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Academic Approaches

Community-led energy initiatives in Ireland: accelerating the energy transition?

Reflections on the impact and outcomes of two case studies

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Abstract

There is an increasing realisation by government in Ireland, as evidenced by the emphasis placed on the 'active energy citizen' in the Energy White Paper, of the need to address retrofit at a number of levels and that individual actions alone will not deliver change at the pace that is required to meet national and EU energy targets. This article presents findings from case study research, carried out as part of an MSc in Retrofit Technologies which suggests that community-led energy initiatives can play a vital role in bridging the gap between individual understanding of the scientific need to change our energy system and initiating societal actions to deliver this change. By appealing to human concerns and raising awareness at a local level they engender higher levels of buy-in than the imposition of top-down policy instruments and create a more favourable social context for the implementation of further energy efficiency and renewable energy projects.

Keywords:

Engagement, social cohesion, trust, energy efficiency

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1.Introduction

Following the example of the UK (Seyfang, Park, & Smith, 2013) and other European countries (Oteman, Wiering, & Helderman, 2014) (Romero-Rubio, 2015) (van der Schoor & Scholtens, 2015), there has been a recent groundswell of interest in the community energy sector in Ireland and the role that the 'active energy citizen' will play in meeting national energy targets is heavily emphasised in the Energy White Paper (DCENR, 2015). Across the country, community initiatives have begun to engage a broad cross section of citizens in a range of energy efficiency and energy generation projects (FoE, 2015). These initiatives build on the strength of existing community networks which originate in the Irish meitheal tradition, the agricultural co-operative movement as espoused by Horace Plunkett (Plunkett, 1897) and more recently the GAA and Tidy Towns organisations.

Community-led approaches to energy retrofits have been recognized as one way of raising societal awareness and acceptance of both the need for energy efficiency measures and their benefits, that include but are not limited to, achieving energy savings (Heilscher et al, 2011). Indeed, societal impact of community-led projects can often outweigh the energy efficiency aspects and by improving social cohesion, trust and awareness of the benefits of energy savings, they can create a favorable context for the implementation of further energy efficiency projects, (Walker & Devine-Wright, 2008) thereby accelerating the energy transition.

Despite the many claims made for the sector by both policy makers and activists, there is a limited evidence base in Ireland to inform decision making in relation to policy tools, and the research set out to address this gap. It examined the impact and outcomes of the implementation of a bottom-up approach to retrofitting and renewable energy technologies within two rural community-led initiatives.

Key questions considered were:

1. What are the drivers and motivation for starting a community energy project?
2. What specific benefits arise from a community-led approach and can these impact at a wider level to accelerate our energy transition?
3. What are the challenges in implementing a community energy project and how can the sector as a whole be supported and encouraged to flourish?

This section continues with an outline of the theoretical background and current understanding of community energy. Section 2 sets out the methodology used. In section 3, a description of the community energy initiatives and the background to the projects provides context and explains the rationale for choosing the case studies. In sections 4 and 5 the findings are presented and discussed and section 6 draws conclusions and makes some recommendations for the support and delivery of community energy projects in Ireland.

1.1 Defining Community Energy

There are many definitions of the 'emergent phenomenon' (van der Schoor & Scholtens, 2015, p. 675) of community energy and individual understanding of both the level of community engagement involved and what is meant by 'community', varies between policy makers, practitioners and academics (Walker & Devine-Wright, 2008). Community energy has been described as a diverse field of activity which ranges from energy generation, retrofit and conservation projects to collective behavioral change programmes (Seyfang et al, 2013).

This diversity is both a strength and a weakness of the sector, on the one hand people readily identify with the concept of 'community energy' because there are no predetermined models. The corollary is that it can lead to a lack of understanding as to what is actually meant by the term and tensions can arise where the 'community' label is appropriated for use in a tokenistic way (Hoffman & High Pippert, 2009). Following Seyfang and others, (Gorden Walker, 2008) (Hathway, 2010), this article is based on the premise that community energy refers to projects where communities, of place or interest, exhibit a high degree of ownership of the process, as well as benefiting collectively from the outcomes and that they can include both supply- and demand-side sustainable energy initiatives.

1.2 Characteristics of the Sector

UK research (Heilscher et al, 2011) has identified three distinctive features of the community energy sector. Firstly, they tend to adopt a multi-faceted and holistic approach which has potential to deliver deeper, longer lasting change. Most of the participants in the NEASTA1 [1] carbon reduction initiative, the 'Big Green Challenge', had made use of a range of carbon reduction measures (Steward, Liff, & Dunkelman, 2009) including retrofit, micro-generation technologies, and behavioral change programmes such as CRAGS[2] and Transition Towns.

Secondly, they have a normalising influence on the climate change context (Houghton, 2010), (Howell, 2012) in which they operate. When faced with the enormity of the scale of the climate change problem, individuals can often feel disempowered (Thogerson, 2005) given their limited capacity to influence change. Changing the social context to make energy efficiency the norm has been shown by some to be more effective than attempting to change individual mind-sets to achieve sustainable energy consumption (UKSDC, 2011). Others have found that bringing together people from different backgrounds can be influential in countering 'what some argue is an era of declining civic engagement' (Hoffman & High-Pippert, 2009 p. 7572) and the inherent power in the process of acting together can change citizen's perceptions of their own capabilities (Houghton, 2010), thereby encouraging further collective action.

Thirdly, they have a focus on engagement and rely on a participatory approach which requires strong social cohesion and high levels of trust to start and maintain (Gordon Walker, Devine-Wright, Hunter, High, & Evans, 2010). Individuals vary in their reasons for wanting to participate, from a perceived community benefit, to a desire to demonstrate that alternatives are possible or a sense of duty but local needs (creating jobs, saving money) rather than global environmental concerns (Rogers, Simmons, & Weatherall, 2008) are the primary motivation for those starting a community energy project.

1.3 Impact

The impacts of community energy projects go beyond energy generation, carbon reduction and financial benefits (Seyfang et al., 2013) to include a wider range of sustainability objectives including community development, addressing fuel poverty and improving local economies. It has been suggested that a community-led approach delivers more than 'the sum of the 'small parts' of renewable energy generation and carbon reduction' (Gordon Walker, Hunter, Devine-Wright, Evans, & Fay, 2007, p. 78). While the carbon impact can be significant (Houghton, 2010) there are other, behavioural impacts which have

1 National Endowment for Science, Technology and the Arts

2 Carbon Reduction Action Groups

potential to influence a wider societal energy transition (Howell, 2012). The CISE[3] project found that these grassroots or bottom-up solutions;

> *deliver energy savings and behaviour changes that top-down policy instruments cannot achieve, due to the greater local knowledge and engagement they embody, sense of community ownership and empowerment and the social capital and trust that is generated. (Heilscher et al., 2011, p. 3)*

A UK study into 14 community projects compared quantitative data for a two year period with a 2009 baseline to measure changes both in energy saved and generated and what they called 'multiplier effect' results (Platt, 2011). They found that

> *projects, and in particular installations of measures, can reach deep into communities and have pronounced impacts on attitudes towards installing energy efficiency measures and microgen. (ibid, p. 6)*

The study concluded that such groups can quicken the pace of the drive to meet national targets in addition to having a wider effect by changing attitudes and behaviours.

Despite the evidence that they can be innovative forces of change, there are many challenges for community groups. Projects often have significant difficulties in surviving long term (Hargreaves, Heilscher, Seyfang, & Smith, 2013) and volunteer fatigue can set in unless support structures are in place (Houghton, 2010).

Section 2 Methodology

A case study methodology was adopted because of the need to consider the specific context within which community energy operates, in conjunction with the actual phenomenon (Robson, 2011). Case studies are also preferred methods of research for a study where the focus is a contemporary, rather than historical phenomenon (Yin, 2014) and where the data to be collected is primarily non-numerical and qualitative. It was considered that rural rather than urban case studies were more representative of the sector in the Irish context and focusing on them would broaden the relevance of the research findings.

Semi-structured interviews were held with three individuals from each case study including core members responsible for initiating the projects in addition to others outside of this immediate group but who were critical to implementation. Other sources of documentary information used to corroborate the evidence gathered in the interviews included formal reports and presentations, surveys, websites, grant application documentation and workshop proceedings.

Direct observations were gathered through meetings with the community representatives, visual inspections of a selection of the projects and general observations from travelling around the areas. These assisted in understanding both how retrofit technologies were being applied and the specific contextual and local circumstances within which the community groups operated.

Thematic coding was then used to analyse the data. This involved labelling the qualitative data contained in the interview transcripts with individual codes and sorting that coded information into a number of principal themes. A matrix of the coded information organized under these themes was used to summarise and interpret the data in order to write up each case study. Findings drew on the various data sources: documentary analysis, semi-structured interviews and direct observations in order to inform the cross-case conclusions.

Section 3 Background to the case studies

The first case study community, Energy Communities Tipperary Co-operative (ECTC) originated in 2010 from a village group in Drombane who were concerned about social and economic decline in their area. A key barometer of decline for the community was the ongoing loss of members of the local hurling team to emigration. The ECTC now includes eight parishes spread across an area of some 2000 sq.km in North Tipperary. It was selected for study as the clustering of community-led initiatives in County Tipperary suggested a heightened level of activity there which was of interest. While the study made reference to the overall activities of the ECTC, the interviews and site visits took place in the parishes of Drombane and Birdhill. There are 400 households in Drombane and 200 households in Birdhill giving an indication

3 Community Innovation for Sustainable Energy see www.grassrootsinnovations.org

of the unit size of the case study.

In 2011, a detailed survey of the energy use in Drombane parish was carried out which established that the annual energy spend in the community was €1,000,000 or an average of €2,500 per household (Curtin, 2011), well above the then national average of €1,770. It was the publication of the results of this survey which initially prompted discussion by the village group around the possibilities of achieving energy efficiencies at a community level by clustering houses for retrofit, with a target of achieving a 20% reduction in energy spend. The completion of this survey analysis also coincided with the launch of the Better Energy Communities (BEC[4]) grant programme by the Sustainable Energy Authority of Ireland (SEAI) in 2012, which enabled the group to access funding in order to implement the first phase of retrofit works. Since then, the group's primary activity has been home retrofits and some 300 homes and eight community buildings have been retrofitted with roof and wall insulation, window and door replacements, installation of high efficiency boilers and heating control upgrades.

In selecting the second case study it was important to consider how to supplement any gaps left by the first case study (Yin, 2014). Erris Sustainable Energy, established in 2014, is another rurally based community energy initiative with a clearly defined geographic area. However due to its origins in the EU GREAT[5] project, it has a focus on smart grid deployment and renewable energy, in addition to building retrofits and offered an opportunity for comparative analysis with the ECTC, which did not include any significant renewable energy element.

The project location is the Barony of Erris, a remote 850 km2 area in the north west of County Mayo, with a population of 10,000. Spread across five parishes, with a very dispersed settlement pattern, the region has considerable renewable energy resources[6] and was also at the centre of long running community protests against the location of the Bellanaboy Corrib gas refinery. Since 2014, 22 community building upgrades have been completed, including parish halls, national schools, sports and cultural facilities. Retrofit measures have been carried out in conjunction with renewable energy, energy storage and smart transport projects.

4 Part of the national retrofit initiative, the BEC programme, encourages new approaches to achieving improvements in energy efficiency within communities by providing grant support to partnerships for retrofit works and renewable energy installations across groups of buildings. For more information see www.seai.ie

5 Growing Renewable Energy Applications and Technologies www.greatproject.eu.com

6 http://www.met.ie/climate-ireland/wind.asp

Section 4 Findings

4.1 Identity and understanding of community energy

While both case studies identified with the research definition of community energy, the ECTC was more focused on the process dimension with a high degree of engagement and ownership by locals in the setting up and running of the initiative. In Erris, because of the support of Údarás na Gaeltachta, the organizational aspect is less community driven but there was a heavy emphasis on the collective impact of the outcomes on the community. This distinction is described in Fig 1 which plots the theoretical space occupied by the two case studies in relation to these dimensions.

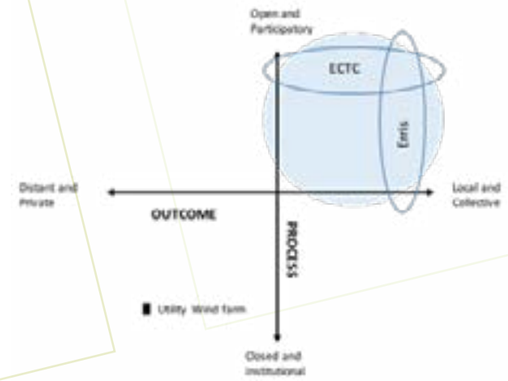

Fig 1 The case studies plotted in relation to process and outcome (adapted from Walker, Devine-Wright)

This diversity was also reflected in the contrasting activity profiles of the two projects, which ranged from a large number of domestic retrofits in ECTC to mostly community building upgrades combined with renewable energy technologies in Erris, in response to local need and opportunity. However the limited funding sources available to the communities restricted their approach to implementation and in both cases the BEC grants had a disproportionate influence on delivery. In Tipperary they felt under pressure to form a bigger umbrella organisation, the ECTC, primarily to suit the grant administrative process. It was noted that that while there were advantages to streamlining the administrative structure, this may potentially be at the expense of losing the engagement of people who don't identify with this bigger entity:

Already it's a jump for people to start being concerned about stuff that's beyond their front door. So in the geographical sense, that unit is still of importance in this country, that community unit. So that's the level that we were getting the buy-in at. Nobody really is interested say in X in what happens in Y, it doesn't really matter to them [A3]

In defining the community in Erris, a broad range of stakeholders were included, from voluntary/ community groups and charities to local businesses and educational facilities. Existing close ties between the Údarás and the Gaeltacht community were used as a platform, and these networks were considered more effective than the local authority's:

so we definitely used Udaras's network that Mayo County Council wouldn't have had access to on the ground. So definitely for a bottom-up approach it's far easier to get buy-in with Údarás [B1]

The case studies bear out the theory that heightened levels of trust are required for successful community-led energy initiatives. The village group in Drombane initially felt that energy was too complex an issue to take on but people stayed on board because of high levels of trust in the process which was linked to their alignment with existing networks such as Tidy Towns and the GAA. There was a scepticism expressed towards solutions imposed from the top down which did not engender the trust that a local person promoting the same action would:

the other factor about it was rather than someone coming from Dublin and promoting something, it's I'm promoting it, and I live up the road, and they know me [A1]

The difficulties of having to work together were acknowledged but they relied on this trust in each other to develop consensus. In Drombane, there was evident pride in their achievements which had empowered them to undertake more initiatives:

Drombane was basically dead enough community-wise but when you get a project like that starting off other things spread out of it [A1]

Their sense of identity as a community had grown from relatively weak beginnings to the current position where they were considering undertaking a renewable energy project in order to generate their own income stream and reduce their dependency on SEAI.

4.2 Measuring success: outcomes and benefits

The starting point for the ECTC was to do something for job creation to address rural decline, and all three interviewees stressed that their original motivation was not energy efficiency:

the demographic in Drombane is not 'save the environment [A3]

While the polarisation of the community in Erris over the Corrib gas refinery had resulted in a group water scheme wind turbine being rejected despite the clear financial benefits, this controversy had the effect of raising awareness locally around energy issues, although there was still a view that:

there's nobody in Belmullet worried about climate change [B1]

In both cases, by attempting to do something positive for local rural development, specifically job creation, they had brought the community on board by identifying the potential for energy efficiency to deliver financial savings and create employment. As a result, they placed great importance on the wider non-energy benefits which accrued to the community. Interviewees frequently referred to the unanticipated impact of the retrofits beyond reduced energy bills and improved comfort levels. In Birdhill, art classes, children's sit down activities, cards, keep fit and concerts were now on offer. Social dancing nights attracting up to 200 people had taken off in Drombane because of the improved comfort levels in the community hall. People were willing to come out and engage in community activities:

so you have concerts now in the hall because it's pleasant to sit in it. People aren't going oh god I don't want to go down there because I'll be frozen [A2]

In Erris, the social impact was also more heavily weighted than the economic savings. By using community buildings as demonstration projects for retrofit and renewable technologies they had widened the project's impact across the community. The previously run-down and underused 1950's parish hall is now fully booked, and the building has become a focal point for social engagement through drama classes and bingo nights. One interviewee described the importance of this to a rural community:

that has opened up a huge social aspect, you heard him talking about 180 people at bingo on a Tuesday night. Now most of those are probably elderly ladies, a lot of them living on their own and that's their only social interaction for the week [B2]

A feature of the ECTC has been the widespread upgrade of fuel-poor homes which has encouraged others to engage. The community-led approach was credited with successfully accessing hard-to-reach households, such as the elderly, who either didn't know about individual grants or found the paperwork off-putting. As one person remarked, despite living in extreme fuel poverty:

The attitude would have been 'ah we're alright, leave us alone [A1]

Having first hand experience of the improvement in comfort levels that a neighbour was benefiting from, or seeing the change in their local community hall, encouraged others to participate in subsequent years. Interviewees spoke of a heightened awareness and interest in energy issues as a result of the projects:

like when would you have had a group coming about a table to talk about energy on a social level here? [B2]

I would say that it's no longer a clappy, happy, alternative conversation to be having [A2]

They also referred to an increasingly positive attitude towards the installation of energy efficiency measures and micro-generation, which was attributed to the community buildings becoming showcases for the technologies.

4.3 Barriers and challenges to implementation

The problems of accessing finance for community energy projects was evident in both case studies, however this was more complex than just the issue of accessing capital funding. Prior to the establishment of the ECTC, the core group had taken on responsibility for large bridging loans which was a significant concern at a personal level. Although SEAI grants were welcomed, they were not entirely in line with what was needed, for example, the timeframe requirements put huge pressure on the communities. The uncertainty of year-to-year grant funding also compounded the difficulty of making financial decisions and prevented momentum from building. There was a concern that this single source of funding gave rise to an instability which increased the risk of project failure.

A second challenge was the level of dependency on volunteerism although this differed significantly between the case studies. In Tipperary, an 'inordinate amount of voluntary input' [A1] had at times threatened the future of the project. Interviewees noted the demands they felt on a number of levels; financial, administrative, time and responsibility to others. This was compounded by a sense of frustration at the expectation that the model could be replicated 'bigger and better' by increasing the size of the organisation, one interviewee felt that they were seen as:

little machines down here whereas we're communities and in communities you have to bring people with you, you can't bring them with you overnight [A1]

As the group's primary motivation was community development, there was a resultant tension with SEAI's expectation that they could continually implement bigger and more complex energy projects, with little recognition of the many unpaid hours that were required. Having the part time resource of a local

BER technician and a financial manager had helped, but the onus put on volunteers was significantly higher than in Erris where there were two fulltime employees and community volunteers were not required to do the core work. Even there, they referred to the risk of burn-out:

it's a realistic thing, it happens, people just get tired of doing everything [B1]

acknowledging that without being paid it would be hard to keep motivated.

The ability to implement projects was also influenced by the specific skillsets available to the communities. In Erris, familiarity with EU research programmes assisted them to draw in R&D financing to deliver micro generation and smart grid projects. The presence of Tipperary Energy Agency (TEA) and the North Tipperary Leader Partnership (NTLP) in the locality was critical to the ECTC as it gave them access to a technical expertise that they did not have themselves. There were many references to the willingness of individuals to commit time to engagement and mediation, which was valued as much as financial support, especially as it was recognised that the community did not initially have the organisational skills to be able to implement projects without outside help.

At national level, the need for political commitment to meet the potential in the communities was commented on by one interviewee:

Communities are voluntary groups so few enough of them will be flying the flag for saving energy but if the state meets them halfway, if the state makes it attractive for them to be in that space, they will be in it. Whereas if it's going to be a struggle and a battle for them, they won't [A3]

This was reflected in their vision for the future, as the lack of opportunity for energy generation featured in both case studies. There was a strong desire to move away from dependency on a single grant scheme to generating other income streams. Interviewees felt that a more favorable environment with feed-in-tarrifs and a national agency for energy co-operatives (such as in Germany) would allow them to develop a self-sustaining business model. Despite the current lack of such supports, ambition exists in both communities to consider models for renewable energy projects. The ECTC are looking at the potential of using local forestry as a renewable energy resource and are also considering joint venture arrangements with developers to gain a community stake in future wind farms. In Erris, there is strong interest to implement a community owned 500kW solar photovoltaic installation despite the many regulatory uncertainties.

Section 5 Conclusions

5.1 Impact

The case studies demonstrated that community-led energy initiatives have achieved significant levels of retrofit in rural areas where previously there had been little awareness of the national imperative to move towards energy efficiency. A desire to address rural decline was at the heart of the ECTC project and the opportunity presented by the jobs potential of renewable energy was the motivation in Erris, rather than concerns about climate change, reflecting the prevalence for local themes to outweigh global themes in relation to motivation in the literature (Rogers et al, 2008). However, in both cases the outcomes have gone far beyond these initial drivers, to impact on energy efficiency. That the terms 'energy efficiency' and 'retrofit' have entered the lexicon of these communities is a measure of their impact.

Because the initiatives grew in response to local circumstances, the specific measures implemented varied between the case studies but in both, the community building retrofits have had the most significant impact as they have resulted in an improved range of services and opportunities for social engagement within the communities, with clear societal benefits. By directly demonstrating the benefits of retrofit to those who wouldn't normally be reached, this ensured widespread buy-in which then encouraged more individuals to get involved. This points to what Heilscher describes as the generation of social capital and trust that a top-down approach cannot deliver (Heilscher et al, 2011) and the inherent power in the process of acting together (Houghton, 2010). A further spin-off from this increased activity was the generation of additional revenue in the community buildings which now paid their utility bills.

The diffusion effect of community-led initiatives into wider society was also evidenced by the spreading of activity from the case studies into other areas. The ECTC, which started from one village and grew to eight parishes, are now assisting a community in Clare to set up a similar initiative and the

Erris model is being implemented across the wider Gaeltacht, all of which echoes the multiplier effect which Platt noted in the Green Streets Challenge (Platt, 2011). The case studies also point to an increased awareness and interest in monitoring energy use. However, the actual savings achieved have not been quantified. In fact, energy consumption may not have reduced at all in cases where elderly people are either consciously taking advantage of improved comfort levels or are afraid of their new heating controls. The behavioural incentive for an older person whose 'son up in Dublin' [A1] is paying the bills is also a factor. While there was some evidence of an increased interest in renewable energy technologies and spill over into other sustainability initiatives in both cases, education around behavioural change is currently lacking and the outcomes can only be said to be partially contributing to a normalisation of the climate change context as described by Houghton (Houghton, 2010).

5.2 Supports

Research has identified the direct link between a favourable policy environment and the growth of community energy initiatives in the UK and elsewhere (Walker et al, 2007), (Oteman et al, 2014). In Ireland, the limited national support available to community energy initiatives is compounded by the split political responsibility for communities and energy. While SEAI plays a role in bridging this gap, and their Sustainable Energy Communities Network[7] is a positive step in this regard, their primary remit is meeting national energy efficiency targets rather than supporting community development. Yet in both case studies, success was gauged more from the improved levels of social engagement and community cohesion rather than the actual energy savings achieved. That these benefits are not measured suggests to the communities that they are not valued by policy makers.

The two case studies are examples of successful community energy projects with the potential to grow and replicate themselves. However, the research points to the likelihood that they have happened by accidental coalescence of factors rather than a strategic commitment of state agencies to the community energy sector. In Tipperary, the presence of TEA, one of only three independent energy agencies in the country, meant that a motivated but inexperienced community could access the technical expertise they needed which gave them the confidence to take on an energy project. The NTLP was also instrumental in moving the initiative beyond aspiration to action but this was because one individual was willing to be open-minded about what was needed to support the community, not because of a specific energy agenda.

In Erris, the project benefited from the support of Údarás na Gaeltachta but the community aspect came about because of the personal motivation of the two key people who saw an opportunity to use the BEC grant programme to deliver an energy efficiency project. Their background in research and management meant that they had the skills to maximize this opportunity and secure the financial support that was required to fund the project with a limited requirement for volunteers, demonstrating what Platt refers to as the inequality between communities (Platt, 2011) which arises from the resources that are available to them. This has allowed it to build up substantial momentum but again it can be argued that this is a result of a fortuitous alignment of people and agency rather than the outcome of a national policy shift to promote community energy initiatives.

5.3 Summary

In summary, the findings from two case studies indicate that community-led energy initiatives can create significant impact in relation to how society responds to the challenge of energy transition. By bringing together the often compartmentalised elements of retrofit, renewable energy technology and community development they can create a more favorable context for energy efficiency projects. However, in selecting the case studies it became clear that there are actually very few community energy initiatives here that are delivering at this level and until there is a political commitment to actively encourage the sector, they are likely to grow only where local circumstances permit and not as part of a national plan.

Six years after UK energy policy first introduced the idea of community energy in the 2007 White Paper, Seyfang eloquently described the emergence of 'a thousand flowers blooming' across the country. In Ireland, pro-active steps are required by our policy makers if a similar movement is to take hold and flourish here, as Plunkett's co-operative societies did in the 1890's, to deliver on the potential that is there for communities to become an influential force for change within the national energy system.

7 Launched by SEAI in 2015, the network's core purpose is to build energy capacity and competencies in communities across Ireland. Communities can sign up to a three-year partnership agreement and will be able to access a panel of mentors to be appointed by SEAI, in addition to technical and financial supports. http://www.seai.ie/SEC/

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CO2 Emissions, Economic Growth and Urbanisation: Insights from Vector Error Correction Modelling

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Abstract

In this paper we analyse the impact of economic development and urbanisation on CO2 emissions in Ireland over the period 1970 to 2011. Using a vector error correction model and impulse response functions we pose two questions. Firstly, what role has economic development and urbanisation played in driving CO2 emissions in Ireland. Secondly, what impact might government regulations and directives which cut CO2 emissions have on future economic growth and urbanisation in Ireland. We use data from the World Bank and Penn World Tables to answer these questions. Our findings suggest that in the short run economic growth leads to higher levels of CO2 emissions but that in the long run economic growth lowers emissions. Regarding urbanisation, increasing urbanisation in Ireland has contributed to lower levels of CO2 emissions than might otherwise be observed. Our model suggests that cuts to CO2 emissions will have no impact on urbanisation but will have a negative impact on GDP.

JEL Classification

C32, O13, Q40, Q43

Keywords:

Vector Error Correction Model, Pollution, CO2 emissions, Impulse Response Analysis, Granger Causality

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1. Introduction

This paper analyses the impact of increased economic growth and urbanisation on CO2 emissions in Ireland over the period 1970 to 2011. An ongoing international debate questions whether economic growth and/or urbanisation impact CO2 emissions. Evidence is split between studies which find positive associations between growth, urbanisation and CO2 emissions [see for example Liddle and Lung (2010)] and those which find negative effects [see for example Fan et al. (2006)]. Much of this analysis however focuses on developing countries or on a panel of countries and is not specific to a small open economy such as Ireland. During the period under investigation CO2 emissions in some small open economies rose (an increase of 19.6% in Ireland, 15.9% in Finland and 14.7% in Austria), whilst average emissions fell in the EU (drop of 16.4%), the OECD (drop of 5.7%) and most large countries (World DataBank 2016). This research paper focuses on one small open economy, Ireland, and uses applied econometric analysis to isolate the impact of a variety of socio-economic factors on CO2 emissions.

It is of particular importance and interest to study Ireland given the commitments made by successive governments under the Kyoto Protocol and subsequent EU Commission targets (Environmental Protection Agency 2013) to reduce emissions and environmental pollution. Further to this, in light of recent reports from the Irish Environmental Protection Agency (2016b) which indicate that Ireland will exceed its 2020 EU targets and 2030 EU level targets of the Paris Agreement, it is timely to consider whether any action taken to bring Ireland back in line to meet these targets will impact on economic growth. Given these commitments we ask two specific questions. Firstly, to what extent will continued Irish economic growth and urbanisation impact CO2 emissions? Secondly, what impact might cutting CO2 emissions have on Irish economic growth and urbanisation?

A variety of analytical approaches have been used in the literature to analyse the impact of socio-economic factors on CO2 emissions. Studies such as those by Liu (2005) and Zhu et al. (2012) use semi-parametric data analysis and simultaneous equation systems to highlight the role played by economic growth, urbanisation and energy consumption in explaining rising CO2 levels across different countries. Others such as Zhang and Cheng (2009) use a vector autoregressive model to perform Granger causality tests on a variety of socio-economic variables including urbanisation and GDP. The contribution of this paper is to create a model which incorporates the variety of socio-economic factors considered in

previous papers into a single model and to estimate these using vector error correction (VEC) methods. The advantages of a VEC model is that it allows us to incorporate a variety of variables and to utilise impulse response functions to analyse the impact of a shock to one variable in the system on all other variables. The aim of the paper is to shed light on the role of economic variables in driving emission levels in Ireland. Our key variable is CO2 emissions which, as noted by Bacon (2007), is one of the key contributors to the greenhouse gas effect.

Since Grossman and Krueger (1991) there has been substantial focus on what has been termed the economic growth and environmental pollution nexus. The standard approach has been to assume economic growth impacts pollution in an inverted U-shape, the so called environmental Kuznets curve (EKC). However, papers such as Liu (2005) criticise the EKC as it assumes that economic growth is exogenous and no feedback exists between environmental pollution and growth. VEC models, such as the one used in this paper, allow us to overcome this issue and to test for Granger causality from GDP to environmental pollution and vice versa.

There are a variety of socio-economic factors which impact CO2 emissions and are relevant for our study. The key variables are GDP and urbanisation. GDP measures economic growth whilst urbanisation is a good proxy for modernisation (Ehrhardt-Martinez et al. 2002) and as economies modernise they tend to generate higher levels of pollution. Other factors can also contribute to increasing CO2 emissions and therefore we include a measure of openness and energy usage. Kais and Sami (2016) and Suri and Chapman (1998) argue that trade openness is a vital factor that could influence emissions. Grossman and Krueger (1991) suggest that greater openness to trade results in lower environmental standards, while Shafik and Bandyopadhyay (1992) suggest that openness and competition may result in increased investment in new technologies which result in a reduction in pollution. Davis and Caldeira (2010) and Liu (2005) argue that the burning of fossil fuels is one of the primary causes of CO2 emissions. Zhang and Cheng (2009) note that while previous studies focused on output-emissions or output-energy, recently all three have been included in multivariate systems.

The key contributions of this paper are as follows. It provides a specific analysis of the impact of a variety of socio-economic factors (most notably economic growth and urbanisation) on CO2 emissions in Ireland. This is the first such study to specifically focus on Ireland as the unit of analysis. Secondly, we ask what impact growth and urbanisation have on CO2, and we address the extent of any reverse causality by asking what impact cuts to CO2 emissions have on economic growth and urbanisation in Ireland.

The remainder of this paper is structured as follows. Section 2 presents a review of the relevant literature on economic growth, urbanisation, and CO2 emissions. Section 3 discusses the data used in this paper. Section 4 outlines the methodology utilised and how this contributes to existing studies on the determinants of CO2 emissions. Section 5 presents and discusses our results. The final section concludes.

2. Literature Review

2.1 CO2 Emissions

Concerns about global warming and climate change have resulted in a substantial body of academic research targeted at understanding the nature of the relationship between CO2 emissions, economic growth, and urbanisation. The main interest in analysing CO2 emissions arises from its definition as a greenhouse gas. Numerous authors note that while CO2 emissions are not the sole greenhouse gas, they constitute the largest component of global greenhouse gas emissions (Bengochea-Morancho et al. 2001; Bacon 2007). These emissions are believed to adversely impact the planet's physical, ecological, and biological systems (Malik et al. 2016), resulting in global warming related issues such as higher temperatures, widespread melting of snow, and rising sea levels (Intergovernmental Panel On Climate Change 2007).

2.2 Economic Growth and Emissions

When it comes to analysing the environmental impact of economic growth Soytas and Sari (2009) and Xepapadeas (2005) note that traditional theories of economic growth have ignored issues surrounding the environment. However, beginning in the 1990s a substantial literature detailing the nature of the relationship between economic growth and CO2 emissions has emerged [see for example Soytas and Sari (2009), Selden and Song (1994), Holtz-Eakin and Selden (1995), Bhattacharyya and Ghoshal (2010), and Bengochea-Morancho et al. (2001)]. Selden and Song (1994) highlight the role economic development

plays in releasing larger quantities of CO2 emissions into the atmosphere through the increased production of goods and services among other factors. As mentioned above two main streams of analysis exist in the literature – the first examines the link between economic growth and pollution (Kuznets 1955; Grossman and Krueger 1991) while the second examines the link between economic growth and energy consumption (Kraft and Kraft 1978). The empirical research examining the nexus independently and jointly is largely inconclusive [see brief review in Halicioglu (2009)].

2.3 Urbanisation and Emissions

In addition to economic growth, most countries are experiencing increasing levels of urbanisation. The role of urbanisation in driving/constraining CO2 emissions is another much debated topic in academic research. Zhu et al. (2012) note that much of the evidence on urbanisation and environmental pollution is mixed. On the one hand studies such as Liddle and Lung (2010) and Cole and Neumayer (2004) find a positive relationship between urbanisation and pollution while similar analysis by Cramer (1998) and Cramer and Cheney (2000) find that population growth (a proxy for urbanisation) is also closely linked with higher levels of pollution. On the other hand, Fan et al. (2006) find a negative relationship between urbanisation and pollution while Zhu et al. (2012) and Wang et al. (2015) suggest the existence of a Kurnets curve, implying that as countries become more urbanised pollution levels initially rise, but reach a threshold after which CO2 emissions begin to decline.

2.4 The Irish Case

There is substantial debate surrounding CO2 emissions in the Irish context focusing on factors such as the identification of CO2 footprints in Irish households (Kenny and Gray 2009a; Kenny and Gray 2009b), and the possible impact of carbon taxes on the Irish economy (Wissema and Dellink 2007; Callan et al. 2009). However, the impact of economic development and urbanisation on CO2 emissions has not been assessed using time series econometric techniques. The Irish Environmental Protection Agency (2016a) notes that "Ireland's greenhouse gas emissions per person are amongst the highest of any country in the world … [and that] the argument that we are too small a country to make a difference holds no ground". Ireland, has also, under the EU Commission's Climate and Energy Package, committed to delivering a

20% reduction, relative to 2005 levels, in non-ETS greenhouse gas emissions by 2020 (Environmental Protection Agency 2013). However, recent evidence provided by the Irish Environmental Protection Agency (2016b) suggests that "Ireland is not currently on the right track to meet its 2020 targets, nor is it on the right emissions trajectory to meet future EU targets or our national 2050 decarbonisation goals". Given these constraints on CO2 emissions, and the need to take action to ensure that these emission targets are placed back on track, it is timely to analyse the impact of future economic growth and urbanisation on CO2 emissions as well as analyse what impact reductions in CO2 emissions will have on Ireland's capabilities to generate sustained economic growth and urbanisation.

3. Preliminary Data Analysis

Our analysis is conducted for Ireland from 1970 to 2011[1]. Our study utilises two complementary data sources – the World Bank and the Penn World Tables. The World Bank provides information on GDP, CO2 emissions, energy consumption, and the proportion of the population in urban concentrations, while the Penn World Tables provide information on openness and capital stock.

To measure economic growth we use Gross Domestic Product (GDP). GDP is extensively used in economic literature to measure economic development and growth. Specifically, we utilise GDP in US$ (constant 2005 prices). The use of constant prices removes the impact of inflation on GDP and is standard in the literature. However, it has been criticised by authors such as Ward et al. (2016) as not being an appropriate metric for measuring societal wellbeing. However, despite this limitation GDP is the most commonly used metric for measuring economic output while also proxying for living standards (Soytas and Sari 2009). We return to this issue again in the conclusion when contextualising our results. CO2 emissions (CO2) is the total metric tons of CO2 produced in a given year and includes carbon dioxide

1 We note that this is the most comprehensive time series available using the two datasets and variables employed. However, we acknowledge that, as more data becomes available, the statistical discrepancies in Ireland's 2015 GDP figures may limit future analysis of GDP and environmental pollution using time series analysis. However, this problem is not confined to environmental analysis and the 2015 statistical issues will impact any time series analysis using GDP figures for 2015.

produced during the consumption of solid, liquid and gas fuels and the manufacture of cement[2]. Studies such as Bacon (2007) Zhang and Cheng (2009), and Wang et al. (2015) use this measure as a proxy for greenhouse gases. Urban population (URBAN) refers to the number of people living in urban areas as defined by national statistics offices. This provides a crude, but effective measure of the degree of urbanisation present in Ireland and its evolution over the period of this study. The use of this variable is consistent with existing literature, see for example Zhu et al. (2012).

In addition to the three key variables, we also control for energy use, capital stock and openness. Energy use (ENERGY) is in kilotons of oil equivalent and refers to primary energy before transformation to other end-use fuels. Capital stock (K) is the stock of physical capital used for the production of goods and services and is measured in US$ (constant 2005 prices).

Openness (OPEN) is measured as the sum of exports and imports divided by GDP. The higher this value the more open Ireland's economy is deemed to be to trade[3].

Figure 1 presents a plot of our variables. All variables exhibit a strong upward trend with CO2, GDP, ENERGY, and OPEN all showing dips after 2008 (when Ireland experienced a severe economic downturn). It is notable that CO2 emissions appear to be tied to the business cycle, falling significantly when GDP falls. However, we note that during the economic crisis Ireland continued to grow more urbanised. While the rate of urbanisation slowed slightly, we did not observe a reversal of urbanisation. We also note that energy consumption and openness fell post-2008. Again this is not surprising as we would anticipate that both of these variables would follow the business cycle, with lower economic output resulting in lower energy requirements and with the global economic crisis in 2008 resulting in falling demand for Irish exports driving a falling openness indicator.

2 We note that we are using a production measure of CO2 emissions. This measure has some limitations. In recent years, Motaal (2011) notes that developed economies have been offshoring much of their 'dirty' production to developing countries, thereby reducing their own CO2 emissions but increasing the CO2 emissions of developing countries. However, the consumption of these 'dirty' goods still takes place in developed countries, meaning that, even though CO2 emissions may have fallen in the developed countries as they are producing less 'dirty' products, they are still importing these dirty products from the developing world. This makes them ultimately responsible for the CO2 emissions. It is not possible given the data needs of our methodology to shift our analysis to an emissions consumption prism as proposed by Motaal (2011), however, we acknowledge this potential weakness of our data.

3 Note that this variable is designed to capture a country's openness to trade. It does not allow for inferences into emission offshoring except that we might infer that higher levels of openness (i.e. more exports and imports) might imply that Ireland is importing more goods which may in turn imply that Ireland's CO2 emissions are artificially low based upon a consumption measure of CO2.

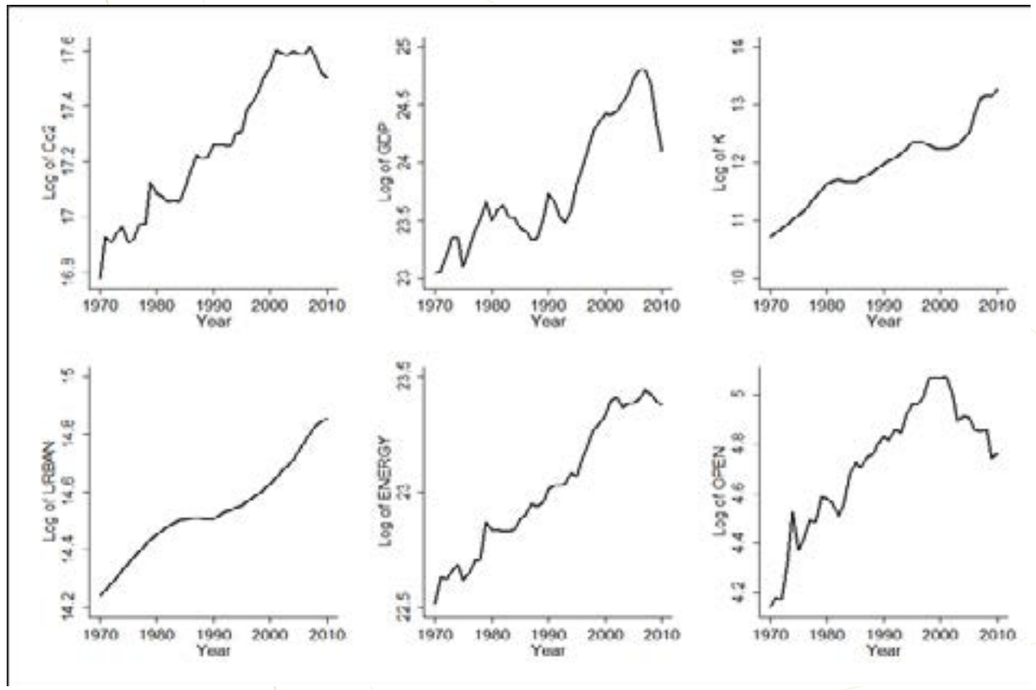

Figure 1: Graphs of Variables

4. VEC Model Specification

In order to model the impact of economic growth, urbanisation and our other control variables on CO2 emissions we employ a vector error correction (VEC) model. The VEC model can be thought of as a specific type of time series regression model which allows us to analyse the impact of our variables on each other. The advantage of this type of model is that, not only can we analyse the impact of GDP and urbanisation on CO2 emissions, but we can also see whether decreasing CO2 emissions have a positive or negative effect on GDP or urbanisation.

While other methods of analysis are available we believe that when considering a single country over a long time period VEC modelling provides numerous advantages. While authors such as Liu (2005) and Zhu et al. (2012) use semi-parametric data analysis and simultaneous equation systems to highlight the role played by economic growth, urbanisation and energy consumption in explaining rising CO2 levels across different countries, this approach relies on a panel of countries being assembled. This is useful

for providing insights into overall trends across heterogeneous country contexts, but not robust when considering a single country over time. A similar time series model is a vector autoregressive (VAR) model. Zhang and Cheng (2009), amongst others, use VAR models to perform Granger causality tests on a variety of socio-economic variables including urbanisation and GDP. However, a VAR model assumes that no co-integrating relationship exists between the variables under consideration. Our tests in the Irish context suggest that co-integration is indeed present for the Irish data, and this suggests that VAR models, while still functional, would be less efficient when compared to a VEC model approach as the VAR estimation would ignore the co-integrating relationships. In summary, the advantage of a VEC model is that it allows us to incorporate a variety of variables for a long time period using just Irish data and to utilise impulse response functions to analyse the impact of a shock to one variable in the system on all other variables.

In order to estimate our VEC model we follow four steps:

1) We test whether each variable is stationary.

- Variables entered into a VEC model should be integrated of the same order. For instance the data is appropriate if it is non-stationary in levels but stationary in growth rates (i.e. GDP versus growth in GDP). A Dickey-Fuller test is used to assess whether the data is stationary or not (Dickey and Fuller 1979).

2) We test the appropriate lag length to include in our model.

- As it is likely that CO2 emissions are affected by GDP in the current year and in past years we include lagged values of each variable. We use a formal statistical test known as the Schwarz's Bayesian Information Criterion to assess the exact lag length we should include (Greene 2008).

3) We test for cointegration between the variables.

- Cointegration refers to a long run relationship between the variables. It is likely that CO2 emissions and our variables are linked, not only in the short term, but also in the long run. A Johansen test is used to test for the presence of cointegration (Johansen 1988; Johansen and Juselius 1990).

4) We estimate our VEC model.

- The VEC model is estimated using the integration of the variables identified in step (1), the lag length identified in step (2) and the number of cointegrating vectors identified in step (3).\

4.1 Testing for Stationarity

We test for stationarity using Augmented Dickey-Fuller tests, the results of which are displayed in Table 1. The variables are non-stationary (i.e. possess a unit root) in levels but stationary in first differences, implying that all variables are integrated of order one, I(1). As the data is all I(1) this implies it is possible to progress to stage 2 of our estimation strategy.

	Levels	Growth Rate
CO2	-1.886	-3.616***
GDP	-1.996	-3.412***
K	-1.786	-3.605***
URBAN	-2.077	-1.734*
ENERGY	-2.067	-4.220***
OPEN	-2.04	-4.803***

Table 1: Dickey Fuller Tests

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Note: ***, ** and * indicate significance at the 99, 95 and 90 percent level.

4.2 Selecting the Appropriate Lag Length

When specifying our VEC model we begin by selecting the appropriate lag length using Schwarz's Bayesian information criterion. A lag length of two was selected. It is standard in existing literature to select the appropriate lag length of a model using an information criteria test such as Schwarz's Bayesian information criterion (Doran and Fingleton 2013).

Lag Length	SBIC
0	-12.4932
1	-23.5138
2	-23.5991*
3	-22.7759
4	-23.485

Table 2: Selecting lag Length

Note: * indicates optimal lag length.

4.3 Testing for Cointegration and Estimating the VEC Model

Next we choose the appropriate model specification using the Pantula principle. This principle helps us identify the number of cointegrating vectors and determine whether it is appropriate to include a constant or a trend in the short run or long run components of the model. The full unrestricted VEC model is specified in equation (1):

$$\Delta Z_t = \Gamma_1 \Delta Z_{t-1} + \ldots + \Gamma_{k-1} \Delta Z_{t-k-1} + \mu_1 + \delta_1 t + u_t + \alpha(\beta' Z_{t-1} + \mu_2 + \delta_2 t) \qquad (1)$$

Where Z_t is an n*6 matrix containing our six endogenous variables for n time periods. The Γs are $n*n$ matrices of coefficients, μ_1 and δ_1 are n*1 vectors of parameters and u_t is an n*1 vector of error terms. Also α and β are $n*r$ rank matrices, so that μ_2 and δ_2 are $r*1$ vectors of parameters.

We start with the most restricted form of the VEC specification (placing restrictions on all the parameters in equation (1)) and sequentially progress to the most relaxed specification, testing along the way for cointegration using Johanson's rank test [see Doran and Fingleton (2013)]. We find that our model should include constants (not trends) and that there are two cointegrating vectors[4]. We estimate this model using ordinary least squares (OLS). The next section presents the results of our empirical analysis.

4 Results available from the authors by request.

5. Results

To analyse the results of our analysis we present impulse response functions (IRFs). A selection of orthogonalised IRFs obtained from our estimated VEC model using a Cholesky decomposition are presented in Figures 2 and 3. Impulse response functions summarize the impact of one variable on another. Essentially they assume a hypothetical shock to one variable and display how this shock propagates throughout the other variables. We present two graphs of IRFs. The first (Figure 2) shows the impact of our socio-economic factors on CO2 emissions. The second (Figure 3) shows the impact of CO2 emissions on the other variables in our system. The graphs show the impact of a one standard deviation shock in each equation on/from CO2 emissions. For instance we can assess the impact of a hypothetical increase in GDP on CO2 emissions or we can assess the impact of a cut in CO2 emissions on urbanisation. The VEC model allows for any combination of our variables to be assessed to see how they respond to increases or decreases in another variable.

Beginning with Figure 2 we note that while a positive shock to GDP causes an initial increase in CO2, this impact changes direction in the long run and results in a long term reduction in emissions. This implies that the impact of economic growth on CO2 emissions in Ireland is complex, with differentiated short and long run effects. In the short run (roughly up to 10 years following the GDP shock) higher levels of economic growth will result in increased CO2 emissions, as would be anticipated. However, in the long run (after 10 years) the effect is negative. Suggesting that as the economy develops CO2 emissions fall. This implies that in the short run economic growth can be 'dirty' leading to increased pollution, but that over time the impact diminishes and in the long run economic growth leads to lower levels of CO2 emissions.

Regarding urbanisation, this effect is more straightforward, with the short and long run implications identical. A positive urbanisation shock (i.e. an increase in the proportion of individuals living in urban areas) leads to a decrease in CO2 emissions, ceteris paribus. This suggests that as a result of increasing urbanisation in Ireland, CO2 emissions are lower than they otherwise would have been (even though they have increased over the last 40 years). This negative association between urbanisation and CO2 emissions is consistent with Fan et al. (2006) and implies that as Ireland continues to become more urbanised this could result in lower levels of pollution than would otherwise have been the case.

Regarding the remainder of our control variables, a positive shock to capital stock also leads to a substantial reduction in CO2 emissions in both the short and the long run. Positive shocks to energy and openness, on the other hand, lead to short term increases in CO2 emissions and persist as slight increases in CO2 over the long term.

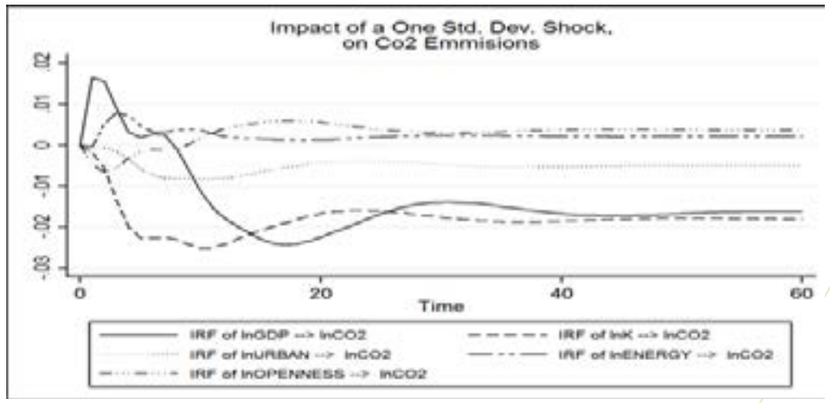

Figure 2: Impact of Shocks on CO2 Emissions

When we consider the impact of a negative CO2 shock on our system in Figure 3 we observe some interesting finding. This essentially addresses the second question posed by this paper; what impact might cuts in CO2 emissions have on economic growth and urbanisation? In this instance, rather than looking at the effect of a positive shock as we did in Figure 2, we now structure our impulses to analyse the impact of a negative shock to CO2 emissions, which is the challenge facing Ireland given its commitments under various environmental regulations.

Firstly, in terms of urbanisation, CO2 emissions have a very small short term impact and in the long run do not significantly increase or decrease the rate of urbanisation. This leads us to believe that worsening or improving CO2 emissions will not play an important role in determining the level of urbanisation in Ireland. Urbanisation is most likely driven by other socio-economic factors such as job opportunities, wage differentials and amenities. However, a negative CO2 shock has a profound negative impact on economic growth. In Figure 3 it can clearly be seen that a negative CO2 shock reduces GDP and GDP does not recover but remains permanently depressed. This suggests that by imposing cuts to

CO2 emissions economic growth will be negatively impacted. This provides an important insight and challenge for policy makers. It challenges them to consider what other policies might be implemented to ensure that GDP is not negatively impacted by curtailing CO2 emissions. Recent research on Irish firms suggests that, at an individual level, firms adapt to changes in environmental regulation and do not suffer negative consequences (Doran and Ryan 2012; Doran and Ryan 2014). Policy makers must now consider how this might be achieved, at a national level, in the Irish case.

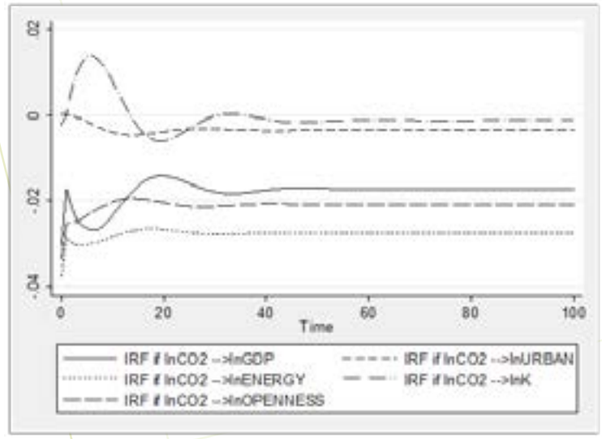

Figure 3: Impact of CO2 Emissions on Socio-Economic Variables

6. Conclusions

This paper has analysed the environmental pollution and economic growth nexus for Ireland using a VEC model and data from 1970 to 2011. The results have provided four key findings which are of importance to policy makers.

The first is confirmation that economic growth results in increasing levels of CO2 emissions. However, our results suggest that the relationship is more complex than initially envisaged. It would appear that higher CO2 emissions arising from economic growth are only a short run problem and that in the long run economic growth actually results in lower levels of CO2 emissions. This suggests that economic growth need not be thought of as environmentally unfriendly. However, measures may need to be adopted to

ensure that the short run negative consequence of growth are mitigated as much as possible, as increased pollution, even though only present in the short run, is not a desirable outcome of growth.

The second finding is that increased urbanisation leads to lower levels of CO2 emissions. There are a number of possible reasons for this, such as reduced emissions from transport as more individuals can avail of public transport networks and the ban on smokeless fuels in Irish cities and large towns. This finding suggests that, from an environmental perspective, urbanisation in Ireland should not be viewed negatively as it actually reduces CO2 emissions. This may suggest that increasing investment in public infrastructure in urban areas may further contribute to cutting emissions.

The third finding relates to CO2 emissions having no significant effect on the degree of urbanisation, suggesting that Ireland's urbanisation is driven by factors other than emissions (as would be expected). This may be the availability of employment, amenities, higher wages, or a range of other factors.

Finally, we find that a negative shock to CO2 emissions has a negative effect on GDP. This suggests that by imposing cuts on CO2, through government policies, while positively effecting the environment, may negatively impact the economy. The implications of this finding depend upon the reader's view of GDP and whether it is an indicator of societal wellbeing. As noted previously, Ward et al. (2016) highlight that GDP is a poor proxy for societal wellbeing and that the goal of maximising wellbeing may not necessitate maximising GDP, with other factors such as the wellbeing of natural assets, and protecting and restoring the climate and marine eco-systems being perhaps more important than a focused goal of economic growth at all costs. However, in an economy such as Ireland, which is emerging from a period of economic crisis and high levels of unemployment, the political costs of reducing GDP growth (which can reasonably be assumed will increase unemployment) may not be attractive to elected representatives. This suggests that environmental policies targeted at reducing CO2 emissions may require two prongs; the first carbon controls to reduce emissions as is standard, but the second would be an economic policy designed to mitigate for potential damage caused to the economy resulting from these carbon controls. It is undoubtedly the case that government intervention is required to reduce emissions in order to protect the environment, however, the consequences of this intervention will have negative spillovers for the economy which may need to be mitigated but may result in net societal gains even if there is falling GDP.

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Perspectives from practice

CoHousing Inclusive:

Berlin Practices and Model Projects of Spreefeld, Sharehaus, and Sredzkistrasse 44

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id22 works for a culture of sustainable urban development, in Berlin and internationally, and to this end assists and publicizes self-organized initiatives, especially innovative, community housing forms. For many years, id22 has been organizing Creative Sustainability Tours + Workshops and coordinating the EXPERIMENTDAYS, an annual public event with housing project market. id22 also maintains CoHousing Berlin, an online platform for housing projects. In 2012, id22 published the book CoHousing Cultures with a review of nine European CoHousing projects. In 2017 a new publication, CoHousing Inclusive, will discuss and demonstrate the diversity of European inclusive housing projects.

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Abstract

Inclusive CoHousing is an emerging form of self-organized and community-led housing which offers great promise for being at least a partial solution to urban housing crises. There is a growing demand for housing which is affordable and participatory. This paper presents a number of case studies based in Berlin.

Introduction

There is an increasing need to produce and maintain both economical and accessible housing, especially in our growing, larger cities. It is logical to look at our various housing "challenges" in an integrated way, in order to develop housing strategies which benefit from synergies and are both cost-effective and social. For example, this can involve developing and maintaining community-driven housing for people with and without refugee experience, people with and without special needs. This means exploring, developing and making public new forms of housing which are truly inclusive and sustainable.

CoHousing has a reputation of being elitist and middle-class, referring for example to Danish or American clustered single-family homes. Can the CoHousing movement grow and develop to become something much more inclusive, accessible, and affordable? Discussions around housing, inclusion and integration are in any case changing. It is no longer just about forcing projects to involve different kinds of "special people". More are recognizing that diversity is a potential, and not necessarily a problem.

Lifestyles and expectations of urban populations are becoming more diverse. Self-organized, bottom-up initiatives are responding to this and developing solutions for a sustainable production of space for living and working. CoHousing projects are succeeding where the speculative market is generally failing to deal with the housing needs of growing and ever diverse populations.

Berlin is currently the most significant large city in Europe for studying such emerging housing forms, due to its recent impressive history of housing innovation and great range of model projects and participatory housing approaches.

Three exemplary Berlin case studies have been selected to illustrate how CoHousing is being developed in order to include and integrate various groups which are otherwise not being served adequately by either government or investor housing sectors.

Short International CoHousing History

CoHousing has its various roots and influences in German cooperatives as well as squats and other experiments, and also a range of European housing reform movements over the last 150 years. The term itself was made popular initially at the end of the 1980s by American architects influenced by Danish collaborative housing. Since then, the concept has been adapted to more densely populated urban, European conditions, as expressed in the book CoHousing Cultures (2012).

Berlin's diverse CoHousing models have emerged out of this city's special mix of crisis and opportunity: a dynamic and creative population combined with (until recent years) affordable and available buildings and land. Berlin historically has its own traditions of community-oriented and alternative housing: from cooperatives of the late 1800s, to 1970s communes and modern shared flats (WGs), from squatted houses and self-help projects in both East and West Berlin, to the more recent privately financed, middle-class-oriented "building communities" (Baugemeinschaften). Today Berlin is

challenged, as with other European cities, to not only create quantities of dwellings, but also to develop good quality housing qualities.

European urban populations such as Berlin's expect to enjoy both "rights to the city" and "rights to housing." Increasingly people understand this to mean democratization processes, which also enable them to directly develop, shape and maintain needed and desired housing forms. This has among other things been leading to scattered CoHousing movements that are inclusive and non-speculative.

Berlin's Emerging Housing Crisis: Problems and Opportunities

Berlin, as one of Europe's larger cities, is known for its great innovation and diversity, in terms of living as well as housing arrangements. This special city is changing once again, as rising rents and land values as well as speculative and gentrifying developments are impacting the housing landscape. Berlin has a housing shortage coupled with a growing population and a significant number of newcomers - immigrants and refugees. Berlin is thus struggling to find adequate housing strategies to deal with its various populations, including not only international students and middle-class academics who are moving to Berlin, but also many others who are at a disadvantage in the housing market: low-income and unemployed people, refugees, people with disabilities, seniors, and others.

Berlin currently has about 3,500,00 residents, as compared to 4,500,000 before WWII. The city is once again in a phase of re-building and re-densifying. Within only a decade's time, Berlin has gone from having more than 100,000 vacant apartments and a vacancy rate of ca. 8% in 2005 to having less than 1% vacancy rate in 2015. Berlin is still a city of renters, with only about 15% of the population owning its flat or home. But this rate is going up each month as more and more are feeling insecure with the rental housing market and instead investing in a private unit. After more than a decade of essentially having no housing policy, Berlin is now racing to catch up, and is in the process of developing new housing support strategies. CoHousing projects are expected to play a role in the production of new housing, but it remains to be seen just what support they will enjoy from local government.

Berlin's Emerging Model Projects

Bau- und Wohngenossenschaft Spreefeld Berlin.

Special Features / Inclusion + Integration:

A combination of concepts for co-living and co-working, as well as community gardening, open to the neighborhood. Non-speculative development land on the Spree riverside, providing spaces for public shore path and edible landscapes, cultural and social projects. Community spaces are designed and maintained flexibly: smaller ones are used as housing for refugees and larger ones for public events. The project is trying to be barrier-free, and includes for example one apartment group for people using wheelchairs and assistance in their household.

Project Development: 2008-2014

Type of Building: New construction in the Berlin Mitte District.

Residents: 130+ are living in the cooperative, 50+ are working there

Flats: 60+ flats, including ca. 3500 sq.m. standard (private) flats and 2000 sq.m. cluster apartments with shared spaces.

Community & Commercial Spaces: Various communal spaces on different floors, including roof terraces, guest apartments, fitness rooms, playrooms, laundry, music, kitchen, etc. On the ground floor and the gallery level there are Option Spaces and commercial units, but no housing. The three Option Spaces as well as the inherited East Berlin Boat House have flexible functions and are available both for residents, co-workers and the public. The spaces are used for a wood workshop, event locations, cultural events, community meetings and much more. Commercial units are used for co-working, art galleries and a day-care center, also used by the neighborhood and the public.

Legal Form and Ownership: Housing Cooperative

Financing and Funding: Private initiative with bank loans. Subsidies only for the day-care center.

Affordability: Cooperative shares need to be paid for in order to arrange for a use-agreement of an apartment in the cooperative. The rent is slightly below average for the area and is stable and affordable for the middle class.

Sharehaus Refugio

Special Features / Inclusion + Integration:

Multicultural project with living, working and cultural spaces to enable inclusion of newcomers from various countries and backgrounds. Rent contracts are made for 12 to 18 months to keep the project open for people who are coming to Berlin and needing opportunities and assistance with integration. After about one and a half years people are supposed to be able to continue with their lives independently, using their gained skills, networks and connections. Cafe, roof terrace and a large multifunctional space on the ground floor make the project open to the neighborhood. The building is partly barrier-free, some spaces are not accessible. Art ateliers which were there before are integrated in the project. Many cultural events are offered and documented via social media to interact with the broader community.

Project Development: 2014-2015

Type of Building: low-cost reuse of a historical building in the Berlin Neukölln District.

Residents: 40 residents, about 20 locals and 20 newcomers / refugees

Flats: clustered flats with residential shared-living groups on each of the three residential floors, including private rooms with bathrooms, shared kitchens and community spaces

Community & Commercial Spaces: Meetings rooms, a playroom, a roof terrace with a yoga space and a garden are shared by the community of residents. Art ateliers and office spaces in the building have a strong connection to the project. On the ground floor, a cafe and a large multifunctional space which is used for different cultural and educational events and conferences, for the community and the public.

Legal Form and Ownership: Building is owned by the Church organisation Berliner Stadtmission Ev. Kirche, and leased to the Sharehaus Refugio project management.

Financing and Funding: This is a private initiative, largely covering its expenses through the rents paid for the residential, cultural and commercial spaces. Rents for the refugees are generally paid by the local government. A main objective is the creation and support of local networks and small businesses, such as the cafe and catering as well as city tours with refugees.

Affordability: Slightly below the average rent, paid by the local government for people with refugee status or by the residents themselves, if they already have job permission and can work.

Sredzkistrasse. 44. Mietergenossenschaft SelbstBau e.G.

Special Features / Inclusion + Integration: Focus on accessibility and inclusion for elderly as well as young people. Multifunctional spaces in the ground floor are planned to encourage connection to the neighborhood. A model project focused on a challenge of barrier-free renovation of a historical building.

Project Development: 2015-2017

Type of Building: renovation of a 100 year old building in the Berlin Prenzlauer Berg District.

Residents: People who were living in the building before the renovation will have the opportunity to stay. Other residents will join and a generational mix is one of the main aims.

Flats: 11

Community & Commercial Spaces: A small guest apartment and a community space combined with an information center and an exhibition space focused on barrier-free renovation is planned on the ground floor. The space is also expected to be used as a meeting place for the residents and local initiatives, to exchange and transfer project experiences.

Legal Form and Ownership: 99 year lease from a Berlin municipal housing association

Financing and Funding: Partially financed as a model project by the German Federal Ministry for Family, Senior Citizens, Women and Youth.

Affordability: Affordable rents for different social groups including lower income. Lower than market rate rents.

Conclusions

CoHousing is emerging as one of the most significant international strategies with regards to self-organized, community-led residential projects. Based on practical experiences in Berlin and other European cities, such approaches to planning, building and maintaining housing seem to be in a position to provide sustainable, inclusive solutions for living and working as an alternative to the mainstream speculative market. CoHousing projects are not only able to create visionary projects with high-quality architecture, but they also manage to react fast and flexibly with regards to local demographic and social changes. CoHousing projects can help to activate and develop their neighborhoods. Moreover, such projects create and support local and international communities of makers who contribute to sustainable city development on many different levels.

Most importantly with respect to current urban housing questions, CoHousing is well positioned for the development and demonstration of inclusive and integrating model projects, providing us with pioneers from which inspiration and valuable lessons can be drawn. CoHousing models tend to be more open to exploring innovative housing types combined with multi-purpose shared spaces.

To go beyond the production of isolated, smaller numbers of exceptional buildings, and to begin to seriously address questions of inclusion and integration for larger numbers of people, much work remains to be done to improve co-operation among government housing authorities, financial institutions and funding programs, and civil-society comprising both CoHousing experts and residents.

Useful Links:

id22.net

experimentdays.de

cohousing-berlin.de

cohousing-cultures.net

Promoting Social, Economic and Environmental Sustainability While Also Developing College Writing Skills

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In her role as UN Special Envoy on Climate Change, former President of Ireland Mary Robinson wrote an appeal to the Irish people, published in the Irish Times, which began by describing the urgent need to make discussions on climate change part of the everyday conversation. Robinson describes a new global agenda that has the power to "steer us on a path to a safer, fairer world – but this requires political will and genuine leadership from all countries." She writes,

> *To enable this leadership, we must bring the discussion of the future of our world into our kitchens and come to terms with what this means for us, as people and as global citizens. Only when these discussions are passed from the kitchen tables to the decision-making tables will the governments of the world have a true mandate to look beyond the myopia of political cycles and herald in an era of transformative change.*
> *(Irish Times, September 17, 2015)*

In another Irish Times article, published during the week of the COP21 world climate change conference in Paris, Robinson is quoted when she highlights the potential for integrating such discussions on climate change into the education system:

We have damaged the Earth and made it more difficult for developing countries. Therefore, we have to be very clear on our responsibility and I believe we can do more and bring it [Climate Change] into schools and bring it into communities and get people involved in a very active way. (Irish Times, November 30, 2015)

The above quotes can be linked together by the kitchen table and education: many students either do, or at least talk about, their homework around the kitchen table. Wouldn't it be great if the thoughts, conversation and written work of our young people were encouraged to be more substantive, more precise, and more significant as they were directed toward a subject that truly mattered, like addressing the challenges of climate change?

Five years ago I was asked to develop the curriculum for a module called College Writing for first-year students visiting Ireland for the first semester of their freshman year with American universities. The module is delivered at the Dublin Business School (DBS) for students visiting from Northeastern University, Franklin & Marshall College, and Drexel University. College Writing, which also goes by the name Rhetoric and Composition, is a standard module, some would even call it a right of passage, for first-year university students in the U.S. And importantly, it is compulsory – not only are students obliged to take it, they must also pass it in order to progress to higher levels. The module focuses on developing student writing and critical thinking skills so that students can make the necessary transition from second- to third-level.

Surprisingly, until very recently, such a module has not been part of Irish third-level. There have, of course, been other interventions designed to assist students such as non-assessed Academic Support modules, one-to-one tutoring drop-in centres, and writing process overview classes (also drop-in) delivered by library staff. While these supports are certainly better than having none at all, I have participated in efforts like these and, in my experience, they do not deliver the same results as a devoted, compulsory College Writing module. Maynooth University last year piloted a close cousin to the module called Critical Thinking Skills. After good results, they are presently gearing up to embed it more broadly into their first-year offering. The module there will be delivered through the Centre for Teaching and Learning. In the U.S. the module is delivered by and large through English departments, or, through university-wide writing programs. But five years ago, when DBS came upon this opportunity to teach American students, no module of its kind existed in Ireland, so research was required to determine the most effective way to teach it.

One of the things I learned straightaway was that College Writing is often saddled with the unfortunate reputation as the module that both students and lecturers almost uniformly grin and bear because of the associated work load. Students have to write A LOT and lecturers have to give heavy feedback at regular intervals. Typically, a semester-long course involves the student producing and receiving feedback on four to five essays of 1,200-1,500 words. That compares to two assessment points for other modules, which typically have a mid-term essay and an exam. This constitutes a 50-60% increase in the number of assessments.

Another encumbrance to the mass roll-out of College Writing is the question of whether the stated learning objective – improving student writing – is even achievable? How is the skill, or even incremental progress toward its mastery, measured? Isn't developing writing skills a bit like getting into shape: with consistency, a measurable improvement can be seen over a reasonable time, which in many cases varies and takes much longer than a twelve or fifteen-week semester? Many English lecturers when faced with a particularly woeful piece of student writing often wonder, "where do I begin?" The syntax of the sentences appears all wrong, punctuation has been forgotten or misused, clear thesis statements remain elusive, and essays appear to have been constructed with no concept at all of an outlined argument. And then, marking what can seem like a never-ending sea of poorly written work, many faculty (usually PhD-qualified, part-time faculty who serve in the most insecure of adjunct employment arrangements) simply paddle on and look for ways to give credit for "ideas," while the manifold problems at the level of rhetoric and composition receive little comment or correction. Against this background, the resistance to the mass introduction of College Writing programs is understandable. Yet, evidence from student work points to the increasing need for more full-time staff to be hired to develop this fundamental skill[1]. If nothing else, third-level should be teaching students to think critically and to write and speak in a clear, intelligent and articulate manner.

One way the Americans make the module manageable for lecturers is by limiting class sizes to groups

1 The Irish Times, January 30th, 2016.

of 15 students. Already, the subject was looking not so bad. Then, two fortunate things happened: (1) I attended an MLA panel and got the chance to hear Professor Kurt Spellmeyer, Director of the Writing Program at Rutgers University, talk about the revolutionary as well as functional potential of college writing programs, and (2) I came across an essay written by the former (now passed) University of Chicago, Professor of English Wayne C. Booth.

It was back in 2011 and I was in Los Angeles to give a paper on Edith Wharton at the annual conference of the Modern Languages Association (MLA), when scanning through the program, a practical urge prompted me to attend the 8:15 am panel on the teaching of College Writing. Spellmeyer, in addition to his role at Rutgers, is also a Buddhist priest. He spoke about the power College Writing had to sharpen student awareness of issues related to equality, democracy and civic engagement in addition to developing writing and thinking abilities. College Writing didn't have to be a total lemon; in fact, it could be developed in such a way that it became the most interesting and important module of students' university education and a lecturer's teaching experience.

That idea harmonized well with the inspiration later discovered in a reading of Wayne C. Booth's 1969 article, "Boring from within: The Art of the Freshman Essay." The audience for Booth's essay is college writing instructors. In brief, Booth explains that if we want to elicit high quality essays from our students, we have to stop boring them. We bore them when we pitch topics that are too high or too low; students have to be given writing prompts for topics to which they can, on some level, relate. Course themes have to fit just right and have to be relevant to the way they live their lives and / or to their fundamental sense of who they are and what their future holds; they have to be the kinds of topics, for example, that students might find themselves talking about, say, around the kitchen table.

And this brings me back to Mary Robinson and her point about the need to reflect on and discuss a responsible response to the challenges of climate change that will fundamentally change our lifestyles, from how we power our homes, farm our lands, travel, work, to, most crucially, how we rise to our responsibility to change our habits of consumption such that other people – to whom we may not be related or live near – have the fairest chance to live their lives with dignity.

For the past five years, our College Writing module has pursued a theme that connects intimately with these ideas. Our module is subtitled Self, Society and Sustainability. Students love talking themselves

for a start, and they enjoy reflecting on the lifestyles they imagine for themselves. Getting them to articulate intelligently about more abstract concepts like society and sustainability – and to be disciplined against indulging in vague or woolly generalizations – takes patience and assiduous feedback, but does come in time. Students work on four "projects" in response to texts on chosen subsidiary themes. These projects are collated into a portfolio of work that includes drafts and finished essays, shorter reading-response pieces, peer reviews and self-reflections. Students are presented with a range of writers and are actively encouraged to make their own connections between readings.

Project One provides an introduction to some of the facts about the current state of our globe and the sustainability of current development and consumption models. Students receive instruction on how to do close-reading. They read James Lovelock's theory of Gaia, are asked to describe it, and then to identify the rhetorical devices Lovelock uses to explain his theory. They read extracts from George Monbiot's Heat, pinpoint his thesis statement, and then prepare a three-minute "elevator pitch" explaining to an imagined interlocutor why climate change is so serious and why it needs everyone's attention. They read selected chapters from Pope Francis's encyclical Laudato Sí and consider what else the Pope tacitly suggests needs to change if we are to preserve healthy levels of environmental equilibrium as well as the highest principles of basic human decency. Throughout Project One students acquire sensitivity not only to what a piece of writing says, but also that how a writer chooses to say something is often as just as important.

In Project Two they explore connections between the foundational principles acquired in Project One with the sustainability of current practices in modern agriculture. Students try to understand what a paradigm is exactly? Then, they relate terms used by Pope Francis, such as the "technocratic paradigm" and "modern anthropocentrism," with ideas evident in modern agriculture. They watch Deborah Koon's excellent documentary The Symphony of Soil and then apply the Pope's concept of integral ecology to the debate over conventional versus organic farming practices. They consider, in particular, how certain kinds of farming practices affect soil quality along with the livelihoods of farmers and communities. They read Wendell Berry's critique of the 'Modern Agricultural Ideal' and identify passages that illustrate advanced critical reasoning. They wrap up Project Two by researching (and ideally visiting) an urban farm, an organic farm, or a conventional farm and then assess the extent to which the enterprise embodies

the principle of integral ecology.

In Project Three, students look specifically at some of the challenges to curbing carbon emissions. They read chapters from Naomi Klein's This Changes Everything and analyse her hypothesis that free market fundamentalism has overheated the planet. They consider the measures governments can take to plan and ban better to meet the challenges of the 21st century. And they finish the project by writing a letter to a leading political figure in the country of their choice setting out why curbing carbon emissions needs to be made a priority, explaining the specific steps the government can take to put society on a healthier path.

In Project Four, the focus shifts back to a research task as it looks at sustainability in the context of urban regeneration. Students read Robert Putnam, James Howard Kunstler, and Jane Jacobs and think about what makes a good urban space: how can the spatial redesign of neighbourhoods be both good for society as well as help address the challenges of global climate change? In answering this question, they research an urban regeneration project which they believe is a model (good or bad) for the 21st century. Students integrate concepts such as the public realm, "self-interest rightly understood," associational life, "sidewalk life," social capital, social inclusivity, along with integral ecology. The audience for this final essay includes executives in city government who are under pressure to roll out housing quickly in response to a housing crisis. They are asked to expound upon both the process and the principles that should be applied.

So, how did it all turn out? Well, at DBS our partner colleges in the U.S. were so happy with our approach that student numbers increased from 35 to over 100. The students, of course, moan and groan at the start as they adjust to the workload, but the addition of research elements where they have the chance to write about enterprise and design initiatives they discover independently has livened up attention and satisfaction levels. Student surveys at the end of the course consistently reveal College Writing as the module they find most challenging but most rewarding. As well, the module has been very satisfying for the lecturers involved.

Truly, teaching writing can be paired with the opportunity to make an impact on the most pressing issue of our time. Climate change and our response to it require us to read more, reflect more, talk more and write more about healthier configurations in society, in our patterns of consumption, and their impact on our common home. Conversations on these topics are not limited to the kitchen table, or the classroom, of course, but these are logical, accessible places to start and discussions often begun there radiate out to broader circles of influence. Personally, my experience with the module has inspired me to get more involved with my local community. My work with the North West Inner City Umbrella Group for the Regeneration of O'Devaney Gardens and efforts to establish a community garden in the Stoneybatter area continue to inform the discussions and readings I integrate into Project Four. Without doubt, the workload associated with College Writing is significant, but like most things at work, when a sense can be gotten that one's professional practice has a chance to influence something really important, beyond the narrow confines of self, somehow it is easier to find the inner resources to put in the extra effort required.

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LET THE DÁIL ELECT THE GOVERNMENT

Peter Emerson

We will have groups here [in Dáil Éireann], small groups of seven or eight. We will not have parties on definite lines of political cleavage.

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Abstract

Democracy has become very adversarial. Decisions are invariably based on majority votes. So parliaments everywhere split into two: the bigger 'half', the government, versus the smaller, the opposition. But if decisions were based on a non-majoritarian system, a more inclusive structure of governance, with all-party, power-sharing coalitions, could be more likely.

At a public meeting in Ballymun Civic Centre on 23rd April, 2016, participants role-played a Dáil electing just such a government of national unity. The initiative set out to explore whether the TDs could decide collectively, in one ballot, both who should be in Cabinet and who should be which minister. After a brief discussion on decision-making systems, this article describes the appropriate methodology, called the matrix vote. It then outlines the role-play and analyses the results.

Introduction

Majority rule by majority vote is divisive, inaccurate and, at worst, it can be a contributor to civil conflict. Furthermore, the rise of the extreme right in many countries suggests the norm by which 'the winner' is the democratic leader who then dominates politics, if only for four years, is dangerous.

Despite "a surprisingly strong and persistent tendency in political science to equate democracy solely with majoritarian democracy," (Lijphart 2012: 6), there are, of course, other ways of making decisions. One in particular, the modified Borda count, MBC[2], determines the collective will more precisely. In fact, it "is the soundest method of identifying the [option which] is most generally popular with the electorate, or at least the most acceptable." (Dummett 1997: 71.) Secondly, it is non-majoritarian. This article presents a case study of the use of the Borda methodologies and concludes that if the MBC were to be adopted for decision-making in the Dáil, there would be no further justification for (single-party or coalition) majority governance.

The Matrix Vote

Take the simple example of a six-member cabinet: each TD would choose, in order of preference, the six persons he/she wanted to be in cabinet, in the left-hand (shaded) column of Table 1; and then place six ticks in the matrix, one in each column and one in each row, to indicate who should undertake which department.

THE COMMITTEE Names of candidates in order of preference:		A MINI CABINET					
		Taoiseach	Department of A	Department of B	Department of C	Department of D	Department of E
1st	**Jean**			✓			
2nd	**Jane**	✓					
3rd	**Jim**					✓	
4th	**Joan**				✓		
5th	**June**						✓
6th	**John**		✓				

Table I A matrix vote ballot

1 A quotation from Ireland Since the Famine by FSL Lyons, p 475.

2 In an MBC of n options, the voter may cast m preferences, where $n \geq m \geq 1$. Points are awarded to (1st, 2nd … last) preferences according to the rule (m, m-1 … 1). Accordingly, he who casts only 1 preference gives his favourite 1 point, but she who casts all n options gives her favourite n points (her 2nd choice n-1 points, her 3rd n-2, and so on). In effect, then, voters are thus encouraged to cast full ballots.

A matrix vote analysis consists of two counts. The first is based on the preferences cast in the shaded column and identifies the six most popular TDs; the methodology is the Quota Borda System, QBS[3], in which, as in PR-STV, the voters vote 1-2-3-… as they wish. The second count is an MBC of the points in the matrix: in this example, a 1st preference tick gets 6 points, a 2nd preference tick gets 5, etc..

Consider, now, the 32nd Dáil. If all 157 TDs were to cast valid votes to elect a 15-member Cabinet, the quota would be 10.

With 50 seats, Fine Gael has five quotas so it can expect 5 or even 6 seats in Cabinet, (unless, of course, they split the vote). So the Fine Gael TDs would be wise to cast 6th or at least 7th and subsequent preferences for those TDs of other parties or none, with whom co-operation might be more likely.

Considering just the 1st and 2nd preferences, the Party could either:

(a) ask all 50 TDs to give a 1st preference for Kenny for Taoiseach, with 10 giving 2nd preferences for Fitzgerald for the Department of Justice, say, and 10 for Bruton for Finance, etc.;

or

(b) divide the 50 TDs into 5 groups of 10, each using its 1st preferences for Kenny, Fitzgerald, Bruton, Varadkar and say Coveney, and all sharing their 2nd, 3rd, 4th and 5th preferences.;

or

(c) bargain with other parties and/or independents with some of its TDs' top preferences.

The concern would be that if Fianna Fáil adopted the (a) tactic while Fine Gael adopted (b), Micheál Martin could perhaps become the Taoiseach. If instead Fianna Fáil deployed (b) and Fine Gael (a), Fianna Fáil might win more of its desired departmental appointments.

Sinn Féin has 23 seats, i.e., two quotas. So again, should they concentrate on Adams, or go half-and-half with McDonald?

With only 7 seats, Labour doesn't have even one quota, so best to negotiate with other parties.

In effect, then, the matrix vote encourages all TDs to cross the party divide – an essential pre-requisite, surely, of power-sharing.

3 In a QBS count, in stage (i), any single candidate with one quota of 1st preferences is deemed elected; in stage (ii) any pair of candidates with two quotas of 1st/2nd preferences are both elected; then, in stage (iii), if another pair has a single quota, the one with the higher MBC score is elected; and if seats are still to be filled, stage (iv) is based on the candidates' MBC scores.

The Experiment

At a public meeting in Ballymun, Dublin, about 50 people participated in an experiment to determine the implications of using the Borda matrix vote system to elect a cabinet and ministers. Accordingly, in a role-play of three phases, this 'mini-Dáil' elected an all-party coalition. On arrival, participants were divided into groups, Fine Gael, Fianna Fáil, Independents, Sinn Féin, Labour, Anti-Austerity Alliance/People Before Profit and Social Democrats/Green Party, so each group had about five or six members. Each participant then drew from a hat the name of a real TD and, for the purposes of the experiment, adopted this TD's persona.

With a facilitator, each party as well as the independents first met separately to discuss tactics. A big party – the word 'big' implying the possession of one or more quotas – decided who to nominate for which department, while every small party considered the possibility of a joint nomination. These nominations were collated and distributed to all concerned.

In the second phase, the various groups interacted, primarily on co-operating with their top preferences. Finally, the groups voted. Now parties in the 32nd Dáil have 50:44(43):23:23:7:6:3/2 TDs. Accordingly, the groups were given 17, 14, 8, 8, 2, 2 and 2 ballots respectively[4], to be completed. In a real Dáil, if 157 TDs were electing 15 ministers, the quota would be the integer greater than 157/ (15 + 1), which equals 10. So, as already noted, Fine Gael with 50 TDs[5] would have five quotas, Fianna Fail with 43 would have four, and so on. With just 53 votes, the quota is the next integer above 53/16 which is 4, so Fine Gael now has four quotas Fianna Fail has three, and so on[6].

The Results

Table II shows the outcome: the Cabinet members in descending order of QBS popularity in the left-hand shaded column, and departments in order of 'relative importance' (but see below) from left-to-right. The

4 It therefore did not matter if the numbers of participants in the various groups did not reflect the ratio of TDs in the Dáil.

5 Given their small size, the Social Democrats (3) and Green Party (2) 'TDs' formed just the one group of 5.

6 The experiment was based on a Dáil of 166 (and not 157 plus the Ceann Comhairle) TDs, so hence the slight discrepancy between the numbers of quotas in the Dáil and the numbers in the experiment.

outcome was an all-party coalition: Fine Gael 5 ministers, Fianna Fáil 3, Sinn Féin 3, Independents 2, Labour 1 and Social Democrats/Green Party 1.

Ministers in order of popularity as measured in the QBS election: yellow = elected on a quota of 1st prefs; brown = elected on 2 quotas of 1st/2nd prefs; and green = elected on MBC scores		Election (1st prefs)	DEPARTMENTS															MBC scores
			Taoiseach	Education	Finance	Foreign Affairs	Expenditure	Children	Transport	Arts	Social Protection	Food etc.	Energy	Environment	Justice	Jobs etc.	Health	
M Martin	FF	15	234		91			1									8	334
M O'Sullivan	Ind	8		26				354			7						12	406
ML McDonald	SF	8		311														311
S Coveney	FG	4										341						341
F Fitzgerald	FG	4													185	142		327
R Bruton	FG	4			226								11				28	265
C Murphy	SD	4									236							23
M McGrath	FF						284											284
P Doherty	SF								337									337
E Kenny	FG	3	376									2						378
B Howlin	Lab	3					16		14		21		220			20		291
M Healy-Rae	Ind								18	100				148				248
C Ó Caoláin	SF									242								242
J O'Callaghan	FF					216												216
L Varadkar	FG					177				16	6					0		199
MBC scores			618	529	493	453	441	380	379	360	353	343	341	284	240	215	150	

Table II The Results

Most ministers were chosen for departments for which participants felt they were well suited. Most of these appointments, shown in the matrix in grey, were uncontested. As indicated in the table, deputies were appointed ministerial roles as follows; Deputy Enda Kenny with 376 became the Taoiseach; Deputy Maureen O'Sullivan on 354 took on Children; 341 put Deputy Simon Coveney in charge of Food; Deputy Micheál Martin got a raw deal with 334 votes giving him responsibility for Health, shown in reverse, the most popular candidate in the least important portfolio; while Deputy Leo Varadkar with 0, also in reverse, was allocated by default to Jobs.

In a full matrix procedure, TDs would give each nominee not a single tick for one portfolio, but the letters A, B and C for three possible departments. If, then, Deputy Micheál Martin's points for Taoiseach were beaten by Deputy Enda Kenny's, Deputy Martin's As would be transferred to his Bs, probably for Finance (234 + 91 = 325), so beating Deputy Richard Bruton's 226; so Deputy Bruton's As might be transferred to his Bs, (226 + 11 = 237) to give him Energy; so Deputy Brendan Howlin's 220 As would be transferred to his Bs, quite possibly to Jobs. All other appointments would be unaffected.

The MBC scores shown in the right-hand column reflect the 15 Cabinet members' MBC popularity. The scores in the bottom row would be a more accurate reflection of the 'relative importance' of the various departments, if the A-B-C procedure had been followed.

Analysis

The 'negotiations' were animated. Fine Gael gave one 1st preference to Fianna Fáil and one to Labour; it also gave 45 (6th, 7th or 8th) preferences to Sinn Féin. Fianna Fáil gave all of its 1st preferences to Deputy Micheál Martin, but split the ticks between Taoiseach and Finance. Therefore, as noted, he lost both. But the A-B-C procedure would have allowed his supporters to vote 'sincerely' and less 'tactically' – to use terms from social choice science – with As for Taoiseach and Bs for Finance. The Independent group submitted only partial ballots, but in QBS, a 1st preference remains a 1st preference, so Deputy Maureen O'Sullivan still got her quota; she could have received a higher MBC score, however. Sinn Féin co-operated with everyone, receiving more support than they gave, thus gaining one more Cabinet member than their quota. Labour concentrated everything on Deputy Brendan Howlin, successfully. And finally, the Anti-Austerity Alliance/People Before Profit group co-operated with the Social Democrat/Green Party group to get the Social Democrats' Deputy Catherine Murphy a seat.

The outcome, was proportional. Doubtless, if more 'TDs' had been present, the outcome might have been different; but it would still have been fair. The biggest limitation was that of time. Accordingly, the next project is to hold an all-day experiment with 158 'TDs'.

Conclusion

Many political leaders including several dictators, like majority voting – they choose the question and the

question is the answer – the likes not only of Napoleon, Lenin and Hitler, (Emerson 2012: 143-150), but also of Bernardo O'Higgins, the first ruler to gain 100 per cent support; this was in 1818, when he became El Supremo in Chile, (ibid: 170). Now a majority government can win every debate in parliament, (rebels permitting), but "the idea that democracy is effective only when there are two parties, one in government and the other in opposition, is an Anglo-American myth." (Lewis 1965: 70.) Indeed, "…majority rule and the government-versus-opposition pattern of politics that it implies may be interpreted as undemocratic…" (Lijphart 2012: 30). Majoritarian governance, then, is at least problematic, both in theory and, as shall now be explained, in practice. For example, in 2013, Germany took 67 days to form a two-party coalition; two years earlier, Belgium took a record 451 days for a five-party agreement. Frequently, small parties are in government and bigger ones are not, as in Austria in 1999 with the Freedom Party. Or maybe just one individual – the 'king-maker', like the late Tony Gregory, TD, in 1982 – decides who shall be Taoiseach, While in 1998, India broke another world record with a majority coalition of 41 parties! (Emerson 2016: 31 et seq.)

The MBC is more accurate than majority voting and, ergo, more democratic. In fact, "however democratic simple majority decision initially appears to be, it cannot in fact be so." (Riker 1982: 65.) Because, he continues, "If a voting system is to be really fair, more than two alternatives must be allowed." And, to quote Jean-Charles de Borda on the same criterion of fairness, "the voters must be able to rank each [option]." (McLean and Unwin 1995: 84.) Nothing is perfect of course, but the MBC "is a unique method… to minimise the likelihood that a small group can successfully manipulate the outcome." (Saari 1995: 14.) Accordingly, contentious debates could be multi-optional; so too the votes! Whence, the outcome can be the option with the highest *average* preference, so that involves every TD, not just a majority of them. Governance could therefore be all-party; and TDs could all share collective responsibility to ensure the collective will of the Dáil is enacted. Given the rise of extremist parties throughout Europe, a review of the potential offered by the Borda methodologies is long overdue.

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Book Reviews

Democracy Reinvented, Participatory Budgeting and Civic Innovation in America

by Hollie Russon Gilman. Brookings, Washington (2016)

Reviewer: Jordana Corrigan, Research Officer, NorDubCo, Dublin City University

Democracy Reinvented is described as 'offering the first comprehensive treatment of participatory budgeting in the United States and explores the wider landscape of contemporary civic innovation'. Participatory Budgeting is defined as '(1) a replicable decision-making process whereby citizens, (2) deliberate publicly over the distribution of, (3) limited public resources, arriving at decisions which are then implemented' (Russon Gilman, 2016:8).

The author, Hollie Russon Gilman, served as policy advisor on open government and innovation in the White House Office of Science and Technology Policy. She is a Postdoctoral Research Scholar at Columbia University's School of International and Public Affairs and a fellow at New America and Harvard's Ash Center for Democratic Innovation and Governance.

The author states that her goal has been to 'provide a rich and multifaceted analysis of an emerging civic process while also generating a theoretical understanding applicable beyond PB' (Participatory Budgeting). The introductory chapter outlines the challenges of declining trust in government and participation in democratic processes in the US. Chapters 2 and 3 describe the origins of Participatory Budgeting (hereafter referred to as PB) internationally and its adoption in the US as a tool to increase citizen engagement. The author offers a valuable insight into the practicalities and advantages of using PB as a means of improving 'democratic conditions' by devolving participation, deliberation and decision making to a localised level. By addressing the citizen as the 'expert' in their community, PB is described as allowing community needs to be addressed more effectively and creatively in what is argued to be a more transparent and robust decision-making process, and which can lead to higher levels of civic participation in the longer term.

Chapters 4,5,6, and 7 provide a n in-depth consideration of the PB process against three criteria; deliberation, participation and institutionalisation. Using case studies in Chicago, New York and Boston, the author considers the PB process against these criteria and provides descriptive and empirical evidence of the experiences of these case studies..

The discussion contained within these chapters can also be considered in the broader discussion of innovations in civic governance. The author addresses the use of online tools and Open Data as a means to make the governance of institutions more collaborative and inclusive while acknowledging the issues of 'efficiency' versus 'inclusivity', and the fact that valuable 'civic rewards' lie in the engagement, interaction and knowledge transfer of interpersonal relationships. This discussion is timely and useful considering Ireland's membership of the Open Government Partnership and our commitment to the associated action plan. The book also discusses the barriers faced by public institutions in achieving changes in democracy, institutionalising innovations and the subsequent reasons for a lack of experimentation within same.

While the book offers some useful policy recommendations for those who wish to use PB as a tool and a means to improving democracy, the author makes it clear that the PB process is highly context specific, and the success of same depends on the ability of those involved to reflect on, and adapt the process to their unique contexts.

This book puts forward, very positively, the case for PB as a means to increasing participation and deepening democracy. However there is a requirement to address some questions surrounding the process. The author acknowledges these questions in the closing chapters, specifically in the case of developing PB as a means to allocating larger budgets; how is the process institutionalised? Who participates and what are their motives for doing so? There are also the interesting questions of how we view and value 'civic rewards' as millennials engage with democracy in new and different ways, and whether or not citizens wish to become deeply involved with civic governance.

Notwithstanding the questions which remain unanswered Democracy Reinvented provides a valuable contribution to those interested in the theory and practice of increasing participation and improving democratic conditions, particularly at the localised level.

The documented changes that were made through PB in the case studies, and the references to the development of specific innovative projects throughout the world provide the reader with a sense of optimism about what can be achieved if we as citizens and stakeholders in institutions, are willing to commit time and resources to the pursuit of more effective governance.

Ireland, Small Open Economies and European Integration- Lost in Transition

by David Begg. Palgrave MacMillan (2016)

Reviewer: Gerard Doyle, PhD Researcher, School of Transport Engineering, Environment and Planning

David Begg's recent publication Ireland, Small Open Economies and European Integration- Lost in Transition provides a comprehensive account of how four small open economies- Denmark, Ireland, Sweden and the Netherlands- have responded to European integration, referred to as Europeanisation. Begg, former General Secretary of the Irish Congress of Trade Unions, makes a compelling argument that countries characterised by strong welfare states are best placed to counter the negative effects associated with globalisation. In doing so, he lays bare the trite incorrect assertions pedalled by right wing ideologues that competitive economies and vibrant welfare states are mutually exclusive.

The book comprehensively compares how the four countries responded to the various phases of European integration. From interviews with senior civil servants and politicians, Begg indicates successive Irish Governments were primarily concerned with securing the maximum level of subventions as opposed to shaping ECC/EU policy or critiquing transformative phases of integration such as monetary union. As a result, Ireland was not well positioned to deal with the 2007 global economic crisis. The book, unfortunately, fails to detail the closed mindsets of the leadership of a number of social institutions: the main political parties, the trade union movement and business representative bodies in Ireland towards the process of Europeanisation which viewed any criticism of the European project as being 'un-European'.

At a national policy level, David Begg asserts that successive Irish Governments failed to develop innovative economic frameworks as was the case in Denmark and Sweden. Instead, our model of economic development was based on a passive approach to economic development predicated on Foreign Direct Investment. This contrasts with the other three countries discussed in the book whose Governments have been innovative in positioning their economies to be in a position to respond to global crisis and the relentless process of globalisation. For example, when the early 1970's oil crisis brought the Danish economy to its knees, the Danish Government devised a vision for Denmark to reduce its reliance on imported oil. Through the state policy of supporting the harnessing of renewable energy, this led Danish companies to become market leaders in wind energy which has resulted in the generation of thousands of jobs.

The books' strengths include its explanation of how social partnership developed in Ireland at national and local levels and in the other three countries, and the varying strategies employed to address economic crisis.

The book's shortcomings are primarily the obtuse language which makes it more difficult for individuals without an economics background to understand the key tenets of this book; and the lack of detail on the economic model Ireland should adhere to which is not based on speculation or inward investment.