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Lessons learned in France and Quebec regarding financial and legal mechanisms to develop renewable energy: A hybrid model as an acceptable solution for onshore wind?

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ABSTRACT

This article shows that the unfavorable context of emergence, as well as neo-corporatism, limited the weight of wind energy in France and Quebec and delayed the project development and the wind industry as a whole. Indeed, the level of political will to wind energy development in both jurisdictions is fluctuating and characterized by a lack of continuity in policy or regulatory instruments. The efficiency of the pricing mechanisms depends on its political design. While the French Feed-In Tariff is inefficient in terms of installed capacity and is deemed too expensive by opponents, the first two calls for tenders in Quebec fare quite well on that front. However, they are perceived as unacceptable due to the multinational companies involved and the implantation of large-scale wind farms in inhabited areas. The third community call for tender, while generally better-accepted locally, is poorly regarded among the cooperative movement and at the national level because of the competition with the municipal sector and higher costs to society. In both cases, a hybrid pricing model would achieve a better balance between costs to society and local development, thus promoting social acceptance through a greater diversity in ownership types and wind farms size.

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1. Introduction

Quebec and France are at a major decisional crossroad concerning their energy future. In France, with an ongoing debate launched in 2013 on energy transition, the question of nuclear park expansion and the discussion of a third European directive on renewable energy (RE), the share that each energy type should contribute to the nation's energy mix by 2030 is and will continue to be the subject of lively debate. In Quebec, with the renewal of the soon-to-expire 2006–2015 Energy Strategy, it is the weight of the onshore wind energy sector which should be a source of debate, given the current context of electrical surplus and low export cost. Indeed, these two factors may possibly question the way energy development used to be envisioned until now.

This article aims to inform these debates by applying the findings of a recent thesis which analyzes the various components involved in the development of a sustainable and acceptable wind energy policy [12]. More specifically, this article examines one of these components: the financial and legal instruments that governments can leverage to achieve their own goals in the development of RE (onshore wind, offshore wind and solar). Drawing from the experiences of France and Quebec, we present the lessons we can learn on the use of political and legal instruments, in order to identify those instruments with the highest potential for success.

First, we briefly describe these different means of action to promote RE, focusing on the most prevalent tool used in France and Quebec: pricing mechanisms. Second, we detail the methodology used in our research and indicate the major advantages and disadvantages of the two main systems used. Third, we analyze their results in terms of installed capacity and costs, and highlight innovations in terms of social acceptance (SA). Finally, we discuss how institutional factors could affect the level of political will to implement RE in each national context, as well as the stability of the instruments used. These elements will allow us to conclude on the general interest of each pricing system.

2. Methods

2.1. Financial instruments used to develop renewable energy in France and Quebec

In this article, we discuss the issue of financial mechanisms while considering the legal and regulatory framework as an extern variable, because we need to balance these two elements to enable a large-scale deployment of the industrial sector and of RE projects [12,60]. In general, the financial mechanisms determine the level of profitability of a given technology; their role is to trigger investment in new production capacity [59]. To achieve this investment, countries must develop appropriate mechanisms for each type of RE, or the policy strategy is unlikely to be successful [53]. To classify them, the Lewis and Wisser's [38] typology splits financial mechanisms into two categories: direct (incentives) or indirect (pricing mechanisms).

Incentives are sometimes used to complement a pricing mechanism. They may take the form of production or investment subsidies, tax credits, or preferential loans. These incentives reduce investment costs and facilitate access to financing by improving profits or reducing production costs for potential investors [26,50,55]. The government

may also seek to attract international investors if they include specific criteria in the call for tender, such as regional or national content in onshore wind in Quebec and in offshore wind in France. These measures are important when countries arrive on the market late and try to attract leading foreign industrial players [38,39]. In the end, the overall effectiveness of these policy instruments is assessed in how well these tools complement pricing mechanisms [10,40].

Pricing mechanisms are the key element in triggering a political decision on RE development. Indeed, ambitious goals can only be achieved by filling in for the difference in costs with conventional energy (CE) available on liberalized electricity markets [10,52]. However, most countries do not take into account environmental externalities when establishing the selling price of electricity. As a consequence, most RE marginal costs are still higher than those of CE and/or than the average production costs in several jurisdictions, such as France and Quebec.⁴ Pricing mechanisms are thus still needed for the RE sector to become competitive [27,28,41,55].

A tariff system determines the selling price of RE as well as the conditions to access to the grid, which are two essential components of the projects diffusion process [22,59]. There are two main families: Feed-in Tariffs (FIT); and quota systems (QUOTA) [11,12]. In FITs, policy makers set the price and the amount of energy produced is determined by the market [27]. The tariff obtained is the same for all potential investors. It is known and guaranteed for most of the duration of the power purchase contract (15–25 years). There is now an improved version of this type of system, or advanced RE tariffs, such as in onshore wind farms in France. After a certain period of operation (10 years), the tariff decreases more or less depending on the quality of the wind resource. In addition, some FITs can also become dependent on the market if a portion of the tariff is not fixed in advance, but is determined by the market, as is the case with premiums in Spain [3]. For QUOTAs, the quantity to be produced is politically determined and the tariff is set by the market [27]. The amount requested becomes the goal to reach in a negotiated time period (for example, Quebec wants to reach 4000 MW of wind energy by 2015). With QUOTAs, contracts may be awarded by calls for tender (CT) at the lowest cost. Bidders then propose a cost and the regulator decides the winners. They can also be combined with the attribution of green certificates. In this case, a portion of the selling price is set by the emission trading markets.

France and Quebec almost exclusively use pricing mechanisms for RE development. In Quebec, onshore wind is the only RE developed at large scale other than hydropower (hydro). Originally developed through negotiated contracts, CTs with regional and national contents have become the norm over time. By decree, the government sets targets and decides on the criteria for bidders (see Table 1). In France, the situation is more diverse, as several REs are developed at a large scale and various types of pricing mechanisms are used for their development (see Table 2).

2.2. Comparison of pricing mechanisms

A jurisdiction must make a political choice between the two types of pricing mechanisms for each RE and develop a suitable policy in order to reach the expected objectives. These choices are difficult to

⁴ Even though RE costs decrease over the years due to increasing economies of scale and learning effects.

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