



Regional industrial policy in the wind energy sector: The case of the State of Rio Grande do Sul, Brazil



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ABSTRACT

This paper presents the case of Rio Grande do Sul (RS), in Brazil, a state which implemented a regional industrial policy (IP/RS) in the wind energy sector, motivated by the comparative advantages of the state and by a national program to stimulate the development of this source of energy in Brazil. Exploring different theoretical views on the role of government and industrial policies in the economy, we investigated the bases, models and strategies used to design the IP/RS and the benefits gained from its implementation. The case study followed the inductivist paradigm using qualitative analysis of information from documentary and bibliographical research, as well as from data obtained through active participant observation. The IP/RS promoted the introduction of public goods and horizontal market interventions for the wind sector. The IP/RS was able to increase the competitiveness of the RS in relation to the other Brazilian states with high wind potential, demonstrated by the superior growth of RS in auctioned contracts and by the significant increase in wind power capacity in RS compared to the performance of other states.

1. Introduction

The wind power industry is dynamic and innovative. It is growing rapidly and consistently worldwide, contributing to the development of new market sectors and job creation. The average growth in wind-generated power capacity worldwide between 2005 and 2014 was 23% per year, reaching a global capacity of 369.6 GW by the end of 2014 (GWEC, 2015). According to the REN21 report, by the end of 2014, wind power represented 3% of the world's production of electricity (Sawin et al., 2015). The International Energy Agency (IEA) (2015) predicts that this capacity will reach 18% by 2050.

In recent years, Brazil has been showing steady growth in wind power in the energy matrix. In 2014, it was the fourth ranked country in the world in installed generating capacity and the tenth in cumulative installed capacity, totaling approximately 6.0 GW (GWEC, 2015). The onshore wind potential, estimated at heights up to 100 m, is more than 300 GW (ABEEólica, 2015a). In the 2015 edition of the Bloomberg New Energy Finance (BNEF) (2015) Climatescope, Brazil was touted as the second most attractive Country for investing in renewable energy, after China. This standing was based on the existence of a structured value chain, the accessibility to funding for the construction of power plants, and most importantly, on the building of an institutional environment with industry-friendly public policies. The current model for energy

contracting in the country, which is based on auctions, encourages competition between investors and manufacturers, contributing to reductions in energy prices.

The role of public policy - especially industrial policies (IPs) - has been gaining increasing coverage in the literature researching energy and sustainability, as observed in the recent works of Lewis (2011), Morris et al. (2012), Jiao and Boons (2014) and Pegels and Lütkenhorst (2014). Investigations typically center on how the formulation, implementation and evaluation of IPs promote and encourage the development of industrial sectors (Jiao and Boons, 2014). Both in more general studies and in those specifically targeting the subject of energy, IPs usually fall under the purview of federal governments.

The potential contribution of regional policies within the framework of the regional states that constitute the federation (or other political divisions existing in countries) on the effectiveness of IPs, represents a research gap within the context of public policy and energy. The development of regional IPs in synergy with the national policy and from the perspective and peculiarities of its member states may enhance the collective gains at the national level as well as the outcomes for each state constituting the federation. In particular, with the implementation of a state IP, we should expect stronger competitiveness for that region, such as in auctions against other federal states for investments.

Our purpose is to investigate the development of an industrial policy

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(IP) for the energy sector at the regional level in addition to a national policy and the possible gains for the regions that have deployed it. To meet this goal, we investigated the case of the State of Rio Grande do Sul, Brazil. In the past decade, national programs were implemented to stimulate renewable resources in Brazil in order to diversify the Brazilian electricity matrix and meet the country's growing energy demands. Wind energy has been the fastest growing source of power generation in Brazil for the last 5 years (EPE, 2015). During this period, the states of Rio Grande do Norte, Ceará, Bahia and Rio Grande do Sul have shown the most significant performances in wind farm installation (ABEEólica, 2015a). We focus our research on Rio Grande do Sul since this State implemented an IP (IP/RS) in the period from 2011 to 2014, formally choosing the wind sector as a strategic industry for development. In this context, we investigated the motivations, bases, models and strategies used to design the IP/RS and the benefits and challenges associated with its implementation.

Our investigation begins with the role of government in the economy and the role of the IPs viewed through different theoretical lenses. Then we describe cases involving regional policies to understand how they may complement the national level policies. We outline our theoretical framework, basing it on the theory of Comparative Advantages (Ricardo, 1817) and Porter's (1985, 1990) concept of Competitive Advantage. Next, we describe the methods and the main sources of the evidence. Finally, we present the outcomes of the IP/RS in the wind sector and a critical analysis of its implementation.

2. Industrial policy: different possibilities of state actions

Industrial policy can be defined as a mechanism for coordinating strategic actions of governments and companies in the development of technological change-inducing activities and/or to troubleshoot identified issues (Suzigan and Furtado, 2006). Ferraz et al. (2002) define the coordinated mechanisms of the IP as incentives and regulations that affect resource allocation in the industrial fabric and influence the productive structure and heritage of a country and the conduct and performance of its economic agents. Subsumed within this concept of the IP is the role of the state as the promoter and supporter of productive activities carried out within its territory.

Recent discussions on this subject have addressed the type of action or intervention undertaken by the state and the consequences of those actions (Evans, 1995). The different forms of public interventions can be classified according whether they have a transverse nature – broader ranged (horizontal) – or are limited to a few sectors (vertical) as in the provision of public goods or market interventions (Fernandez-Árias et al., 2010). The provision of public goods in a broader range usually occurs when the goal is to preserve already established or developing sectors related to existing sectors. In such cases, the IP's focus is to remove obstacles to development and productivity through investments in basic infrastructure, professional education, improving the business environment and exchange rate policy actions (Hausmann et al., 2008). Interventions for the provision of public goods to specific industries involve, for example, the construction of roads and specific infrastructures in a region, support for certain industrial clusters and the creation of special centers for business promotion and innovation (Fernandez-Árias et al., 2010). Examples of wide range market interventions include the provision of subsidies for research and development (R & D), professional training programs, credit lines and tax incentives, and support for internationalization (Harrison and Rodriguez-Clare, 2010; Fernandez-Árias et al., 2010). Restricted range market interventions are IPs that distort the relative prices of sectors, such as in the provision of subsidies and protections for specific industries (Harrison and Rodriguez-Clare, 2010). These IPs are justified by the promotion and protection of new industries achieved through local content policies and barriers to importation (Harrison and Rodriguez-Clare, 2010).

Generally, IPs are developed at the level of nations, since federal

governments control key variables of macroeconomic policy, such as interest rates, exchange rates and fiscal policies/federal taxes (Nam, 2000). National governments may also influence the strategies of companies and the rivalries among them through instruments such as regulations, laws and tax policies (Porter, 1990). Within the energy sector, the assignment at the federal level is evident. The energy sector is strategic for all countries because the forms of energy production and consumption have direct and indirect impacts on economic and social development as well as on the environment (Rocha et al., 2015).

There are, however, some specific cases of formulation and implementation of regional policies, such as in the regions of Third Italy, Baden-Württemberg in Germany and the Basque country (Porter, 1990). These empirical cases from different countries illustrate the possibility of formulating regional IPs to complement national ones. The energy sector is included in this context.

3. Regional IPs complementing national IPs

Complementarity between policies supports the achievement of a particular target from different angles, and the challenge is to develop specific programs that promote synergy between policies at different levels (OECD, 2002). From this perspective, the implementation of a regional IP (here understood as the IP of a state) as a state policy can be effective in complementing national policies and strengthening the development of a particular state or region of a country. The scope of the goals to be achieved with an IP depends on the institutional capacity of the country or state that implements it. The greater an institution's power to intervene, the larger the scope and number of instruments that can be used (Fernandez-Árias et al., 2010; Peres and Primi, 2009). Thus, IPs at the national level have greater scope, power, and influence than state or local IPs, although these, within their limits of action, can contribute in turn to regional development and augment the effectiveness of national IPs.

Successful examples of regional IP are found in empirical cases of the regions of Third Italy (Emilia Romagna), the Basque country (Euskadi) in Spain and the region of Baden-Württemberg, Germany. In Third Italy, industrial clusters of relevant social-economic importance were formed in the late 1970s, aided by effective local public policies that focused on small- and medium-sized enterprises (SMEs) and provided infrastructure and training programs for the region (Hospers and Beugelsdijk, 2002). In the 1990s and 2000s, following guidelines from the European Commission for a new industrial policy in the European Community, Euskadi, the autonomous community of the Basque country, developed programs to increase the competitiveness of their regional companies, with a focus on creating business innovation centers to promote and foster innovative business and/or technology-based initiatives. The sectors identified as priorities received incentives for technological development, management improvement, internationalization, and human resources training (Euskadi, 2014). In the case of Baden-Württemberg, the third largest state of Germany, the development of this region seems to have been powered by the complementarity of local policies with the national IP. Local government contributions, focused on the development of SME clusters, joined a solid national base of transportation infrastructure and education. Among the regional instruments applied was financial support for the management of clusters and internationalization of the participants for their entry into new markets (BWS, 2014).

However, perhaps the most emblematic case of the effectiveness of regional IPs is that of the United States (US), a country in which there are hegemonic currents that defend liberalism and restrict government intervention in the market. Wade (2014) describes this rejection by the US to IPs, considered as “synonymous of distortionary government intervention that corrodes the values of an entrepreneurial culture, undermines the efficacy of market competition and stacks the wider incentive system in favor of one or another rent-seeking group” (Wade, 2014, p. 383–384). The role of the government is generally perceived as

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