

A democratic energy transition?

Discussion paper on the social impact of the German *Energiewende*

Mikko Rissanen

DIALOG BASIS

mikko.rissanen@dialogbasis.de

www.dialogbasis.de

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The energy transition (*Energiewende*) refers to Germany's efforts to switch to renewable energy. The goal is to have renewable energy account for 80 per cent of the country's electricity consumption by 2050. What makes Germany's plan unique is that this switch is to be performed at the same time as a rapid phasing out of nuclear power plants. This decision was made in the wake of the nuclear disaster in Fukushima. The last nuclear power plant in Germany will be shut down as early as 2022.

First and foremost, the energy transition involves an ambitious transformation of the way in which energy is produced. The German energy transition has progressed rapidly: compared to the starting point in 2000, when the first law was passed for the promotion of renewable energy production, renewable electricity production's share of all electricity generation has increased from seven to 24 per cent (Statistisches Bundesamt 2014). Thus far, renewables have largely replaced nuclear power while there has only been a slight reduction in the use of lignite (or brown coal) and coal.¹

In practice, the energy transition is taking the form of state, regional and municipal infrastructure projects. It is also making itself felt in the everyday lives and the wallets of Germans. Affecting the whole of Germany, this undertaking is having undeniable economic, political and social effects. As a consequence, the energy transition as a project is evaluated on the basis of these effects too.

An example of the balancing act between energy reforms and their effects is provided by Germany's coal policy, which has also been the subject of discussion in Finland. Germany's new government programme involves a commitment to using coal-fired power plants to ensure security of supply. Many commentators however see this commitment to coal as being more influenced by labour and regional policy, especially the need to support the Ruhr area and the mining industry (Die Welt, 2013), than by energy security policy. But in their reports on the issue, the Finnish consultancy company Pöyry (2013) and the environmental organisations BUND (Friends of the Earth Germany) and DUH (Deutsche Umwelthilfe, 2013) maintain that the construction of new coal-fired power plants is no longer financially viable in Germany. They also claim that coal-fired power plants could be phased out within a tight schedule. In addition to conflicts of interest, the coal debate thereby reveals partial inconsistencies in certain energy transition objectives. The debate continues on whether the acceleration of rapid emission reductions would have been a better option than phasing out nuclear power; cheap coal and growth in the capacity of coal-fired power plants led to a slight increase in Germany's coal-based emissions in 2012 (Umweltbundesamt, 2014).

This paper therefore seeks to study the social impact of the energy transition, i.e. how it is affecting Germany's citizens. The transition's impact can be divided into two main strands. As stated earlier, on the one hand the transition is having economic effects: increasing energy production from renewable sources has created jobs and improved the financial situation of many municipalities and cities in Germany. Consumers can also feel the effects of the energy transition and the payment of the feed-in tariffs for renewables in the form of higher electricity bills. On the other hand, the energy transition requires the extensive construction of power plants and electric grids. To ordinary citizens, this takes the form of change in their local environment, which has intensified the discussion on the opportunities individuals have to participate in decision-making and to have a say.

However, a report compiled by IASS Potsdam (Institute for Advanced Sustainability Studies) reminds its readers that, even without the energy transition, Germany's energy system, power plants and

1. Between 2000 and 2013, nuclear power's share of electricity production fell from 30 to 15 per cent and that of coal from 25 to 20 per cent, while the share of lignite has remained unchanged at 26 per cent.

grids would have required a major overhaul by 2050. According to IASS Potsdam, calculation of the cost/benefit ratio should occur alongside a discussion of how the energy transition has changed the distribution of the associated costs and benefits, if the country truly aims to address the transition's impact on consumers (IASS 2013). It is thus important to examine the effects of the energy transition from the perspective of (in)equality.

Impact on the national economy

The energy transition's impact on Germany's national economy has been a topic of discussion since the project began. The "bible" on this issue, the scenarios presented by the German Federal Government's Energy Concept, regards the outcome as positive (BMW & BMU 2012, 107). Furthermore, analyses by two German research institutes, GWS (Institute of Economic Structure Research) and IFEU (Institute for Energy and Environmental Research, 2012), and the think tank FÖS (Reuster & Küchler, 2013) have identified a group of positive factors: the jobs and income generated by the construction and maintenance of the new energy infrastructure; export opportunities afforded by new technologies; savings arising from the reduction in imports and less subvention of fossil energy sources; and the curtailing of investment in conventional power plants. The energy transition also represents an opportunity to avoid or reduce the indirect costs of climate change – damage to infrastructure or human health – for which Germany would have to prepare if nothing were done.

The flip side of the beneficial effects includes the following: certain substitution and budget costs, the most significant of which are the feed-in tariffs for energy produced from renewable sources; the negative impact of these feed-in tariffs on consumers' purchasing power; and job losses due to the phase-out of conventional power plants. Even when taking account of the negative factors, GWS and IFEU state that the energy transition will have a clearly positive impact on Germany's national economy. Even now, in the early stages of the transition when the investment costs are highest, positive effects can be seen in terms of national income and employment (GFS & IFEU, 2012, 7). Until 2050, the net benefits will continue to grow in line with technological advances in renewable energy production and rising fossil fuel prices (Reuster & Küchler 2013, 10). In addition, the growth in self-sufficiency will lead to greater energy security.

More than 370,000 people in Germany have found employment in the renewable energy sector. This accounts for one per cent of all employment (BMU, 2013) and is more than ten times the number of jobs provided by the nuclear power sector (DatF, 2014). The employment impact of the energy transition is therefore highly positive. It is worth noting that most jobs provided by the energy transition are in the energy production sector; the public sector has yet to experience any major growth due to the transition² (Ulrich & Lehr 2013). Geographically, most new public-sector jobs are located in the largest states of Germany, Bavaria, North Rhine-Westphalia, Lower Saxony and Baden-Württemberg. From the viewpoint of sharing the benefits, the key issue is where the energy transition is having the greatest impact. The largest percentage of jobs in renewable energy production, and consequently a major source of employment and tax income, is in the states of

2. In 2012, more than 368,000 out of the 377,800 jobs provided by the renewable energy sector were related to construction and production: power plant production, installation and maintenance, the cultivation of energy crops, and biomass and biofuel production. Public administration and publicly funded research and development jobs in the sector totalled only 9,400 (around 2.5% of all jobs). (Ulrich & Lehr, 2013, 3).

northern and eastern Germany,³ which are home to wind and solar power and which have previously suffered economic decline and shrinking populations.

Impact on municipal finances

According to IÖW (the Institute for Ecological Economy Research), the profits earned through Germany's renewable energy sector were slightly under EUR 17 billion in 2012. Two thirds of these profits went to municipalities – a total of 11 billion – and the rest was divided between the states and the Federal Republic (IÖW, 2013). The energy transition's benefits to local authorities include tax and rental income paid by energy companies, job creation and the operating profits of local companies. In addition to actual energy production from renewable sources, service infrastructures supporting the energy transition also swell the coffers of many municipalities. Although power plant production has unavoidably been centralised in only a few regions and cities, support services (design, installation and maintenance) for the industry are providing jobs on a more extensive basis than this. Based on the scenarios of the IÖW, the municipal sector will continue to increase its revenue in the near future.

Relying on dispersed energy generation, the transition has increased municipalities' opportunities to influence local value creation through a proactive approach. Local and regional councils invest in renewable energy production either directly, or through local energy companies. Through planning activities, they are also creating the basis on which the energy transition can move forward. Germany has multiple examples of local authorities, of various sizes, which have been given a major economic boost by the Energiewende (DUH, 2013). Many local and regional administrations are now seeking energy self-sufficiency, a trend which has clearly gathered pace in recent years. What is more, by committing to locally produced energy, municipalities can support their local economies.⁴

By the same token, municipalities that are financially wedded to nuclear energy or fossil fuel-based production are facing difficulties. In spring 2014, the City of Essen hit the headlines: its holdings in the local energy company RWE had lost EUR 680 million in value due to the company's struggles to adapt to the energy transition (Klimaretter, 2014). At the same time, RWE announced that it would make one tenth of its workforce redundant. Most of the job losses would be in the Ruhr area; during the negotiations to form Germany's new national government in the autumn of 2013, local authorities in Ruhr complained about the energy transition's impact on the local economy and demanded the continuation of fossil fuel subsidies (FAZ, 2013).

Costs and benefits to citizens

As stated earlier, municipalities are reaping a large part of the financial benefits of the energy transition. Residents have felt these benefits in the form of jobs and improvements in municipal

3. Relative to overall employment, the renewable energy sector had the greatest employment impact in Germany's northernmost state, Schleswig-Holstein – at 2.6 per cent of all jobs state-wide in 2012 (Ulrich & Lehr, 2013, 4).

4. According to trend:research (2013), almost 250 towns, cities, districts or villages have declared that they aim to become energy self-sufficient. This figure is growing fast: trend:research estimates that energy self-sufficient municipalities and villages will account for 13 per cent of energy production from renewable sources by 2020.

finances. Citizens and local communities are moving the energy transition forward by making investments of their own and forming high numbers of energy co-operatives: As much as 47 per cent of Germany's renewable energy production capacity can be found in consumer-owned plants (trend:research and LUL, 2013). Energy co-operatives also provide consumers with the opportunity to benefit financially from the energy transition.

In Germany, renewable energy feed-in tariffs are mainly funded through a surcharge on the price of electricity (6.24 euro cents per kWh). This means that in principle, through power consumption, all energy users in Germany – consumers, companies, organisations and the public sector – participate in financing the energy transition. In a sense, this provides a highly transparent funding instrument. Despite the need to increase the surcharge each year and the fact that German consumers pay some of the highest electricity prices in Europe⁵ (EU, 2014), more than half of Germans feel that the current surcharge is reasonable (AEE, 2013). Nevertheless, it is feared that electricity prices will reduce support for the energy transition. The applied model has also drawn flak for the way in which it distributes costs. In order to safeguard their competitiveness, energy-intensive industries and companies have been exempted from paying the surcharge. As the surcharge increases and the cost burden on citizens mounts, more and more people are regarding these exemptions as unfair.

We can gauge the importance of the electricity price debate by the fact that the price of electricity was the only topical issue reviewed from the consumer perspective in the German government's first follow-up report on the energy transition (BMW and BMU, 2012). In its report on the energy transition's social impact, IASS Potsdam (2013) too gives pride of place to the price of electricity for consumers. According to IASS, the current model places too great a burden on low-income households. However, the Institute does not propose the abolition of the surcharge system. Instead, it suggests the adoption of a set of measures for lowering the cost burden on low-income households: adding progressive elements to the surcharge and introducing a "basic quota" exempt from these elements, as well as the faster tracking of electricity price trends in unemployment security and income support entitlements. The discussion on the upper limits of citizens' capacity to pay for the energy transition looks set to continue.

Individuals' opportunities to participate and have a say

The extensive dispersal of energy production activities has led to a discussion of the adverse effects of the energy transition at local level. People are concerned about health and environmental problems, and damage to the landscape, particularly in areas where wind power facilities and power grids are being built. Despite the fact that the possible locations have been regionally prioritised in terms of their potential, locals often find it difficult to understand why wind turbines or power lines have to be built close to their homes. The discussion of the role played by coal is also eating away at support for construction projects: critics point out that the construction of power grids is pointless if they transmit "black" electricity produced by coal as well (Neukirch, 2012). Although not everyone is quite as anxious about the changes and despite the fact that the adverse effects can be minimised through careful planning, the energy transition is placing Germans in unequal positions: some people have to endure changes in their local environments, while others do not.

5. 28.73 cents per kWh (2013).

Although support for the energy transition remains strong, feelings of unfair treatment pose a risk to the progress of the transition. Local movements have risen up in protest against several construction projects. Municipal and regional citizens' initiatives have also been used to hinder wind power projects in particular (Löhle, 2012). In response, an effort has been made to increase ordinary citizens' opportunities to have a say in the transition, particularly at municipal level. Local and regional wind power and energy dialogues have been organised across Germany, often with the support of the states (e.g. HMWELV, 2014).

Experiences of local discussions have mainly been positive. In particular, impartial experts have helped to allay most of the concerns and fears experienced by residents.⁶ The problem is however that the authorities have been slow to recognise the need for dialogue. In many cases, measures to increase the involvement of residents have only begun after powerful resistance has sprung up. Residents have few genuine opportunities to influence such issues once planning and permit procedures have advanced to a certain stage. By then, public discussion can lead to acceptance amongst locals at best. As a result, various actors have highlighted the need to provide residents with genuine opportunities to have a say at an early stage. This is viewed as a prerequisite for the truly democratic realisation of the energy transition. The key message is that locals should be given some say in the planning phase, for example when choosing alternative locations for new construction.⁷

Conclusion

The objective of this discussion paper has been to analyse the impact of Germany's energy transition on consumers. Even a brief examination reveals that we cannot be clear on whether or not the energy transition has led to more or less equality among Germans. On the other hand, it is beyond dispute that many municipalities and ordinary citizens are benefiting financially from the energy transition. At the same time, municipalities dependent on nuclear power and fossil fuel-based power generation are experiencing difficulties. As residential areas and living environments within Germany change, many residents feel that they have lost out. Based on the discussions held so far, we can provide a summary of the key factors that would play an important role in the implementation of a democratic energy transition – in Germany or in Finland:

- The energy transition can be a major source of employment and income, particularly in areas in which the economy and population are in decline. In gaining local acceptance for construction projects, it is important that any income generated remains within the area and that locals benefit from the energy transition.
- In terms of gaining public support for the energy transition, the achievement of a balanced sharing of the costs between people in different income categories, and between citizens and the business sector, is crucial.
- The energy transition has had visible effects within municipalities. Providing residents with genuine opportunities to have a say can improve the quality of planning and expedite the completion of construction projects, providing that problematic issues can be jointly

6. Example: the wind power dialogue held in the city of Bad Orb in Hessen (HMWEVL, 2013).

7. At the end of 2013, the Association of German Engineers VDI (2013) and the state of Baden-Württemberg (2013) published guidelines on the early involvement of residents.

resolved. At a time when resources are scarce within many local authorities, it would be useful to provide central support for municipal or regional dialogue processes.

- Environmental organisations have been particularly eager to criticise the energy transition for focusing too much on the “electricity transition” and for its slow progress in achieving emission reductions (Dahlbender, 2014). Sufficient investment in energy efficiency could also reduce the need for renewable energy production and might mute criticism focused on the threats to the environment and nature posed by the construction of wind power and electricity grids.

The author



Mikko Rissanen works as a project manager for the German-based DIALOG BASIS researcher network. In this capacity, he monitors the progress of Germany’s *Energiewende* especially from the perspective of public participation. He has been involved in the organisation of several local wind power and energy forums in Germany. In the spring of 2013, Rissanen contributed articles on topical issues related to Germany’s energy reforms to Sitra’s *Energiewende* blog series.⁸

8. The Finnish Innovation Fund Sitra posted a series of blogs entitled *Energiewende* on its website in 2013. A Finnish-language summary of the *Energiewende* blogs can be downloaded from Sitra’s website at: <http://www.sitra.fi/julkaisu/2013/energiakaanne>

Sources

Agentur für Erneuerbare Energien (AEE) (2013): Erneuerbare Energiewende ist bei Deutschen weiterhin hoch im Kurs. Akzeptanzumfrage 2013. http://www.unendlich-viel-energie.de/media/file/173.AEE_RenewsKompakt_Akzeptanzumfrage_Sep13.pdf

Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) (2013): Erneuerbare Energien in Zahlen. Nationale und internationale Entwicklung. http://www.erneuerbare-energien.de/fileadmin/Daten_EE/Dokumente_PDFs/ee_in_zahlen_bf.pdf

Bundesministerium für Wirtschaft und Technologie (BMWi) & Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) (2012): Erster Monitoring-Bericht „Energie der Zukunft“. <http://www.bmwi.de/BMWi/Redaktion/PDF/Publikationen/erster-monitoring-bericht-energie-der-zukunft,property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf>

Deutsche Umwelthilfe (DUH) (2013): Strategie: Erneuerbar! Handlungsempfehlungen für Kommunen zur Optimierung der Wertschöpfung aus Erneuerbaren Energien. <http://www.duh.de/uploads/media/Handlungsleitfaden.pdf>

Deutsche Umwelthilfe (DUH) & Bund für Umwelt und Naturschutz Deutschland (BUND) (2013): Rechtliche Instrumente zur Verhinderung neuer Kohlekraftwerke und Braunkohletagebaue in Deutschland. http://www.bund.net/fileadmin/bundnet/pdfs/klima_und_energie/130514_bund_klima_energie_rechtsgutachten_kohlekraftwerke.pdf

Dahlbender, Brigitte (2014): Stromnetzausbau zwischen Notwendigkeit der Energiewende und Naturschutz. BUND Friends of the Earth Germany. http://um.baden-wuerttemberg.de/fileadmin/redaktion/m-um/intern/dateien/Dokumente/Energie/Netzausbau/Dahlbender_BUND.pdf

Deutsches Atomforum e.V. (DAtF) (2014): kernenergie.de. Informationen zur friedlichen Nutzung der Kernenergie und Kerntechnik. <http://www.kernenergie.de/kernenergie/themen/standort-deutschland/wettbewerbsfaehigkeit.php>

European Commission (EU) (2014): Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Energy Prices and Costs in Europe. http://ec.europa.eu/energy/doc/2030/20140122_communication_energy_prices.pdf

Frankfurter Allgemeine Zeitung (FAZ) (2013): Kommunen im Ruhrgebiet fürchten finanziellen Kollaps. <http://www.faz.net/aktuell/politik/energiepolitik/energiewende-kommunen-im-ruhrgebiet-fuerchten-finanziellen-kollaps-12625812.html>

Gesellschaft für Wirtschaftliche Strukturforschung mbH (GWS) & IFEU – Institut für Energie und Umweltforschung Heidelberg (2012): Volkswirtschaftliche Effekte der Energiewende. Erneuerbare Energien und Energieeffizienz. http://www.bmub.bund.de/fileadmin/bmu-import/files/pdfs/allgemein/application/pdf/studie_effekte_energiewende.pdf

Hessisches Ministerium für Wirtschaft, Energie, Verkehr und Landesentwicklung (HMWEVL) (2013): Windenergie in Bad Orb? Bürger diskutieren mit Experten. <http://www.energieland.hessen.de/dynasite.cfm?dsmid=19438>

Hessisches Ministerium für Wirtschaft, Energie, Verkehr und Landesentwicklung (HMWEVL) (2014): Bürgerforum Energieland Hessen. <http://www.energieland.hessen.de/dynasite.cfm?dsmid=19266>

Institut für ökologische Wirtschaftsforschung (IÖW) (2013): Wertschöpfungs- und Beschäftigungseffekte durch den Ausbau erneuerbarer Energien. Studie im Auftrag von Greenpeace Deutschland. http://www.ioew.de/uploads/tx_ukioewdb/Greenpeace-Studie-Wertschoepfung.pdf

Institute for Advanced Sustainability Studies e.V. (IASS) (2013): Beiträge zur sozialen Bilanzierung der Energiewende. http://www.iass-potsdam.de/sites/default/files/files/report_beitraege_zur_sozialen_bilanzierung_der_energiewende.pdf

Klimaretter.info (2014): RWE-Krise lässt Essens Kapital schmelzen. <http://www.klimaretter.info/politik/nachricht/16080-rwe-krise-laesst-essens-eigenkapital-schmelzen>

Löhle, Claudia (2012): Direkte Demokratie – Motor oder Bremse für die Energiewende? Wegweiser Bürgergesellschaft 10/2012. http://www.buergergesellschaft.de/fileadmin/pdf/gastbeitrag_loehle_120525.pdf

Neukirch, Mario (2012): Grüner Netzausbau für schmutzigen Strom. Blätter, 6/2012. <https://www.blaetter.de/archiv/jahrgaenge/2012/juni/gruener-netzausbau-fuer-schmutzigen-strom>

Pöyry (2013): Outlook for new coal-fired power stations in Germany, the Netherlands and Spain. A report to DECC. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/194335/Poyry_Report_-_Coal_fired_power_generation_in_Germany.pdf

Reuster, Lena & Küchler, Swantje (2013): Die Kosten der Energiewende – wie belastbar ist Altmaiers Million? Kurzanalyse im Auftrag von Greenpeace Energy eG und dem Bundesverband Erneuerbare Energien e.V. Forum Ökologisch-Soziale Marktwirtschaft, Berlin. http://bee-ev.de/_downloads/presse/2013/201303_BEE-GPE_Kurzanalyse-Altmaiers-Billion.pdf

Sitra, Finland's Innovation Fund (2013): Energiäkääne – Kooste blogisarjan kirjoituksista. (Germany's Energiewende – A summary of blog writings) available only in Finnish <http://www.sitra.fi/julkaisut/muut/Energiakaanne.pdf>

Staatsministerium Baden-Württemberg (2013): Leitfaden für eine neue Planungskultur. <http://stm.baden-wuerttemberg.de/fileadmin/redaktion/dateien/Remote/stm/planungsleitfaden.pdf>

Statistisches Bundesamt (2014): Bruttostromerzeugung in Deutschland für 2011 bis 2013. <https://www.destatis.de/DE/ZahlenFakten/Wirtschaftsbereiche/Energie/Erzeugung/Tabellen/Bruttostromerzeugung.html>

trend:research (2013): Energieautarke Kommunen und Bioenergiedörfer. <http://www.trendresearch.de/studie.php?s=554>

trend:research & Leuphana Universität Lüneburg (LUL) (2013): Definition und Marktanalyse von Bürgerenergie in Deutschland. Bremen & Lüneburg. http://www.die-buergerenergiewende.de/wp-content/uploads/2013/10/definition-und-marktanalyse-von-buergerenergie-in-deutschland_akt_2.pdf

Ulrich, Philip & Lehr, Ulrike (2013): Erneuerbar beschäftigt in den Bundesländern. Bericht zur aktualisierten Bruttobeschäftigung 2012 in den Bundesländern. Gesellschaft für Wirtschaftliche Strukturforschung (GWS). http://www.erneuerbare-energien.de/fileadmin/Daten_EE/Dokumente_PDFs/_bericht_erneuerbar_beschaefigt_bundeslaender_bf.pdf

Umweltbundesamt (2014): Treibhausgas-Emissionen in Deutschland. <http://www.umweltbundesamt.de/daten/klimawandel/treibhausgas-emissionen-in-deutschland>

Verein Deutscher Ingenieure (VDI) (2013): VDI-Richtlinie Frühe Öffentlichkeitsbeteiligung bei Infrastruktur- und Großprojekten. http://www.vdi.de/uploads/tx_vdirili/pdf/2069987.pdf

Die Welt (2013): Braunkohle-Lobby schrieb am Koalitionsvertrag mit. <http://www.welt.de/wirtschaft/article122875634/Braunkohle-Lobby-schrieb-am-Koalitionsvertrag-mit.html>