Health Policy 121 (2017) 1147–1153

Contents lists available at ScienceDirect

Health Policy

journal homepage: www.elsevier.com/locate/healthpol

Governing energy while neglecting health – The case of Poland☆

Nikolay Vasev

Øster Farimagsgade 5, 1353 Copenhagen K, Denmark

ARTICLE INFO

Article history:
Received 21 April 2017
Received in revised form 14 August 2017
Accepted 12 September 2017

Keywords:
Intersectoral governance
Health impacts
Polish energy sector
Over-reliance on coal
Economic and health costs

ABSTRACT

The present article discusses Poland's continued reliance on coal power and the consequent impacts on public health. Concrete aspects of the energy infrastructure and political priorities are shown to compromise as compromising public governance and leading to deteriorated health standards among the general population. To make this case, this study juxtaposes the most recent developments in the Polish energy sector with current measures in EU energy policy and reforms in other EU Member States. Special attention is paid to developments in Poland following the political shift in October 2015, when a new government came to power. The ruling conservative party's direct involvement in the management of the mining and utility companies and its strong political ties to miners' unions are particularly discussed. Theoretically, the article relies on the TAPIC framework for governance. The framework rests on five integral principles of good governance: Transparency, Accountability, Participation, Integrity and Capacity; TAPIC allows scholars to study the impact of governance on public health in any policy area. Methodologically, this study relies on secondary sources, including academic publications, national and international reports, and statistical data on a range of energy and health factors in Poland and Europe.

1. Introduction

Coal holds a central position in Poland's energy mix. Currently, with 63–66 million tons of extraction, Poland is the fourth largest lignite producer worldwide and the second largest in the European Union [1,p. 151]. Additionally, the country is Europe's biggest hard coal producer with 79.2 million tonnes in 2012 [2]. In May 2016 the Polish Mining Group was established. It took over Kompania Weglowa's (Poland's largest coal mining company) entire workforce of approximately 30,000 employees as well as 11 coal mines, becoming the largest European coal producer with a total production capacity of about 40 million metric tons of coal [3]. Nationally, the coal industry employs around 100 000 people, organized in more than one hundred different labour unions. At 86%, the density of union membership among workers is remarkably high [4,p. 49]. As a result, coal fired power plants generate approximately 90% of the national electricity [5].

However, coal's domestic profusion does not alter its considerable health detriments. Its use has been directly linked with severe health problems due to air pollution, considerable economic damage and generally reduced deteriorated air quality in many Polish cities [6–10].

The present article examines the governance of the Polish energy sector though the TAPIC framework. We aim to illuminate how inimical energy policies lead to adverse health outcomes. A specific focus is placed on the Polish coal mining sector and electricity generation. This study highlights how the government is involved in the management of the energy sector, whether the governance of Polish energy policy complies with TAPIC's recommendations, and what the consequences are for public health. The framework's finer details are presented further below.

2. Methodology

This article relies on a literature review of secondary sources primarily in the English language. We have reviewed several types of sources. First, we examined the state of the art in research on the governance of the Polish energy sector, as well as research on air pollution and the health impact of coal.

Second, we have reviewed relevant reports and documents from Eurostat, the European Environmental Agency (EEA), the International Energy Agency, the World Health Organization (WHO), the Organization for Economic Cooperation and Development (OECD), Health and Environment Alliance, Climate Action Europe, Eurocoal and others. This review posed some difficulties in terms of uniform information availability, as data on some indicators was collected via inconsistent methodologies.

Lastly we examined journalistic articles on the role of coal in Poland and the rest of Europe. Sources such as the New York Times,

☆ Open Access for this article is made possible by a collaboration between Health Policy and The European Observatory on Health Systems and Policies

E-mail address: nv@ifs.ku.dk

http://dx.doi.org/10.1016/j.healthpol.2017.09.008

the Guardian, Reuters, Bloomberg, Politico and others have covered many aspects of the coal mining sector around Europe, and particularly in Poland. These articles give real life examples of the government of the Polish energy sector, popular protests against mining expansion, and the economic inefficiencies of the industry.

The article proceeds as follows. In Section 3 below we describe the health implications of coal power generation, and the impact the industry has had in Poland. Against this background, in Section 4, we will examine how EU legislation has sought to alleviate coal's impact on public health across Europe. Deviations from European provisions will stress national traits of governance and will deliver a clearer insight into the importance of coal in Poland. In Section 5 we will also examine current developments in energy sectors across Europe and draw parallels between Poland and its European counterparts. Having described the health ramifications of coal power, the pertinent legislative measures and the current infrastructural developments, Section 6 will present the analysis of the Polish energy sector via the TAPIC framework. In a short introduction we will present TAPIC's central principles and then proceed with an analysis of the Polish energy sector. We finish with a TAPIC centred stakeholder analysis and the conclusions, presented in Section 7.

3. Coal power – the visible threat

According to the Polish National Center for Emissions Balancing and Management (KOBIZE), coal power plants are responsible for 11% of primary particulate matter (PM_{25}), 51% of sulphur dioxide (SO2) and 31% of nitrogen oxides (NOx) emissions [11,p. 1].

Particulate matter is a general term for a number of polluting particles associated with (among others) coal power plants. They vary in size, and chemical composition. PM_{25} refers to 'fine particles' that have a diameter of 2.5 micrometres or less. Epidemiological studies attribute the most severe health effects from air pollution to PM and, to a lesser extent, ozone. Even at concentrations below current air quality guidelines PM poses a health risk [12,p. 27]. Due to their small size, PM can be inhaled and affect the respiratory, cardiovascular, immune, and neural systems. Both chemical and physical interactions between PM and lung tissues can induce irritation or damage [12,p. 27].

Susceptible groups with pre-existing lung or heart disease, as well as elderly people and children, are particularly vulnerable. For example, exposure to PM affects lung development in children, including reversible deficits in lung function as well as chronically reduced lung growth rate and a deficit in long-term lung function [13,p. 6].

Sulphur dioxide is a much more potent pollutant. It is a toxic and corrosive gas which can cause vomiting, nausea, stomach pain and considerable damage to the respiratory system. It also affects the skin and eyes, and in rare cases can cause blindness. Sulphur dioxide contributes to acidic deposition, causing adverse effects on aquatic ecosystems in rivers and lakes, damage to forests, and acidification of soils [12,p. 67].

Nitrogen dioxide affects primarily the respiratory system. It disturbs the airways causing significant inflammation. In patients already suffering from asthma, and in particular children, long-term exposure to nitrogen dioxide can lead to bronchitis as well as reduce lung function. Short-term exposure to NO2 can result in adverse health effects such as changes in lung function in sensitive population groups, while long-term exposure can lead to more serious effects such as increased susceptibility to respiratory infection [12,p. 58].

Across the EU, the annual cost of air pollution from coal power plants is staggering. Every year, there are 28 600 000 cases of lower respiratory symptoms; 4 100 000 lost working days; 2 100 000 days of medication; and 18 200 premature deaths associated with air pollution. The combined cost of all of this is between EUR 15.5–42.8 billion [14,p. 10]. Specifically in Poland, a recent report by the WHO and the OECD estimated that health costs from air pollution are equal to 20% of the country's GDP. These costs are most likely higher, because healthcare costs and loss of workers productivity are not factored into the WHO/OECD assessment [11,p. 1].

As a result of the high concentration of particulates, Polish cities took 6 of the top 10 spots in a survey of 386 European cities conducted by the EEA. Krakow, Nowy Sacz, Gliwice, Zabrze, Sosnowiec and Katowice exceeded European norms for particulate concentrations between 123 and 150 days of the year [15]. These targets should not be exceeded for more than 35 days a year.

Furthermore, in Poland the WHO estimates that in 2010, the number of years of life lost to ambient particulate matter pollution and household air pollution was 48 544. The corresponding economic cost was US$ 101 billion [16,p. 25]. Admittedly, coal powered plants are not the only contributors to particulate matter pollution. Therefore, this huge sum is not solely attributable to coal plants. However, their increasing number in the country does not help.

In Section 4 we examine how the European Union has sought to address these issues through its regulation, and how the rest of the continent has responded to the changing regulatory environment.

4. European energy policy and infrastructural consequences

The *acquis communautaire* (i.e. the European body of legislation) pertaining to the environmental field comprises more than 460 pieces of legislation [17,p. 3]. Within this comprehensive list there are multiple measures pertaining to air quality and energy generation. Here we will take a closer look at the most relevant EU laws, i.e. the Renewable Energy Directive (RED), the Large Combustion Plants Directive (LCPD) and the Industrial Emissions Directive (IED).

The Renewable Energy Directive was adopted in 2009 with the aim of establishing a common framework for the promotion of renewable energy around the Union. It sets mandatory national targets for the overall share of energy to be derived from renewable sources. The central goal is that by 2020 at least 20% of the EU's total energy needs, as well as 10% of all transportation fuels, will be derived from renewable sources.

The most crucial part of the RED's implementation is the adoption of biennial country reports. Based on these reports, the Commission also issues a report on the overall progress toward the Directive's central goals. In its 2015 report, the Commission concluded that the projected share of renewable energy in the gross final energy consumption is 15.3%. The EU's 2020 renewables target has resulted in around 326 Mt of avoided CO2 emissions in 2012, rising to 388 Mt in 2013. The conclusion is that meeting RED's aims should be manageable. However, the Commission does stress that achieving the 2020 renewable energy targets is not certain in the cases of Poland and Hungary. In these two cases, it is only under optimistic assumptions related to the future development of energy demand and country-specific financing conditions that the 2020 renewable energy targets appear achievable [18,p. 5].

The Large Combustion Plants Directive entered into force in 2001. The Directive targets coal power plants, as it sets out the upper limits for sulphur dioxide, nitrogen oxide and dioxide, as well as dust. The LCPD distinguishes between older facilities commissioned before and after 26 November 2002 and imposes laxer restrictions on older plants and more stringent measures on the newer.

The Directive posed a particular challenge for the new Member States from the Central and Eastern Europe. The energy sector of many of these countries is dominated by old combustion processes