Conclusions

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We have focussed in this publication on the fate of energy transformation, one of the key processes in greening the economy. Yet this process of transformation – which now, to a considerable extent, bears the stamp of the crisis and the ensuing austerity policies – extends far beyond the confines of energy policy alone. Examination of the numerous factors that, in their complex interrelationships, have culminated in an 'investment blockade' delivers lessons that are of relevance also to one of European policymakers' current central concerns: how is the Investment Plan to be made to work and what steps can be taken to mobilise private capital? Our main conclusion will be that progress in this direction will be possible only if the major factors of the aforementioned blockade are addressed simultaneously.

As described in the introductory overview to this book, investment in clean renewable energy generation in Europe has virtually collapsed since 2011, with China having taken over Europe's formerly leading position. Concerns about allegedly high and unaffordable energy prices are mounting in the context of Europe's predominant adjustment philosophy that places price and cost factors at the centre of competitiveness. Not only does this short-sighted policy result in an energy policy reversal, thereby jeopardizing mid- and long-term climate policy targets; at the same time, by paralysing public and private investment, it cancels out millions of potential jobs and undermines the future of European low-carbon technologies.

The backlash of the poor performance of key European countries in terms of energy transformation demonstrates the detrimental effects of austerity policies and of the broader adjustment policy that sees future investment in this sphere as exclusively a cost factor. This publication set out to describe and explain the most important aspects of this policy failure and to draw some conclusions as to how they can be overcome.

At the same time, lessons drawn from the country chapters show that collapsing investment in Europe's green economy can be attributed only in part to the paralysing effect of austerity policies. Tight public budgets certainly do have a directly negative effect on public investment in the green economy, and the recessionary macro-economic environment does not help either; yet the collapse of private sector investment points also to design failures and inconsistencies within the regulatory framework of climate and energy policies at both the European and the national level. The resulting uncertainty leads to a paralysis of long-term investment.

We have argued that managing the transformation process towards a low-carbon economy, and in particular the transformation of energy production and consumption away from fossil fuels towards renewable energy, requires a comprehensive policy framework and a determined but balanced implementation practice. The past six years of economic crisis have demonstrated clearly that, in the absence of such a framework and without a clear long-term commitment, short-term economic interests will prevail.

The three chapters that focussed on recent experiences with energy transformation in major European countries all referred to a critical situation and identified a number of key factors behind these countries' underperformance. Current practices in Italy (chapter 3) and Spain (chapter 4), with a sudden reversal of earlier progress in renewable energy generation, showed how it is possible to arrive simultaneously at the worst result in the three dimensions of economic, social and environmental goals. Germany's recent experiences (chapter 2) with the '*Energiewende*' also offer a rich catalogue of possible conflicts that need to be addressed – and not by Germany alone.

On the basis of the country chapters and of Chapter 5 devoted to energy efficiency, we identified four factors of blockage on the road to a low-carbon and resilient Energy Union. The blocks are constituted by the following: austerity policies; controversial energy pricing; lack of transparency and consistency in the incentive system; the absence of industrial policy and long-term strategy.

Austerity is setting the scene

It is common knowledge that response to the crisis in Europe has been characterized, especially in peripheral countries, by austerity measures aimed at reducing fiscal deficits and sovereign debt with a view to correcting the so-called 'macroeconomic imbalances'. In Italy such measures have taken a regressive toll on the economy as a whole with tough effects for production and employment. As a result of the crisis, Italy lost 25% of its industrial capacity and level of investment, as well as over one million jobs. Chapter 3 of this publication showed that green sectors did not prove immune to the effects of the crisis and austerity: from 2008 onwards, environmental expenditure, as classified by Eurostat, was cut, and in 2011 alone it fell by 7%. By 2012 the Italian Ministry of the Environment had reduced its total budget by 70%, with support for energy transformation having dropped from 58 million to 6 million euros. Public research and development for environmental, transport and energy purposes was reduced by two thirds.

In Italy all of this happened in the wake of a dynamic development of the green economy in the pre-crisis period, boosted by a series of generous incentives for investment in renewable energy sources. These incentives were able to survive initially, to a large extent because they were financed directly by consumers through their energy bills without burdening the state budget. This co-financing model was applied predominantly to photovoltaic power, but incentives for other renewable sources were financed in the same way. This redistributive approach gained political acceptance because the measures were seen as environmentally necessary and their positive effects on energy security and the trade balance were seen as a sort of a 'green new deal'.

However, in a secondary effect of the austerity policies, due to growing economic difficulties suffered by households and businesses alike, the population's tolerance of burden-sharing had been exhausted. The whole system whereby the incentives for renewables had been financed through consumers' energy bills came up against fundamental opposition and the legislator was compelled to put to an end to the incentives. Meanwhile, tax incentives to encourage energy-efficiency investments (with a direct impact on the public deficit) have managed to resist the austerity axe for a few more years, but these too are bound to suffer a radical reduction in 2016. The ambitious strategy that had enabled Italy to reach European energy targets on renewable sources ahead of schedule, while at the same

time imposing an annual hidden tax burden of over 10 billion euros until 2020, came under tremendous pressure and is to be deconstructed. The original consensus of regarding the green transformation investments as a win-win game for the future has turned into a zero-game perspective with the single priority of short-term interests.

For Spain – as we saw in Chapter 4 – the effect on energy of the crisis and austerity policies first appeared in the context of increasing competition and declining demand. The resulting drop in energy demand reduced the large profit margins previously enjoyed by the electrical companies whose main facilities were based on conventional energy generation (coal-fired, combined cycle, nuclear and hydroelectric). Increasing competition was driven by lowering renewable energy prices while at the same time providing subsidies for domestic coal-burning (in order to maintain employment in coal mining). As a result of these policies, much of the potential capacity offered by electrical plants based on a gas-fuelled combined-cycle power generation remained unused. By the first half of 2013 combined-cycle plants of major electrical companies were working at only 10% of their capacity. The viability of this form of energy generation had been questioned further because of the high prices companies were obliged to pay to buy natural gas in the context of long-term supply agreements with Algeria; the result of this situation is that since 2011 Spain has begun to re-export the Algerian gas, after liquefying it (in 2013 Spanish gas exports increased by 18%). One of the major energy companies, Endesa, has already launched several collective redundancies within its combined-cycle plants with the goal of cutting its workforce by 10%.

A particular feature of the context in Spain – alongside the increasing tensions on the energy market and flaring up of redistributional conflict in the wake of the crisis – is the lobbying power of its energy giants due to the fact that former top politicians sit on their boards. These conventional energy producers (Endesa, Gas Natural, Iberdrola) exerted tremendous pressure on the government to grant a state guarantee for their calculated 'tariff-deficit' that amounted to a notional consumer debt in the context of an energy market with liberalised costs, regulated pricing system and political lobbying power. The state guarantee granted to the energy sector, amount to 26 billion euros, came under pressure during the eurozone crisis and led to the dismantling of the previous incentive system for renewable energy.

In conjunction with these distortions allowed by the fact that several former heads of government and former finance ministers sit on the boards of the energy companies, the Spanish case shows how the effects of austerity and the crisis, with the resulting redistributional conflicts, can lead to particularly adverse consequences. Not only does such a situation result in greater energy vulnerability, as renewable energy production has been the only effective tool for reducing energy imports; it also perpetuates the high energy intensity and CO2 emission levels of the Spanish economy.

Although Germany (chapter 2) was not directly affected by austerity policy, public investment and in particular investment related to the energy transformation, also suffered a serious setback.

Chapter 5 described how, in terms of energy-efficiency investment and in the presence of downward pressure on property values, the financial crisis has highlighted the need for refurbishment of existing building stock. The chapter emphasized that the majority of builders continue to focus on new buildings, with energy-efficient retrofits still accounting for only a meagre one per cent of existing stock. Retrofitting efforts need to be doubled if they are to meet EU energy-efficiency goals by 2020.

Energy price and burden-sharing

Price and cost sensitivity in both the business sector and household sphere is high in all the countries examined; the previous acceptance of and commitment to the green transformation are thus quickly eroding.

Burden-sharing is obviously a central issue in financing the short-term costs of the energy transformation. Beside their positive effect on the climate and environment, renewables also possess an unquestionable economic rationale. The future returns are manifold: renewable energy has a ‘zero marginal cost’ as there is no direct fuel cost in generating the power; energy dependence would be reduced greatly while the trade balance of fossil fuel importers – such as the EU – improves. There is, however, a front-loaded financing need for the investment required to this end and these costs need to be shared among the major income holders in society, i.e. households, enterprises and state. In assessing in what proportion, and which groups should be entitled to special treatment and exemptions, a range of distributional issues emerge and,

with the darkening of the economic environment, conflicts are escalating in some cases to the extent of derailing the entire transformation process. These conflicts are aggravated by a lack of transparency in pricing and by the lobbying power of certain actors, as the experiences of the various countries examined have shown.

In Germany too, as shown in Chapter 2, one of the major conflicts in the ambitious energy transformation process is linked to the price of power. The general perception is that the power price increases of past years are due to the rapid deployment of renewable energy technologies and to the feed-in tariff (FiT) surcharge. The author of the chapter shows that the share of power costs in German GDP had remained remarkably stable over the last fifteen years at around 3%, due also to increasing energy efficiency. Price increases, on the other hand, were due to a range of factors, with the FiT surcharge playing a partial role only. The lack of transparency in price formation has greatly contributed to the perception that the energy transformation is the main cause of the recent price increase. Although an upward trend of these costs seems henceforth unavoidable, the conflict has two major roots: burden-sharing and lack of transparency.

The author of the chapter concludes that, even if the supposedly excessive costs of renewables may be a ploy used by opponents of the *Energiewende*, there is need for action to bring in a more efficient design of the support policy for renewables. In the interest of fairer burden-sharing, the excessive exemptions enjoyed by industry require correction; in the interest of greater transparency, the overloading of the FiT remuneration with cost components that have nothing to do with supporting technologies using renewable energy sources should be abandoned. Support for renewables should preferably be provided in a manner that makes it economically worthwhile for power plant operators to contribute to a secure supply of electricity and that helps to limit the need for extension of the power grid. The EU ETS needs to give a proper carbon price signal in order to avoid the current anomalies whereby polluting hard coal-fuelled power stations appear to be more profitable than cleaner gas-powered ones.

In the case of Italy – as described in Chapter 3 – the price of energy had also become a controversial and highly disputed issue. Italian tariffs were twice or three times higher than French or German ones in the case of photovoltaic power and 50% higher for wind plants. The incentives for renewables were financed through consumers' energy bills without

burdening the state budget. This redistributive approach gained political acceptance for several years, as the measures were seen as environmentally necessary and as entailing future economic returns in terms of a green new deal. With the mounting effects of the crisis on energy consumers, the initial consensus about the financing system was fundamentally challenged, compelling the legislator to put to an end to the incentives. The main conflict in Italy was less about the burden-sharing mechanism to finance renewables than about the incentive system itself that granted over-generous subsidies to particular forms of renewable energy in an inflexible way.

In Spain – as Chapter 4 showed – the regulated pricing system led to particularly adverse consequences. Regulated prices exist in this country by type of consumer category in a manner that largely benefits industrial energy consumers, with a social tariff also in application. Costs for the energy providers are partially liberalised, although a premium exists for specific forms of technology. The outcome of regulated prices, on the one hand, and liberalised costs for power generators on the other, has been a so-called 'tariff deficit' that appeared in the books of the main energy companies in the form of consumer debt. This difference between the electricity supply cost and the electricity tariff amounted to 26 billion euros over the years, for which the government granted a state guarantee. As the austerity axe fell and the central budget came under pressure, the complete incentive system was dismantled. Moreover, in spite of the social tariffs currently in place, five million people in Spain live in fuel poverty, as the chapter explained.

Incentive system, lack of transparency

Policy inconsistency became a serious factor of blockage in progress of the energy transformation. In the narrow field of climate and energy policy the controversial role of the EU Emission Trading System (EU ETS) needs to be mentioned at the outset. Regulatory inconsistencies and design failures in the implementation of climate and energy policies can be well illustrated by the way in which national energy transformation policies have been affected by the EU ETS.

The controversial interim results of the otherwise ambitious German energy transformation are partially due to the malfunctioning of the EU ETS. Between 2000 and 2013, while Germany made tremendous

progress in increasing renewable energy generation and considerably downscaled its nuclear capacity, energy generation from fossil fuel nonetheless remained at the same level, and one essential factor underlying this state of affairs was that Germany became an exporter of fossil-fuel-generated electricity due to the malfunctioning of the EU ETS.

The price of a tonne of CO2 emission allowance in 2008 was 22 euros which meant that modern gas-powered electricity generation was cheaper than the coal-fuelled equivalent. Due to the crisis and the abundance of CO2 allowances, the price of a tonne of CO2 emissions had collapsed to 6 to 7 euros by the end of 2014. With this low carbon price, polluting lignite-powered electricity generation outprices less polluting hard coal and both push the relatively clean gas-powered electricity out of the market. To counteract these negative effects, CO2 allowances need to be withdrawn from the market; and yet a Commission initiative to this end backed by the European Parliament was blocked by a coalition of member states in the European Council; a reform of the ETS along the lines suggested cannot now be expected until the next decade.

In Italy the incentive system for renewable energy generation was over-generous and did not react to market changes. From a distributional point of view, the guaranteed returns on investment in renewables were disproportionate. Moreover, these subsidies happened to be concentrated among a limited number of big investors, in most cases foreign private equity firms. No attention was paid to the rapid reduction in the cost of photovoltaic technologies and to the increasing efficiency of cells. A longer-term policy should have led to less generous tariffs and targeted incentives for more efficient panels. Although by 2013 in many Italian southern regions the grid parity had been reached, the Government continued to grant incentives amounting to billions of euros for plants which were about to reach profitability and were in need of no – or lower – incentives.

The Italian case was focused on the photovoltaic incentives which represented the biggest and most controversial experiment, even if the country became one of the largest producers of renewable energies, with a photovoltaic park of 19GW, second only to that in Germany. In general terms, the whole system of energy transformation in Italy suffered from a lack of clarity and huge volatility. Rules and tariffs were changed at least once a year, undermining the ability of the different parties involved to plan their investments efficiently. Rigidity in incentives for photovoltaic deployment played a role in Germany too where the inflexibility of these

public subsidies with long-term commitments failed to take account of technological changes that made photovoltaic panels much cheaper.

In Spain the combination of a regulated pricing system with partially liberalised costs and the state guarantee provided for the main suppliers made the incentive system costly, counterproductive and vulnerable to the shocks of the crisis; as a result, the whole system collapsed. As we showed earlier, the long-term gas contracts and the coal subsidies have further contributed to the lack of transparency and to the malfunctioning of the incentives system.

The current lack of government commitment to renewables has reached such proportions that the European Commission has opened a file to reprimand Spain – and Italy as well – for failing to notify measures transposing Directive 2009/28/EC on renewable energy which was planned to implement the goal of achieving a 20% share of renewables in final energy consumption in 2020. The energy policy reversal driven by the Spanish government has not only reduced the premiums available for renewables but has also generated legal uncertainty in investors, simultaneously calling into question the millions of euros already invested and thousands of jobs.

The incentives system for energy efficiency investment also suffers from a lack of transparency, as emphasized in Chapter 5 of this publication. Ambiguity regarding definitions of what constitutes a deep retrofit and a 'nearly zero-energy building' affects implementation at national level. Indeed, regulatory uncertainty is a major barrier to pursuing energy-efficiency investment. Furthermore, implementation of energy-efficiency-related directives varies from one country to another, limiting the ability of property-owners to achieve economies of scale across the region.

In order to reach EU 2020 efficiency targets, retrofits will need to double from about one per cent of existing stock today to between two and three per cent; this will require a combination of regulatory push and market pull. The EU has more than one hundred public financing mechanisms to promote energy efficiency in the building sector. Most of them rightly focus on existing stock. The financing, however, largely comes through grants and subsidies which, in a context of cash-strapped governments still dealing with a public debt crisis, are not the most effective use of limited public funds. Instead, public money should be used to leverage more private finance.

In the interest of greater transparency, measuring the loss inherent in depreciation represents an important means of motivating shareholders to invest in order to increase the long-term value of their portfolios. Clear performance objectives, good data collection, standardized contracts and regular independent audits should all help in this direction.

Industrial policy

Industrial policy could play a key role in matching climate policy and energy transformation objectives with employment creation and the strengthening of low-carbon technology development.

In Italy, as Chapter 3 showed, no mechanism has been devised or put in place for the support of a national industry in line with the ambitious photovoltaic deployment programme in operation in the country prior to the crisis. No positive effect on domestic industry and employment was visible. Cells have been bought from abroad creating a balance-of-trade deficit under that single product heading of around 8 billion euros in 2010 and 2011. Although employment was generated while the plants were being setting up, this job-creation potential is now finished and what remains is limited to the maintenance of the plants. The fruit in terms of large-scale employment creation was harvested by China, from where Italy imported most of the photovoltaic equipment. Italy's presence on international markets, meanwhile, was enhanced solely by the production of inverters.

The way forward must be through public spending: by maintaining incentives for energy efficiency and selected energy sources; by gradually redirecting incentives for fossil fuels towards the greening of the economy; and by investing in a national system of smart grids able to guarantee full use of the energy produced by renewables now that grid parity is gradually being reached. With the sudden reversal in this sphere, Spain also risks losing its position of technological leadership in the generation of electricity from solar energy that has in the past allowed major Spanish companies to position themselves in markets such as the USA, Algeria, UAE and South Africa.

This publication has delivered evidence that the combination of austerity policies, adjustment policies that see competitiveness exclusively in terms

of costs and prices, and a lack of a consistent regulatory framework, leads to the situation in which Europe finds itself today, namely, a lack of progress in the three apparently conflicting fields of economic, climate (energy) and social policy.

We have also shown that the regulatory framework for climate and energy policy is inconsistent; that energy prices and incentives systems for renewable energy suffer from a lack of transparency; that national subsidies to fossil fuel and even coal continue to exist. The EU Emission Trading System is sending false price signals for CO_2 emissions, as a result of which market players do not have the right incentives to move ahead with renewable energy generation. What we are seeing instead is a new renaissance of coal in a number of European countries.

On top of the economic climate that is defined by austerity policy, the lack of stability and inconsistency of the regulatory system is a primary contributor to the investment-averse stance of the business sector. A transparent and fair burden-sharing arrangement for financing the green transformation among the main economic actors – state, business sector (employers and employees) and households is missing; instead we find here a playground of short-term lobbying interests.

The result is that short-term interests take the lead and long-term goals are pushed out of the agenda, a situation that acts as poison to long-term investment. Europe can come up with the very best of all Investment Plans; but if there is a serious intention to get private investors involved, a stable and transparent regulatory environment is equally badly needed.