The rationale for this is that the ACM does not see it as one of its tasks to second guess the business models of suppliers, and tries to limit entry barriers for (smaller) suppliers to increase competition. Lavrijssen and de Vries indicate that there is some flexibility within the existing legal framework for ACM to adjust its financial criteria. Since the publication of the study, ACM decided to sharpen the current financial licencing requirements and collaborate with the government to adjust the legal framework in the new Electricity Law (ACM, 2022d).

Lavrijssen and de Vries further note that the ACM and the Ministry of Economic Affairs are against the introduction of a guarantee fund for supplier bankruptcies, as this could lead to moral hazard by consumers and suppliers who would take on too much risk, but the authors indicate that there is a lack of empirical evidence to indicate that this is actually the case.

3.3.4. Conclusions

The Dutch retail market has weathered the rise in wholesale electricity and gas prices relatively well. Although six suppliers went bankrupt, they supplied only 2% of households and the existing bankruptcy procedures have worked well. There were no supply interruptions, and the affected consumers received new retail contracts, although sometimes at significantly higher prices. We presume that most suppliers had sufficient long-term contracts in place to hedge their exposure to the fixed-price retail contracts that cover 56% of the market.

In response to the bankruptcies, the government intends to change financial requirements for suppliers, although the goal is not to fully eliminate bankruptcies, as they are seen as part of a competitive market process.

The Dutch situation clearly shows the regulatory trade-offs in creating competition and innovation on the one hand, and market stability on the other. By having softer financial requirements for entrants, entry barriers are reduced, competition improves, and new business models are introduced, but suppliers might also go bankrupt more often. By limiting the penalties for switching supplier, the retail market becomes more competitive, as consumers find it easier to switch, but it also undermines the opportunity for consumers to sign long-term contracts to hedge future price shocks. It is therefore not evident that the current regulation needs large adjustments.

Rising electricity and gas prices have contributed to wider concerns regarding the purchasing power of poor households. The government has reacted to those with a reduction of the energy tax (offsetting the increase in the VAT collected due to the higher energy prices) and targeted support schemes.



3.4. Great Britain

In Great Britain (GB), the crisis has put retail energy markets under severe strain. Out of 28 million households, around 22 million defaulted onto the safeguard tariff re-calculated and reset by the GB energy regulator, Ofgem, every six months. Competition to switch customers has largely been suspended (by suppliers, if not formally) with switching websites offering limited deals to switch to (and recommending staying on default tariffs).

The impact on energy bills of the price rise has been a mainstay of a national debate around a ‘cost of living crisis’. It has led to substantial government support packages. Rising energy prices have been a significant contributor to general inflation (CPI), which hit an annual rate of 9.1% in May 2022, its highest rate since 1982.

3.4.1. *The retail market*

In Great Britain, full retail competition (where all consumers can freely switch supplier) for both electricity and gas has been in place since 1999. An initial maximum retail tariff for households was removed in 2002. By 2008 GB was estimated to have a genuinely competitive retail market, with high rates of annual switching (see Pollitt and Brophy Haney, 2014). There then followed a period of intervention in retail markets by Ofgem aimed at further reducing margins and promoting competition. This culminated in a Competition and Markets Authority (CMA) Investigation which was completed in 2016. This advocated further measures for the promotion of retail competition, short of a wide retail price cap (although the CMA introduced a price cap for customers with prepayment meters). The further measures sought to address the behavioural split between a large group of active customers who benefitted from the competitive market and the somewhat larger group of inert customers who did not switch and paid higher tariffs. Continuing controversy and political debate resulted in the imposition of a six-monthly maximum safeguard household tariff calculated by Ofgem. This is calculated on the basis of forward-looking wholesale prices for six months and is reset from 1 April and 1 October each year (with updates being announced in February and August). The safeguard tariff protected non-switching households on standard variable tariffs.

Switching actually continued and accelerated following the completion of the CMA Investigation. There has been a significant erosion of market share of incumbent (legacy) suppliers who had inherited the former retail businesses of the 14 regional electricity companies, which had been the monopoly distribution and retail businesses prior to privatisation in 1990. The incumbent suppliers had previously been referred to as ‘the big six’ and consisted of EDF, RWE, EON, SSE, SP (legacy electricity retail business owners) and British Gas (the former gas monopoly and legacy gas supplier). These firms combined generation and retail and were integrated ‘gentailers’. The share of the six large incumbents fell from over 85-90% in Q1 2015 to 55% in Q1 2021 due to some incumbent business sales and the rapid growth of new entrants. RWE and EON merged their retail business (into EON) following their corporate merger in 2019. SSE sold their retail business to Ovo Energy in 2020.



A smart meter roll-out is proceeding but by the end of 2021 only around 44% of domestic electricity meters were smart meters operating in smart mode (i.e. fully enabled)²⁸. The figure for non-domestic meters was slightly higher. This has limited the offering of innovative smart meter-based tariffs.

Monthly electricity switching rose from 2003 to 2008, falling back to a low in 2013, it then increased again until 2018, plateauing until April 2021²⁹. Switches were running at 1.7% per month in 2020. In February 2022 they were only 0.3% per month, the lowest since the data began in 2003 (they were lower again in April 2022).

Around 14% of electricity customers are on pre-payment meters. Most customers pay by direct debit (69%), rather than standard credit (17%) in arrears. By the end of 2020, 40% were on fixed tariffs (e.g. fixed for one year), though this has been falling and was 37% in Q4 2021³⁰. Almost none are on real-time tariffs. There are around 4 million on time-of-day tariffs (such as Economy 7 who get cheaper electricity at night for electric heating).

Gas prices have more than quadrupled since 1 April 2021, as shown in Figure 12.



Figure 12: GB wholesale gas prices, forward delivery, weekly average. Source: Ofgem.³¹

This lies behind wholesale power prices, which have more than tripled since the 1 April 2021, as shown in Figure 13.

²⁸ 12.8 million out of 28.9 million.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1059591/Q4_2021_Smart_Meters_Statistics_Report.pdf

²⁹ Source: Ofgem.

³⁰ Source: Quarterly Energy Prices March 2022,

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1064828/quarterly-energy-prices-march-2022.pdf

³¹ <https://www.ofgem.gov.uk/energy-data-and-research/data-portal/wholesale-market-indicators>



Figure 13: GB wholesale electricity prices, forward delivery, weekly average. Source: Ofgem.³²

The number of active domestic suppliers for electricity and gas peaked at 70 in January 2018, it was still at 52 in December 2020. In May 2022 it had fallen to 23 (NAO, 2022), with 29 supplier failures between July 2021 and May 2022. The market shares of the leading six firms were: British Gas 19.6%; EDF 11.5%; EON 17.6%; SP 9.2%; OVO 13.7%; Octopus 10.7%³³. Retail supply is not currently a profitable activity; for instance, both OVO and Octopus, being stand-alone supply companies and start-ups, are loss-making according to their latest published accounts.

NAO (2022) reports the transfer of 2.4 million customers to other suppliers and the placing of 1.6 million Bulb customers in a special scheme between July 2021 and June 2022 due to supplier financial failure. There have been losses of around £3.6 billion (around 5% of all electricity and gas annual expenditure³⁴) which are in the process of being paid by all retail customers³⁵. The exits have been due to the contractual maturity mismatch between typical annual customer contracts and typical monthly wholesale market purchases by the suppliers for electricity and gas.

The default tariff cap means that all domestic default tariffs are subject to a maximum price that can be charged during a given six-month cap period (currently running from October-March and April-September). The level of the cap is calculated by the regulator every six months. The way this is calculated has meant that maximum prices were capped at the time of the initial wholesale price rise and adjusted by only 12% from 1 October 2021 and this then remained in force until 1 April 2022, when combined gas and electricity caps rose by 54%, fully reflecting the underlying rise in wholesale prices. Ofgem recently announced it expected a further 42% rise in the combined price cap on 1

³² See <https://www.ofgem.gov.uk/energy-data-and-research/data-portal/wholesale-market-indicators>.

³³ Source: Ofgem website.

³⁴ Market value of UK inland energy consumption of gas and electricity was c.£61bn in 2020 (DUKES Table 1.4).

³⁵ NAO (2022), £2.7bn due to the Ofgem supplier of last resort regime and £0.9bn due to Bulb in fiscal year 2021-22, with the prospect of another £1bn in the current fiscal year due to Bulb.



October 2022³⁶. Cornwall Insight (a respected energy consulting firm) recently predicted the rise could be 64%, but their analysis also shows just how volatile the estimated figure is³⁷.

The bankruptcy regime consists of two key elements.³⁸ The first is the Supplier of Last Resort where Ofgem invites offers from alternative suppliers to take on the customers of a failed firm. While consumers can be switched on to higher tariffs by new suppliers, this was capped by the safeguard tariff. To get suppliers to take customers, Ofgem has had to allow the additional cost of acquiring customers on the safeguard tariff to be socialised across all consumers. The second is a special administration regime which can be used in the case of failure where no alternative supplier is willing to take on the customers of a failed firm. This happened in the case of Bulb Energy. In this case, the Treasury places the firm in special administration and the taxpayer funds losses. In each case, the credit balances of the customers are protected.

Ofgem needs to review the default cap calculation and the bankruptcy regime, and this is indeed currently being undertaken³⁹. No doubt lessons must be learnt. Supplier stress testing and longer forward-hedging requirements seem likely, as does allowing a supplier to take on customers of a failed firm to raise prices to a level that allows cost recovery, should that be necessary.

Ofgem has suggested changes to the default price cap calculation (May 2022)⁴⁰. The price cap is calculated on the basis of one-year forward wholesale prices. Suggested changes include reviewing the cap every three months, reducing the notice period, and adjusting *ex post* for the profile of wholesale prices over the year (backwardation).

In spite of criticism, there are no firm proposals to change the Supplier of Last Resort (SoLR) or Special Administration Regime which specifies how bankruptcies should be handled and financed, but Ofgem has recently announced a consultation on the SoLR regime⁴¹, and the National Audit Office has looked into the bankruptcy arrangements and their operation in a recent report⁴².

3.4.2. Government Support Measures

In response to the large rise in bills in February 2022, the government has announced an extension of the Warm Homes Discount for poorer households both in amount and scope (from £140 to £150 and to one-third more households, 3m)⁴³. The Warm Homes Discount is charged to all consumers. In addition, all household customers will receive a one-off reduction in the autumn of £200. This will be funded with higher retail bills from 2023-24 for five years. While from April 2022, households in-band A-D houses (80% of households) will receive a one-off Council Tax reduction of £150 – funded from

³⁶ See <https://www.ofgem.gov.uk/publications/letter-jonathan-brearley-chancellor-and-secretary-state-business-energy-and-industrial-strategy-default-tariff-cap>.

³⁷ See : <https://twitter.com/BernieSpofforth/status/1545455985183031304/photo/1>

³⁸ See <https://www.ofgem.gov.uk/news-and-views/blog/how-youre-protected-when-energy-firms-collapse>.

³⁹ See <https://www.ofgem.gov.uk/news-and-views/blog/how-ofgem-responding-energy-crisis>

⁴⁰ See Ofgem (2022), *Price cap - Statutory consultation on changes to wholesale methodology*, London: Ofgem.

⁴¹ See <https://www.ofgem.gov.uk/sites/default/files/2022-06/Last%20resort%20levy%20claims%20true-up%20process%20consultation%20%20.pdf>

⁴² See NAO (2022).

⁴³ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1052719/Energy_Bills_Rebate_updated_factsheet_v2_.pdf



general taxation. These additional measures were intended to address the 54% bill rise, which is around £693 per household with electricity and gas. The government has so far resisted pressure to reduce unit prices by interfering in existing renewable subsidy regimes or to reduce the rate of VAT on electricity and gas.

In May 2022, a further package of measures was announced to provide help with bill payments (valued at £15bn)⁴⁴. These replaced the £200 loan with a £400 payment to every household in Autumn 2022 which will not need to be paid back, and included additional measures, listed below.

In addition, 8 million households in receipt of benefits (universal credit, tax credits and pension credit) will receive a one-off payment of £650 (payable in two instalments starting in July). 8 million pensioner households will receive an additional £300 on their annual winter fuel payment and disability-benefit individuals (6 million) will receive £150.

Local authorities were given a further £500 for the Household Support Fund, bringing total support through this fund to £1.5bn. The Household Support Fund is for vulnerable adults and can provide help with energy bills, as well as other household essentials.

Altogether this means that all households receive a minimum of £400, 80% receive at least £550, with pensioner households getting a minimum of £700, with 80% getting £850. A quarter of households will have received at least £1200 (£550 + £650).

Part of the funding for these payments will be raised through an Energy Profits Levy. This will charge an additional 25% on UK oil and gas profits, offset by an 80% investment allowance for UK investment in oil and gas (resulting in a net tax saving of 91% of the value of investment). This is expected to raise £5bn in its first year.

It is notable that the UK government has resisted pressure to cut energy VAT (which is currently at too low a rate⁴⁵) or to remove energy subsidies from within the bill. Both of these would have reduced the price of energy and encouraged more consumption. They are also strictly finite measures which on their own would not have been enough to adequately support the poorest households.

The Resolution Foundation showed that the May 2022 measures in particular were very progressive and mitigated up to 90% of the expected bill rise of £1500 between 30 September 2021 and October 2022 for the poorest households expected at the time of their announcement⁴⁶. However, as noted above, bills are at time of writing expected to be even higher in October 2022, raising the issue of whether further support will be required.

⁴⁴ See Harari et al. (2022).

⁴⁵ VAT on domestic energy is 5%, which is lower than the standard rate of VAT of 20%. Optimal tax theory suggests there is no good reason why VAT rate would be lower on domestic energy than, for instance, household energy consuming equipment or energy efficiency or production goods (which all carry 20% VAT) (see Mirrlees et al. 2011).

⁴⁶ See Bell et al. (2022).



3.4.3. Conclusions

The impact of the crisis on the GB energy retail market has been profound. A combination of the lagging price cap and rising wholesale energy prices has so far left no room for competition between suppliers on the basis of being able to undercut the safe-guard cap. This raises questions as to how often the price cap should be reset and also the extent to which forward-looking prices should be incorporated into the calculation of the price cap.

The financial regulation and bankruptcy regime for suppliers have been found to be lacking (see NAO, 2022). Lax financial regulation of capital adequacy and contract hedging of retail contracts led to irresponsible business models which sold long and bought short creating a standard asymmetric risk where shareholders could win big on falling wholesale prices and avoid losses on rising wholesale prices, transferring costs to consumers and taxpayers. In addition, the safeguard price cap has had the effect of capping prices and forcing consumers onto the default tariff at a time of rising underlying costs, restricting the ability of poorly capitalised suppliers to adequately cover costs. This was then compounded by the desire to protect consumers from failing suppliers came at the expense of responsible consumers, who had to finance an excessively generous bankruptcy regime (which almost fully socialised bankruptcy costs for customers who had previously benefitted from lower tariffs).

On the plus side, so far the government has given generous targeted direct financial support to households for energy bills. No doubt this will be somewhat crude at the margins as it is not matched to energy consumption. This will give rise to cases where high consumption due to particular family circumstances will be an issue, such as in the case of large families or where there are issues within families of fracture between the benefit recipient and partners (and their children) who actually consume and pay for energy services. However, this has maintained strong incentives for energy efficiency and investment in renewables, by not distorting consumer energy-saving incentives or corporate incentives to invest within the electricity and gas supply sectors. It is too early to tell what effect such a large rise in prices might have. Interestingly, monthly domestic demand for electricity in April 2022 after the latest price rises, was 17% lower than in April 2021; while total monthly gas output from the transmission system was down 20% between April 2021 and April 2022⁴⁷. It is difficult to believe that a doubling of electricity and gas prices over course of 2022 would not decrease demand substantially.

Stephen Littlechild, one of the architects of the UK electricity reform and an advocate for competitive retail energy markets, recently raised the question of whether the UK will ever return to a competitive retail market for small consumers (Littlechild, 2022). He noted that the price cap was introduced as a temporary measure, but that its operation had effectively ended retail competition and itself had led to a lot of bankruptcies, a view endorsed by the National Audit Office (NAO, 2022). The government is currently finalising a review of its *Retail Market Strategy for the 2020s*, which may bring some more clarity to this issue.

⁴⁷ Source : Energy Trends, June 2022.



3.5. Summary

Before going on to discuss lessons learnt from the case studies, we summarise some of the differences between the four different countries studied in this chapter in the table below.

Elements	France	Netherlands	Norway	Great Britain
Retail market				
Market structure	Dominant historic incumbent + 80 alternative suppliers	>50, 5 largest 80% share of market	> 100, 5 largest 65% share of market	23 by May 2022, 6 largest 80%+ share of market
Share of consumers on flexible rate	72%	56% fixed price 44% 6 months intervals 0% real time	> 95%	small
Government response				
Clear Intervention in price formation	Yes, only 4% increase for regulated tariffs	No	No	No, safeguard cap mechanism unchanged
Regulatory tools	1. EDF obliged to sell more electricity to its competitors at below-market price 2. Domestic tax on final electricity consumption removed	1. Reduction in VAT and energy tax 2. Targeted support schemes poor households 3. Compensation income tax (tax credit)	1. Reduction in electricity consumption tax 2. Refund scheme to household consumers	None new.
Consequences				
Retail bankruptcy	Little	6 firms, 2% of households affected	None	29 failures (July 2021-May 2022)
Market liquidity/Number of offers	Less liquid (fewer offers)	Strong reduction in availability of fixed price contracts	No effect	Less liquid.



4. LESSONS LEARNT

There is no doubt that many consumers were ill-prepared for the rise in energy prices, in the sense that they were on retail contracts that provided little or no hedge. What is less clear is whether they had taken a calculated risk or were misled into being excessively exposed to price rises. For example, Norwegian consumers, who mostly rely on spot-based contracts, are not unaccustomed to fluctuations in prices, across seasons and between years, driven by the availability of hydro resources. They also have easy access to other types of contracts, including fixed-price contracts for up to three years. Nevertheless, almost all of them chose to expose themselves to the risk of high prices. In any case, their bet paid off; they were rescued by their government.

What consumers certainly would have had difficulty foreseeing was any lack of preparedness of their suppliers. Suppliers often rely on sourcing energy on short-term wholesale contracts, thereby exposing themselves to margin risk. This is a problem for companies whose gross margins (on all wholesale and network costs) are very small⁴⁸. When the wholesale market turned up, some of them paid the price, in the form of bankruptcy. Unfortunately, their (lack of) hedging strategies also had consequences for others; in the Netherlands, it was the customers of the failing suppliers that bore the cost of having to enter into new and less favourable contracts; in Great Britain, much of the cost of failing suppliers was socialised on energy consumers as a whole. Suppliers with a closer maturity match between their retail and wholesale contracts, or which, through vertical integration, had access to their own energy resources, have fared better. Customers (and their regulator) are hedged from supplier failure because continuity of supply is guaranteed.

Ofgem, in Great Britain, seems to have been unaware of the implications of having large wholesale price rises, interacting with the price cap, for supplier financial sustainability. The regulator and the government had encouraged consumers to switch to new and cheaper suppliers, hailing the loss of market share of traditional suppliers as a success; notwithstanding the fact that the new suppliers had created a competitive pressure that benefited consumers, more could have been done to stress test retail business models and warn consumers about the risk they were taking when signing up to suppliers with very risky business strategies (it did not help that consumers were effectively protected against bankruptcy through the socialisation of their losses). The situation was similar in the Netherlands. The Dutch regulator did test the risk exposure of retailers, but the test could have been more stringent, even within the existing regulatory framework. The effect on Dutch customers was exacerbated by the lack of any financial compensation for customers that saw their suppliers disappear. In Norway, government authorities had been more concerned about what consumers pay on average than what risks they are exposed to.

The crisis has also demonstrated how well-intentioned regulatory measures to improve market performance in general, and competition in particular, may undermine the workings of the market. In Great Britain, the price cap intended to avoid excessive prices and exploitation of consumers became

⁴⁸ Ofgem in GB set the retail profit margin in the default tariff at 1.9% of the total bill. See <https://www.theguardian.com/money/2022/apr/19/how-are-uk-gas-and-electricity-bills-calculated>



generally binding, driving margins to levels where suppliers no longer want to actively compete for customers. In the Netherlands, the cap on the penalty for customers breaching their contract has meant that suppliers are unwilling to offer long-term contracts, hence leaving consumers with no means to hedge against volatile wholesale prices.

The French model has shielded both suppliers and their customers more or less completely from the increase in energy prices. A consequence of the muted price signal is that there will be little or no consumer response to what is effectively a scarcity in the availability and supply of energy. Moreover, by letting generators such as EDF cover much of the cost, the incentive and ability to fund new investments are undermined. The Norwegian tax reductions and rebates to consumers also have the effect of limiting the incentive to save on energy, but here the price of generators was not distorted. In Great Britain, the default cap meant a temporary, but not a permanent, delay in the increase in retail prices, and the measures for relieving the impact of higher energy bills have been implemented outside of the market. In the Netherlands, the reduction in the energy tax was modest. The tax was reduced in percentage terms but remained about the same in absolute levels. Part of the tax reduction was given through a reduction of the income tax, which does not affect incentives to save energy. Part of the energy tax is used to provide subsidies for renewable energy. During periods with high energy prices, those subsidies are no longer needed as the energy price is already high enough. So a reduction in the energy tax might be economically justified.

Where retail prices have been kept from rising in line with the rise in the cost of energy, a deficit has arisen that needs to be financed in some way. In Norway, the deficit is wholly financed by general taxation on an ongoing basis. In Great Britain, part of the deficit will be covered by the sector itself, in the form of additional levies on energy prices and (windfall) profit taxes on gas and oil companies. In France, much of the burden has been put on generation, especially on EDF, with the likely effect of requiring higher energy prices in the future. The consequence of not covering the additional costs of energy immediately is that it must be covered later, sometimes by those who were protected from the costs in the first place.



5. CHALLENGES AND OPPORTUNITIES

The recent unexpected higher energy prices have highlighted the challenges of designing well-performing retail markets. On the one hand, one would like consumers to have access to energy at competitive prices that reflect underlying costs and that provide a hedge against undesired risk. On the other hand, one would like consumers to respond to varying electricity prices when the availability and supply of energy is limited. More specifically, one would want to facilitate behavioural change in energy consumption that increases energy efficiency and supports the energy transition.

This is a balancing act. It is difficult to keep retail prices low and stable while encouraging flexibility and energy saving. It is also not possible to induce a change in behaviour without exposing consumers to the costs of their actions and, to raise the revenues that will be necessary to fund the energy transition, prices have to reflect the actual costs of renewable energy. A good retail market design must balance these different considerations, where the balance may well depend on the specificities of individual countries.

It is possible to encourage demand flexibility by exposing consumers to short-term price variations while at the same time locking in a significant part of their energy costs at fixed prices. It is also possible to protect vulnerable consumers through the general tax and support system, rather than through interventions in the energy market. And it is possible to ensure that suppliers take full responsibility for costly or risky strategic choices, rather than passing the cost of their mistakes on to their customers, or to others for that matter.

In order to achieve this, a number of critical issues stand out.

A first issue is ensuring that suppliers are prepared and can handle the risk they face. One could argue that, as long as customers have the opportunity to choose a new supplier at competitive prices, suppliers who cannot handle their risk should simply pay the price and go bankrupt. However, there are real costs involved in any bankruptcy, especially if suppliers hold a large portfolio of customers, and so some safeguards would likely be desired. Since energy retailing is essentially a financial service, there are lessons to learn from financial sector regulation. Stricter requirements on the financial position of suppliers are likely warranted, including supplier stress-testing and extending forward hedging requirements.

In addition, there may be room for improving the methods for dealing with consumers who find their supplier going bankrupt or leaving the market for other reasons. Consumers must, to some extent, be held responsible for their choice of supplier – otherwise the door would be wide open to offers that are "too good to be true" – but they must also have ways of entering into a new contract on reasonable terms when warranted.

There is a possible trade-off here; on the one hand, ensuring that suppliers do not fail reduces the need for customer protection; on the other hand, a sound system for customer protection makes the financial regulation of suppliers less important. Given that both financial regulation and customer protection come at a cost, finding the right trade-off should be a priority.



A second issue is the financial support for consumers. According to the theory of optimal taxation, consumer support is best administered through the regular tax and welfare system. The current crisis has shown that this system did not respond adequately – or, at least, it was not seen to do so – and various *ad hoc* schemes (e.g. capping price hikes) were introduced. These schemes clearly provided some relief for vulnerable consumers. However, they also had several unintended consequences, partly by providing support where none was called for, and partly by encouraging consumption in a time of scarcity. Careful thinking about the design of consumer support schemes is clearly necessary. This becomes all the more important in a situation where cost of living moves to the top of the political agenda.

Financial support for consumers requires funding. Funds may be raised from general taxation or taxing of the energy industry itself. In some countries, new measures are introduced to raise funds from the energy industry. In the United Kingdom, an Energy Profits Levy taxes the oil and gas industry. Greece is about to introduce a Temporary Mechanism for the Refund of Part of Day-Ahead Market Revenue, whereby revenues to conventional and renewable generation above a certain threshold are withheld in favour of the Energy Transition Fund which is used to discount electricity bills for eligible consumers. However, adding new taxes to the energy industry, or increasing existing ones, may put energy companies under stress and will negatively affect incentives to invest in new capacity; investment incentives may be negatively affected not only by the taxes themselves, but also by undermining trust in the stability of the regulatory framework.

A third issue concerns how consumers can be allowed to hedge market risk while encouraging demand flexibility and energy conservation. Fixing retail prices – whether through regulation or contracts – provide some hedge, but at the cost of little or no demand response to changes in the availability of energy. Full cost pass-through provides strong signals, but also exposes consumers to the full risk of changes in energy prices. The price cap in Great Britain provides an intermediate solution, but turned out to delay rather than remove the rise in prices. An alternative is to encourage (or mandate) the development of retail contracts that lock in part of the energy consumption at fixed prices while retaining price variation on the margin. One way to do that would be to combine real-time pricing with financial difference payments for a fixed quantity of energy⁴⁹.

Another important trade-off in the retail market is balancing competition and innovation vs. stability. Measures that increase switching regulates and lower the requirements for new suppliers, but might increase aggregate market risk. Regulation of contractual terms must however be carefully considered, given that the availability of contractual types and the terms on which they may be offered are closely related. In the Netherlands, the cap on penalties that consumers pay for early contract termination seems to have undermined the market for long-term contracts. Similarly, the opportunity for French consumers to switch back and forth between a regulated price and market offers may limit the incentive of suppliers to offer innovative contracts, especially of longer duration. Regulation of contractual terms must therefore balance consumer protection and incentives of suppliers.

⁴⁹ This could be organised within a single contract with a retailer or, if permitted by national legislation, by two different contracts: the retailer who offers a fixed price hedging contract, and an aggregator that sells flexibility on top of that.



The considerable diversity in retail market design, as well as the ways in which governments have responded, and will want to respond, to the supply crisis and potential future shocks, raises the question of the implications of the subsidiarity principle in retail markets: what are the limits to what member states can do? Should these limits be reconsidered? Indeed, to what extent should retail markets be a concern for the European Commission rather than individual Member States?



REFERENCES

ACER (2021), Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2020 - Energy Retail Markets and Consumer Protection Volume, November 9, European Union Agency for the Cooperation of Energy Regulators (<https://www.acer.europa.eu/electricity/market-monitoring-report>).

ACER-CEER (2018), Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2017 Consumer Protection and Empowerment Volume, October, European Union Agency for the Cooperation of Energy Regulators (<https://www.acer.europa.eu/electricity/market-monitoring-report>).

ACM (2021), Energiemonitor 2021, Consumentenmarkt elektriciteit en gas, Netherlands Authority for Consumers and Markets. <https://www.acm.nl/sites/default/files/documents/energiemonitor-2021.pdf>.

ACM (2022a), Wederverkoop van energie aan kleinverbruikers, Netherlands Authority for Consumers and Markets. <https://www.acm.nl/nl/onderwerpen/energie/energiebedrijven/wederverkoop-van-energie/wederverkoop-van-energie>.

ACM (2022b, February 9), ACM doet extra onderzoek naar financiële weerbaarheid energieleveranciers [Nieuwsbericht], Netherlands Authority for Consumers and Markets. <https://www.acm.nl/nl/publicaties/acm-doet-extra-onderzoek-naar-financiele-weerbaarheid-energieleveranciers>.

ACM (2022c, February 24) Vergunninghouders elektriciteit en gas, Netherlands Authority for Consumers and Markets. <https://www.acm.nl/nl/onderwerpen/energie/energiebedrijven/vergunningen/vergunninghouders-elektriciteit-en-gas>.

ACM (2022d, March 23), ACM stelt vooruitlopend op nieuwe wetgeving extra eisen aan energieleveranciers | ACM.nl [Nieuwsbericht], Netherlands Authority for Consumers and Markets. <https://www.acm.nl/nl/publicaties/acm-stelt-vooruitlopend-op-nieuwe-wetgeving-extra-eisen-aan-energieleveranciers>.

ACM (2022e, March 25), Leveringszekerheid en intrekken vergunning, Netherlands Authority for Consumers and Markets. <https://www.acm.nl/nl/onderwerpen/energie/energiebedrijven/vergunningen/leveringszekerheid-en-intrekken-vergunning>.

ACM (2022f), Energiemonitor 2022, Consumentenmarkt elektriciteit en gas, Netherlands Authority for Consumers and Markets.

<https://www.acm.nl/sites/default/files/documents/energiemonitor-2022.pdf>



Banet, Catherine (2021), Revision of the Renewable Energy Directive (REDII): How to improve tendering, planning and tracking rules to deliver the European Green Deal, CERRE Centre on Regulation in Europe (<https://cerre.eu/publications/revision-renewable-energy-directive-redii-fit-for-55-european-green-deal/>).

Bell, Torsten, Mike Brewer, Karl Handscomb, Jonathan Marshall, and Lalitha Try (2022), Back on Target: Analysis of the Government's additional cost of living support, The Resolution Foundation (<https://www.resolutionfoundation.org/publications/back-on-target/>).

CRE (2021), Rapport d'Activité, Commission de Regulation de l'Energie.

EC (2021), Tackling rising energy prices: a toolbox for action and support, Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2021) 660 Final, October 13.

EC (2022a), Security of supply and affordable energy prices: Options for immediate measures and preparing for next winter, Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2022) 138 Final, March 23.

EC (2022b), Short-Term Energy Market Interventions and Long Term improvements to the Electricity Market Design – a course for action, Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2022) 236 Final, May 18.

EnergiesDev (2022), Dispositif ARENH et Écrêtements. <https://energiesdev.fr/ecretement-dispositif-arenh/>.

IEA (2021), France 2021: Energy Policy review, International Energy Agency.

von der Fehr, Nils-Henrik M. and Petter Vegard Hansen (2009), Electricity retailing in Norway, The Energy Journal 31 (1), 25-45, 2010.

Harari, Daniel, Brigid Francis-Devine, Paul Bolton, and Matthew Keep (2022), The Rising Cost of Living in the UK, Research Briefing, House of Commons Library (<https://researchbriefings.files.parliament.uk/documents/CBP-9428/CBP-9428.pdf>).

Hulshof, Dan, Catrinus Jepma, and Machiel Mulder (2019), Performance of markets for European renewable energy certificates, Energy Policy 128, 697-710 (<https://doi.org/10.1016/j.enpol.2019.01.051>).

Giulietti Monica, Michael Waterson, and Matthijs Wildenbeest (2014), 'Estimation of search friction in the UK electricity market', Journal of Industrial Economics 62 (4), 555-90.

Giulietti Monica, Catherine Waddams Price and Michael Waterson (2005), Consumer choice and competition policy: a study of the UK energy markets', Economic Journal 115, 949-68.



Joskow, Paul L (2000), Why Do We Need Electricity Retailers? Or, Can You Get It Cheaper Wholesale? Working Paper. MIT Center for Energy and Environmental Policy Research (<http://dspace.mit.edu/handle/1721.1/44965>)

Lavrijssen, Saskia and Femke de Vries (2022), Onderzoek naar interpretatie, toereikendheid en toepassing wettelijk kader voor toezicht op energieleveranciers (p. 31) (<https://www.acm.nl/sites/default/files/documents/onderzoek-interpretatie-toereikendheid-en-toepassing-wettelijk-kader-toezicht-op-energieleveranciers.pdf>).

Littlechild, Stephen C (2000), Why We Need Electricity Retailers: A Reply to Joskow on Wholesale Spot Price Pass-Through, Cambridge Working Papers in Economics. Nr.008 Faculty of Economics, University of Cambridge.

Littlechild, Stephen C (2022), Discovery, Doubt, Delusion, Ducking, Destruction, Desperation, Diagnosis, Discipline, Disregarding, Direction and Decease? Regulation and the evolution of the GB competitive retail energy market, Presentation to EPRG Spring Seminar (<https://www.eprg.group.cam.ac.uk/2021-eprg-online-spring-seminar/>).

Ministerie van Algemene Zaken (2022, May 9), Stijgende energierekening deels gecompenseerd—Koopkracht—Rijksoverheid.nl. Ministerie van Algemene Zaken. <https://www.rijksoverheid.nl/onderwerpen/koopkracht/stijgende-energierekening-deels-gecompenseerd>.

Mirrlees, J., Adam, S., Besley, T., Blundell, R., Bond, S., Chote, R., Gammie, M., Johnson, P., Myles, G. and Poterba, J.M. (2011), *Tax by Design*, Institute for Fiscal Studies.

Mulder, Machiel and Bert Willems (2019), The Dutch retail electricity market, Energy Policy 127, 228–39 (<https://doi.org/10.1016/j.enpol.2018.12.010>).

Mulder, Machiel and Sigourney P E Zomer (2016), Contribution of green labels in electricity retail markets to fostering renewable energy, Energy Policy 99, 100-9 (<http://dx.doi.org/10.1016/j.enpol.2016.09.040>).

Tweede Kamer der Staten-Generaal. (2022). Antwoord op vragen van de leden Erkens en Boucke over het artikel “Anode Energie vraagt faillissement aan vanwege energieprijzen.” <https://zoek.officielebekendmakingen.nl/ah-tk-20212022-1701.html#extrainformatie>

NAO (2022), *The energy supplier market*, *The Department for Business, Energy & Industrial Strategy and Ofgem*, London: National Audit Office.

NVE (2022), Kraftsituasjonene første kvartal 2022, The Norwegian Energy Regulatory Authority (https://www.nve.no/media/14085/kvartalsrapportq1_2022.pdf).

Pollitt, M.G. and Brophy Haney, A. (2014), ‘Dismantling a Competitive Retail Electricity Market: Residential Market Reforms in Great Britain’, *The Electricity Journal*, 27(1): 66-73.



SSB (2022), Ny strømprisrekord i 1. kvartal, Statistics Norway (<https://www.ssb.no/energi-og-industri/energi/statistikk/elektrisitetspriser/artikler/ny-stromprisrekord-i-1.kvartal>).



Avenue Louise 475 (box 10)
1050 Brussels, Belgium
+32 2 230 83 60
info@cerre.eu
www.cerre.eu
🐦 @CERRE_ThinkTank
🌐 Centre on Regulation in Europe (CERRE)
📺 CERRE Think Tank