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A public policy approach to climate policy: the case for a de-centralized model of energy transition in the residential sector

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Introduction

Despite its elevation in the global and national agendas, and the implementation of a number of mechanisms to effect reduction of greenhouse gases emissions, climate change mitigation remains elusive (Dalby, 2013: 36). The single most important reason for this has been the fact that climate change requires a profound transformation of our economic structures and processes, which calls for significant investments and thus entails substantial costs. At the same time, such a sweeping transformation threatens disruption of incumbent actors' economic activity and profitability. Climate change mitigation, in other words, has been understood as involving enormous costs, and hence has been fought back and handled in such a way so as to avert a drag on the economy (Burke *et al*, 2016: 504). In this context, climate policies had to be sensitive not to disrupt economic processes, even if these constitute climate change's very sources; and responses to climate change mainly revolved around the establishment of market mechanisms that would lower emissions and mitigate climate change in the theoretically most effective and flexible manner (Dalby, 2015). In this context, carbon taxes have been fiercely fought back and/ or kept to a minimum, while fossil energy subsidies keep running to enhance smooth economic activity (Giddens, 2011).

This response bodes well with entrenched neo-liberal mind-sets and concomitant modes of governance, both at the national, regional and global levels (Dalby, 2015). While emissions trading has been singled out as the most fit-for-purpose mechanism to effect flexibility and effectiveness (and this way avert economic disruption), at the national level reduction of emissions has been attempted via regulatory and financial instruments, such as renewables obligation certificates, feed-in tariffs and premiums, and auctions. At the EU level, the

European Emissions Trading Scheme, energy markets regulation, and a diversity of renewables generation and energy efficiency support schemes form the backbones of the EU climate mitigation strategy (Pellerin-Carlin, 2017).

The market logic has underpinned such schemes. The understanding that new resources and technologies (preponderantly wind and solar), essential for greening the mix and reducing overall emissions, called for subsidies to compete in the market brought these support schemes to fruition. Nevertheless, a number of caveats must be pointed out. These support schemes were in most cases seen as investments addenda and stimuli. They operated within a framework in which private agents, either corporations or individuals, were incentivized to invest on energy efficiency and renewables generation with an eye to make profits. Support schemes have targeted primarily companies, aiming to encourage them to invest in big solar and wind parks and feed renewable energy in the grid (Bridge *et al*, 2013; Strachan, 2015). To a lesser degree, they have also targeted individuals, primarily in terms of incentivizing the installation of rooftop solar panels. Energy efficiency programs also worked in the same logic of state support and own capital investment generating profits in the near future. These support mechanisms thus notoriously excluded the least-well off, and the ones short of the capital and borrowing profile necessary and/ or unwilling to commit themselves to ambivalent investments with pay-off times stretching well into the future (Simpson and Clifton, 2015; Overholm, 2015; Gawel, Korte and Tews, 2015). In this logic, emissions reductions would be the byproduct of these investments, not the goal *per se* of the acting agents. To the extent that profitability was seen as ambiguous and investments would not be attracted, emissions would remain high. This has been increasingly the case as European governments moved to replace generous feed-in tariffs that would render such investments a more or less sound investment with auction systems. This had as a result a drop in the number of applications to go green (Balcombe, Rigby, and Azapagic, 2014; Solorio and Bocquillon, 2017: 36). To the extent that profitability prospects were obscured, investments came down as well, and climate goals subsided. Overall, the pace of the energy transition seems to have slowed down dangerously in Europe, and even the mediocre climate goals set seem imperilled. This is a direct effect of market workings; less enticing support schemes have reduced space for profits, energy investments and emissions reductions (Hinrichs-Rahlwes, 2017).

What next then for EU climate policy? This paper argues that as long as the logic of the market underpins and directs climate policy, climate policy can only bring tangible fruits inferior to what is needed climate-wise. This paper hence adopts a public policy approach to climate

policy in the residential and commercial sector, whose share in total emissions in the EU approaches one eight of overall EU emissions (European Environment Agency, 2016). The switch from a market-based to a public policy approach concerns the logic driving climate policy, its rationale, the investments-outcomes calculus, and the modes of engagement with market agents. Within a public policy context, the state, rather than providing incentives to market actors to invest and determine the scale of emissions reductions, employs market actors to carry out specified sets of actions that will achieve the levels of decarbonization the state has determined. While profitability is no more a goal in this altered policy context, sound finance is. The state should take caution that such investments are reasonable and do not lead to overt indebtedness handed over to future generations. Bundling public policy issues and reshuffling sources of finance towards sustainable investments is the key to restructuring the investments-outcomes calculus.

A public policy approach to climate policy

Since climate change mitigation revolves around the reduction of emissions, itself contingent upon a far-fetched greening of the energy mix, climate policy is intertwined with energy policy and calls for energy policy mechanisms to be put to use. In particular, this paper advocates the promotion of an inclusive, progressively de-centralized model of energy transition in the residential sector. This consists in a bundled scheme to:

- bring residential and commercial buildings up to the highest energy efficiency standards
- procure energy-saving appliances in them, and
- install renewable energy generation infrastructure to fuel residential and commercial facilities.

The first and second pillars target energy efficiency and will minimize and rationalize energy consumption, thus halting demand for fossil fuels; the third will substantially increase renewables into the energy mix at the cost of fossil fuels. The state will outcontract to engineering companies, and oversee, the retrofitting of all residential and commercial buildings. It will mandate energy utilities to proceed to energy audits of all household appliances and finance (in return for a higher charge per kilowatt/hour for overall lower amounts of energy consumed) their substitution with the most efficient ones (Jackson, 1996:

130-3). It will also either mandate to energy utilities or outcontract to engineering companies the installation of a combination of solar rooftop panels and/or wind turbines at a household/ community level depending on the conditions on the ground. These latter investments will effect an influx of renewables in a progressively de-centralized energy system, either in the central grid through prosumption, or in a stand-alone fashion through self-generation and self-consumption, or the most appropriate combination thereof.

This scheme will be publicly funded, but will engage market actors and render them and communities/ individuals as agents of the energy transition. It employs and utilizes private engineering firms and contractors to effect increased energy efficiency and renewables production, and maintains the crucial role of utilities, albeit mandating a partial switch in their portfolio from product to service provision. To the extent that it embraces, finances and promotes a model of energy transition broadly premised upon self-generation and self-consumption, it will also engineer the attenuation of the role of energy companies, an implication we look at in more detail in the last section.

Financing the profoundly permeating energy transition

The question, and objection, that naturally comes up is how this ambitious scheme will be financed, especially in times of austerity and within the framework of stringent spending regulation at the EU level (Johnston and Regan, 2018: 152). Rather than smacking of fiscal irresponsibility, this proposal aims to circumvent the finance issue in three ways. The first refers to the state claiming part of the investments back through a fixed, progressive charge on electricity bills. The breaking point here is that the charge will be set at such a level that the electricity bill will be lower than is currently the case with conventional energy consumption in inefficient buildings energy-wise. The second concerns the reshuffling of existing or proposed finance schemes towards energy investments. Instead of channelling finance to the modernization and expansion of outdated energy infrastructure (grid systems, gas and electricity transmission pipelines etc.), an overhauling of these systems with the triplet of investments suggested here will yield much more promising outcomes in terms of energy output. Of particular importance here is the demarcation of financial support for international fossil pipelines and LNG terminals. In particular, the Gas Connecting Facility has earmarked important sums of money to counterproductive schemes in climate terms (European Union,

2016: 31); a more comprehensive use of these amounts would be to channel them to member-states to support the triplet of investments espoused here.

The third way revolves around bundling extensive renewables and energy efficiency investments together with those necessary for the accomplishment of other public goods as well. We borrow the concept of bundling drawing from the discipline of behavioural economics, as applied in consumer behaviour as a rational utilitarian approach (Foxall, 2016: 260-269). This bundling has two dimensions:

- It incorporates the benefits, both directly and indirectly monetizable, that accrue from such investments on other public issues and sectors. The benefits dimension in the spending-benefits calculus then enlarges to match and justify the funding.
- Energy investments can reduce existing or necessary in the future spending in the bundled sectors, hence providing a more balanced, if not superior, balance sheet. The spending dimension in the spending-benefits calculus shrinks rendering public funding more palatable and warranted.

In particular, climate change mitigation can be prudentially bundled together with healthcare and air quality, economic prospects and social policy, and energy security issues. This is because growing emissions also lead to impoverished air quality and growing health risks; these risks have implications on the economy and amount to a further layer of costs (Burke *et al*, 2016: 514). Next to these, energy investments offset climate change mitigation and adaptation costs that are set to rise proportionately the further in the future appropriate action is taken (Stern, 2006). They also yield a number of benefits with regard to the trade equilibrium, the local supply chain, and cumulative disposable income and aggregate demand. Overall, the money invested in the energy transition can be recycled in the economy, this way stimulating economic activity (Proedrou, 2017a). To the extent that energy poverty is a structural problem contributing to impoverishment, unemployment, marginalization and anti-social/ criminal activity which warrants a bulky social policy budget, moreover, energy investments can weaken the energy poverty-economic and social marginalization nexus and accordingly relieve the burden of social policy-related costs. Thirdly, minimization of dependence on (imported) oil and gas, brought about by the combination of minimization of energy demand and the extensive substitution of fossil fuels for renewables energy, improves the state of energy security. It removes uncertainties emanating from unreliable exporters and imports, and

associated security and economic risks, and grounds energy provision in a more reliable footing (Proedrou, 2017ab; Proedrou, 2018). Since energy crises cause prices to skyrocket, and engage the importing EU in a wide set of mechanisms to monitor volatile energy markets, prepare contingency plans, and monitor, anticipate and respond to energy crises, contemporary energy security strategies also entail substantial costs. Sizable monetary benefits can thus accrue from an enhanced energy security state of the art. In what follows, the next chapter probes into a more profound discussion of each of these issues. Section 5 elaborates on the across the board implications the implementation of the proposed scheme would have, while the last section sums up the debate stressing out limitations of the current research, and suggesting further research agendas.

Bundling climate policy with other public issues

Healthcare and air quality

Climate change is only one aspect of the growing environmental problem the world is faced with, and complicit in (Dalby, 2014). Growing emissions also amount to poorer air quality and associated grave health problems, such as cancer and cardiovascular episodes. The toll this takes in terms of human lives lost, medical treatment needed and days of work lost (Burke *et al*, 2016: 514) can also be monetized. One way to deal with the symptoms of the problem is to put aside increased sums of public money and pour it into Europe's ailing national health systems that are trying to grapple with daunting demand for health services. An alternative one is to endeavour to tackle the problem at source. Energy investments targeting minimization of fossil fuel use through increased energy efficiency and renewables production can be seen as investments to offset costs implicated in treating an increasing number of serious health conditions at the medical level. To the extent that such an approach will improve the chances that skilled people do not remain out of work for health reasons, let alone become incapacitated to perform work at all, indirect economic benefits are also at play. Ontario's health-improving energy campaign attests to the success of bundling health issues with energy use patterns (Sovacool, 2016: 209-210).

Economy and Social Policy

The Stern Review (2006) was ground-breaking in diffusing a clear-cut message that climate change mitigation will cost less the sooner action is taken. This means that as emissions keep accumulating, the bill only goes up. The only sensible response then is to invest immediately in climate change mitigation to offset much higher future costs. Even in the short to medium-term, nevertheless, investments on energy efficiency and renewables are promising in economic terms in a number of ways. First, by minimizing overall energy use and substituting fossil for renewable energy, expensive energy imports go down; as a result, the trade equilibrium improves, and substantial foreign exchange is saved (Proedrou, 2017b; Proedrou, 2018). If we theorize the extra energy needed in inefficient buildings as wasted money that burdens foreign exchange reserves and households' and firms' budgets, the financial benefits of such investments become even more clear-cut.

Secondly, investments on renewables and energy efficiency constitute inward investments into the national and European economies. They provide a significant opportunity for enhancing the local/ national/ European supply chain, providing more jobs to people who will take up the auditing/ replacement/ insulation and installation work needed. This will also increase overall disposable income, which in its turn will translate into increased consumption and corporate income, part of which will return into the European states' cashiers through added value and corporate taxes (Proedrou, 2017ab).

Energy poverty sums up the dire condition of people in difficulty or unable to pay their electricity bills and cater for their basic needs (Thompson and Bazilian, 2014). This problem has become more acute with the progression of the Eurozone crisis the last decade (Bouzarovski, 2014). Paradoxically, energy-related expenses are proportionately much higher for the lower income strata; even worse, they sink them in a vicious circle in which inability to cover energy costs leaves them unable to cover basic needs, become/ stay incorporated in the economic/ social realm and improve their living conditions. Energy investments, then, can go a long way improving the lot of the least well-off. While business as usual strategies have effectively excluded people facing energy poverty, public investments can provide the background for enhanced opportunities for them. This policy then brings positive results in two fronts.

First, it will allow people struggling with everyday costs to minimize the share energy costs take up in their budget, and thus make it easier for them to make ends meet. To the extent that such malaises are causally linked with difficulties to find a job and increase one's income, the

less privileged citizens may well stand a better chance of earning their living. This amounts to more disposable income within the economy (especially if one thinks that the lower-income strata consume most, if not all, of their income), a higher recycling of money and the rise of aggregate demand, exactly the structural factor missing from any European recovery for a decade now (Proedrou, 2017ab).

Secondly, to the extent the above analysis is valid, we should expect that a number of people would register off the dole, no more burdening public funds through unemployment and other benefits. To the extent that energy poverty is a structural factor behind unemployment, social and economic marginalization and anti-social/ criminal activity, wide-ranging social policy costs designed to tackle them/ offset their repercussions should also be expected to come down.

Energy security

EU energy security has been widely described as being under threat and facing great risks since the mid-2000s, and has been increasingly politicized and securitized (Judges and Maltby, 2017). Attempts to institutionalize an Energy Union constitute only the most recent attempt at providing an adequate remedy at a policy level. One source of energy insecurity is increasing dependence on oil and especially gas imports; another the risks posed by resource scarcity and peak oil and gas; a further third vulnerability to the political motivations of exporters and transit states and the security implications of their actions in the energy realm. In line with (increasingly frequent) boom and bust cycles in energy markets, prices often increase exponentially, thus inflicting significant burdens to importing economies and their populations. To anticipate such incidents, importers retain sizable storage and spare transport capacity, as mechanisms to withstand energy shortages. These, however, implicate significant costs, which are passed over to final consumers in the form of increased retail prices (Proedrou, 2017b). The paradox then is that attempts to anticipate energy crises increases the level of prices even in their absence.

Investing on energy efficiency and renewables, to the contrary, belittles the energy security risks, as these investments bring down incoming oil and gas quantities, and accordingly the leverage of exporters and transit states, this way shielding the European economy. A largely unrecognized feature of renewables-born electricity is that it constitutes flows of energy and is much more loosely dependent on imported sources across the supply chain. This comes in stark contrast with finite stocks of fossil fuels. Another point of superiority of renewables (and saved

energy quantities through increased energy efficiency) is the low price volatility compared to the high volatility underpinning the global oil and gas market (Proedrou, 2018). In this context, it appears quite remarkable that the EU, with increasing frequency, urgency and intensity preoccupied with energy security concerns, has failed to harness an inward-looking, demand-side energy policy based on domestic resources, but continues focusing its policy attention to gas projects in its extended neighbourhood.

Policy implications

The policy implications of the implementation of the proposed scheme are ground-breaking. First, climate policy becomes inclusive and expansive, lowering emissions significantly in the residential sector. Having been in the frontline of the battle against climate change, the EU has to deliver on its promises, showcase the success of its climate enterprise, render the feasibility of an effective climate policy clear-cut, and diffuse successful policy blueprints and practices to the rest of the world. This is essential for the EU's welfare and future standing in the world, and for hospitable future planetary conditions.

Second, a bundled economy-society-climate change mitigation approach can yield extensive and diverse benefits exactly at a time when the popularity of the EU project is at its lowest and European societies face a number of shocks and challenges, some of which are either economic in nature or closely linked with economic difficulties. This bundled approach, on the one hand, can help rejuvenate the European economy, an outcome in demand for a decade now. On the other hand, this bundled approach is targeting the middle and lower-income strata, exactly the ones in other words that the targeted support schemes currently in offer fail to embrace, and whom the Eurozone crisis has wounded the most. It can serve as a stimulus to lower classes plagued by energy poverty, economic strains and a sticky labour market, and contribute to the improvement of worryingly falling social and welfare indicators, encompassing but not limited to health and air quality, unemployment and social marginalization. One can talk of climate policy working in the service of social Europe.

Third, the implementation of this scheme could showcase the superiority of public policy to market-based solutions. It would this way debunk and put to rest myths of efficient energy markets vs. impotent states, opening up possibilities for a denser public policy agenda. Dreadful as climate change has been as the direst market failure among many, it presents an

excellent opportunity for the state to reinstate its authority and lead towards sustainable futures in a way that the market is structurally decapitated to do so.

Fourth, a public policy approach to climate policy with application to the residential sector resonates well with growing voices about energy democracy (Szulecki, 2018), and a more inclusive EU that will board closer towards a citizen-based project (Youngs, 2018; Nicolaïdis, 2010). While our specific proposal as outlined here leaves the role and leverage of market actors open, to the extent that states embrace, finance and promote a model of energy transition broadly premised upon self-generation and self-consumption, this will also engineer the attenuation of the role of energy companies. While this goes against the EU's expertise in building and integrating markets, lower energy use, matched by renewables' fundamental property according to which they are more energy efficient the closer to source they are used (Proedrou, 2018), mandates that taking energy out of the market realm in the residential sector is far from unlikely and/ or undesirable. In the same context, our proposal leaves the role of energy communities and individuals in energy transitions open; the reshaping of energy use patterns in the residential sector allows much space for imaginative forms of energy planning and democracy.

Conclusion

There can hardly be any doubt that energy investments cannot by themselves bring about all desirable outcomes. While proposing this bundled scheme and arguing for its positive effects on unemployment reduction, economic recovery, enhanced energy security and improved ecosystems and human health, it is appreciated that energy investments can do only their contributing part, and this should not distract from the work needed to be done in the bundled fields.

While our proposal concerns the residential sector, moreover, it is hard to support the argument that the state can simultaneously take over the burden of a similar all-encompassing policy in the industrial sector. Nevertheless, the triplet of investments proposed above is equally significant for emissions reductions in industry as well (together with a thorough ecological tax reform and concomitant regulation), perhaps in a more structured, and phased, energy transition approach. State-corporate agreements for moving into this direction are essential and have to be probed into. Following the logic of this paper, the eradication of corporate fossil subsidies schemes and the diversion of these amounts to co-finance the industrial (and

headquarters) facilities' energy efficiency, the procurement of efficient energy appliances, and, in an even more relevant fashion for industrial activity, the installation of renewables generation facilities is commendable. The greening of the transportation sector also looms large in energy transition debates, and considering how a public policy approach is fit for purpose merits further consideration, especially in light of the substantial infrastructure challenges implicated. Again, the finance and bundling templates endorsed here could serve as a useful starting point.

In general, while energy investments constitute no silver bullet, they showcase the benefits that can accrue to other issues and objects of policy intervention. Thus, the bundling approach shows significant merits and should be considered in similar public policy cases in which single-cause investments appear costly and difficult to effect. Bundling issues, targets and financial sources can help accomplish more profound and pervasive outcomes than would have otherwise been the case in the implementation of single policies for single issues.

In the same context, the bundled issues proposed here are not exhaustive in nature. One could make a strong argument that energy transitions will shape the geopolitical standing of states in the world, and hence these expected benefits must be bundled as well. This remains a largely underexplored area and merits solid exploration (but see Dalby 2014; Scholten and Bosman, 2016; Scholten, 2018; O'Sullivan, Overland and Sandalow, 2017; Proedrou, 2018). Another research avenue recommended regards quantitative studies that will further explore and substantiate the exact monetary relationship between healthcare, air quality improvement, unemployment, social and energy policy etc. on the one hand, and energy investments of the sort advocated here, on the other. The analysis attempted here is qualitative in nature; it would greatly benefit from quantitative assessments that would further qualify assertions and findings in this paper.

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