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Sustainable Development and Environmental Injustice in Rural Ontario, Canada: Cases of Wind Energy and Biosolid Processing

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Abstract

Global demographics are shifting, and as a result, rural populations are becoming further open to marginalization in regional politics. This research uses in-depth qualitative interviews to examine how the politics of two specific techno-industrial developments in Canada have played out within a complex urban-rural perspective of development. Using an environmental justice framework, we focus on how urban and rural values are manifested in rural citizens' perspectives of development processes—an idea that has rarely been investigated in the Canadian context. Through a unique multiple case-study approach, complexities emerge within the general view of marginalization of rural places. Most notable is the notion that regional policy directions are driven largely by urban centres of power disconnected from the realities of rural life. Further, we note residents' identification of the multi-scalar nature of the problem, which appears to be less one of perceived industrial exploitation, and more a lack of representation in regional political processes.

Keywords: environmental justice; rural geography, risk, development, wind energy, biosolids

1.0 Introduction

For much of pre-industrial and industrial history, rural areas were known simply as the dominion of productive farming and subsistence living. With the introduction of alternative agricultures and various commercial and leisure activities, community identities have and continue to change (see Dax, 1999; Mahon, 2007). This has been described as a shift from productive to consumptive lifestyles (Fothergill, Kitson, & Monk, 1985) and the emergence of the 'post-productivist'

countryside (Ilbery & Bowler, 1998). Coinciding with this shift has been a strong public policy discourse around transforming rural communities into more diverse socioeconomic landscapes (Almstedt, Brouder, Karlsson, & Lundmark, 2014)—where both productive and consumptive expectations of the rural thrive in parallel and conflict with each other. Out of these transformations came increased attention to rurality, and the idea of ‘the rural’ is changing and need not be just one thing or indeed contain one type of people. Those looking to better define or conceptualize rurality have been engaged in a contested area of discussion (see Cloke, 2006 & 1977; Halfacree, 1995; Woods, 2017). In some places, these have changed expectations about what the rural is or should be in the context of new development patterns and have led to social conflicts surrounding such different interpretations of land use practices (Wester-Huber, 2004; Learmonth, Whitehead, Boyd, & Fletcher, 2007). In Ontario, Canada researchers have followed this development and have studied intra-community rural conflict (see Fast et al., 2016; Walker et al., 2015; Mason et al., 2017; Walker, Baxter, & Ouelette, 2014).

It is within this context of shifting conceptualizations of ‘the rural,’ that we present research that investigated the social impacts of rural developments designed to help reach sustainability goals in Ontario. In particular, we focus on the urban-rural tensions created through a government-initiated drive towards increasing renewable energy and circular economies via wind energy development and biosolid processing. The inspiration for this line of inquiry was previous research in other contexts that suggests the rural as the setting for a new type of environmental injustice as well as emerging research that suggest residents’ views of development are powerfully shaped by what is seen as an urban-based policy system (e.g., Sayan, 2017). Indeed, our past research in this area has suggested these developments are driven mostly by provincial-led directives that are designed by urban leaders in the capital of Toronto (Mason-Renton, 2017; McRobert et al., 2016). Further, in taking a step back to look at the province as a whole, recent Ontario elections (2011 and 2014) reflect an ideological distinction in voting between urban and rural centres, voting overwhelmingly liberal and conservative respectively (Mann, 2014; Sher, 2011). Such an urban-rural cleavage is said to be one of the most powerful forces in Canadian politics and is explained by the fact that urban voters tend to be more socially progressive (Bittner, 2007).

2.0 Literature Review

Research in the non-urban domain has often drawn on the idea of the ‘rural idyll’ (Gorman-Murray, Waitt, & Gibson, 2012; Kondo, Rivera, & Rullman, 2012; Little, 1999; Matthews, Taylor, Sherwood, Tucker, & Limb, 2000). The idea is rooted in the belief that the rural is a stable, harmonious, healthy and conflict-free space (Vepsalainen & Pitkanen, 2010). Industry has also been noted to think of rural places in this way and often centers development within them because they are perceived to be less resistant to otherwise unwanted land uses. As a result of the proliferation of the ‘rural idyll’, rural citizens have often been labeled as being ‘passive onlookers’ of the scenery (Vepsalainen & Pitkanen, 2010) presumably free of political opinions, conflict, and otherwise quarrelsome behaviour. This idea has been challenged in recent years with many claiming that those rural spaces are not free from crime, political conflict and other problems (Larsen, 2008; Halfacree, 1995; Parr, 2010; Somerville, Smith, & McElwee, 2015) that have long been accepted in urban contexts (Cloke, 1997). Rural political debate is now seen as regarding conflicting notions of the ‘rural’ itself (Woods, 2004). As evidence

against this rural idyll, some have pointed to rural protest groups and political action- which have been labelled a new social movement (Woods, 2003) brought forth by a long-standing resentment of urban-based paternalistic power structures (Newby, Bell, & Saunders, 1978). These rural protests aim to “defend ...against external pressures and threats” (Larsen, 2008; p. 172).

The evolution of rural spaces has not only introduced disagreements over land use within these communities but has ignited a theoretical divide between rural and urban perspectives catalyzed by a politics of mobility (see Cresswell, 2010). Much of this is set within the context of declining rural populations in many countries including Canada (Bryant & Joseph, 2001; Dahms & McComb, 1999), where the rural has moved from a position of national centrality (Troughton, 1995). Ashwood and MacTavish (2016) describe how this shift has created an ‘ideal’ setting for “taking and dumping” (p. 271) whereby the tyranny of the (urban) majority is bullying the rural. Indeed, it has also long been recognized that urban processes can act as ‘external forces’ on rural communities (Ramsey & Smit, 2002). Led by policies that are developed by the ‘urban elite’ and applied to rural communities (Lipton, 1977; Varshney, 2014), protests are said to be in part due to a disconnect between the values of the two settlement types. In Canada, such a division has been marked by what McAllister notes as a policy discourse increasingly characterized by “the concerns of densely inhabited metropolitan regions” leading to a situation in which “communities in rural regions of the country are subject to vagaries of fluctuating international markets and external political agendas that are indifferent to the specific needs of rural Canada” (2002, p. 233-4). The emergence of this urban/rural division may also be linked to the broadening of network governance modes over the second half of the 20th century, with urban centres becoming increasingly polycentric, rural voices were further out-competed in their access to key governance processes (McAllister, 2004).

Though there is a collection of empirical work that points to socio-economic inequities in rural populations (Bullard & Wright, 1993; Cowell, Bristow, & Munday, 2011; Robbins, 2011; Urkidi & Walter, 2011), ‘the rural’ is most often the place of, and not the reason for, environmental injustice. Further, it is clear that studies examining these issues through the lens of an urban/rural divide are rather dispersed throughout the academic literature. In Canada, there has been some work on the urban-rural divide in areas of health outcomes (Thompson, Nugent, Blanchard, Ens, & Yu, 2016), culture occupations (Schimpf & Sereda, 2001) and commuting (Patridge & Nolan, 2005). Research examining regional, techno-industrial development through the lens of a rural-urban divide is however rare even in the broader international literature. Those that do examine these impacts in rural spaces, mostly do so with regard to extractive technologies (i.e., Braiser et al., 2011; Ladd, 2013; Theodori, 2013) or are most commonly discussed among case studies examining exurban or fringe communities connected by their geography (e.g., Halfacree, 1993; Woods, 2009; Masuda & Garvin, 2008), rather than by resource transfers.

Community opposition to stigmatized facilities in rural areas creates a challenge to the future of sustainable techno-industrial developments including renewable energy and biosolid processing. The objections to techno-industrial developments in such landscapes have long been characterized as being driven by selfish, Not in My Backyard (NIMBY) motivations (see Farstad & Rye, 2013; Kemp, 1990; Seifert, 2009). While there is still some emerging academic and grey literature

emphasizing these pejorative attitudes, the concept of a rampant NIMBY syndrome has been exposed largely as a political concept meant to undermine those opposing proposed developments (Wolsink, 2000). Researchers have concluded that NIMBY is too simplistic and is actually more likely representative of a deep place-attachments and expectations of the rural landscape (Baldwin, Smith, & Jacobson, 2017; vanVeelen & Haggett, 2016).

In the context of regional resource demands, such as energy production and waste management, this research used environmental justice (Schlosberg, 2009) as its theoretical base to examine locally felt inequities in these rural communities. The study of environmental justice has historically been defined by differentiated planning and health outcomes based on race, class or income. However, recent scholars including Schlosberg (2009), have argued that environmental justice must horizontally expand to include the study of inequity across many other social and geographic characteristics. ‘The rural’ or the concept of rurality has been said to be an implicit dimension of environmental justice based on this kind of recent growth.

Perhaps in response to the calls by Schlosberg and others, some recent studies have framed environmental (in)justice around the idea of rurality and, more specifically, an urban/rural disparity. Recent work of Kelly-Reif & Wing (2016), who study agricultural and energy production in the USA and Japan, suggest that industrialization of ‘the rural’ intensifies injustice and creates conditions that lead to a “parasitism which eventually harms both urban and rural communities” (p. 357). In a similar way, Van Wagner (2016) describes aggregate mineral mining in Ontario and states that these areas home to development are treated as sacrifice zones—places where urban resource demands can be met. Agyeman, Schlosberg, Craven, & Matthews (2016) illustrate several cases where the pervasiveness of environmental justice theory fits across geographies and suggests that land use conflicts in rural spaces often leads to ‘politics of the local.’ Though not through the lens of rurality or an urban-rural divide, Walker and Baxter (2017a, 2017b) have recently suggested environmental injustices relating to the way wind energy is being built in Ontario and Nova Scotia, Canada. Their description of procedural and distributive injustice (see also Gross, 2007) does suggest a better way forward for planning and siting rural wind energy that returns local energy autonomy and “incentivizes residents and communities to say “yes” [to development]” on their own terms. Mason-Renton and Luginaah (2018) also highlight how felt environmental injustices across the urban-rural divide affect residents’ ideas of biosolids as either an intrusive waste or valuable nutrient resource.

Particularly with reference to the structural components of an urban-rural relationship, we draw upon environmental justice theory to help illustrate injustice by highlighting the experiences of those living closest to rural development. Through wind energy development and biosolids processing, this research explores how regional politics and sustainability goals, as well as residents’ values and expectations, are influencing responses to such urban-driven developments. There is some work that has looked at wind energy (Songsore & Buzzelli, 2016; Walker & Baxter, 2017a) and land application of waste (Jones, 2011; Mason-Renton & Luginaah, 2018) within an environmental justice context, yet literature that uses it to shape its most important research questions are difficult to find. This work in the rural context is timely, as parts of academia have recently “turned its gaze to metropolitan preoccupations” (Morrison, Lane, & Hibbard, 2015, p. 1611). Particularly in geographic and planning research, there have been concerns that

rural-based thought has been ‘taken over’ by its urban counterpart (Morrison et al., 2015; Woods, 2009). Described in detail below, we draw on these two case studies to provide the reader a better understanding of methodology and the context important to each.

3.0 Methodology

This research utilized a multiple case study (MCS) approach to investigate perceptions of sustainable techno-industrial developments as they related to the urban-rural divide in the context of risk and development in Ontario. Though each case was originally performed as a unique study, the common themes both elicited through data collection and analysis provided a window for collaboration. The value of a MCS approach is said to be within the ability to compare and contrast findings based on theory common to both cases (Yin, 2003). It is also believed that when used in the right way, the analysis of two or more cases within the same paper may provide a more in-depth understanding than a single case could provide (Mills, Durepos, & Wiebe, 2009). Through much conversation between the investigators of each study, as well as others with familiarity studying in rural Ontario, it was decided that using a MCS approach was appropriate because both cases were set within similar contexts and indeed relied on much of the same theory (Miles & Huberman, 1994; Stake, 1995). While it is important we kept each case conceptually separate in terms of its local context, the ability to combine findings around common themes increases what Baxter and Eyles (1997) call transferability and what others may deem generalizability or external validity (Schofield, 2002).

Across both projects, qualitative interviews with local residents were chosen as the primary research instrument. In-depth methodologies create the opportunity to fully understand the cultural dimensions and differentiated social experiences relevant in rurality. Traditional studies concerned with environmental risk have often focused on remote or hypothetical ideas of risk or development (Baxter & Eyles, 1999). In contrast, this research is empirical and community-centred in that it studies development from the perspective of local citizens, their daily life, and the impacts they have experienced. More detail about the research methods of each case is outlined in greater detail in the pages that follow (with extensive detail provided in Walker, 2012 and Mason-Renton, 2017).

3.1 Wind Energy

In Ontario, Canada wind energy has been the largest contributor to renewable energy development since 2006. The expansion of wind energy has focused on large turbines (>1.5 MW) and was largely driven by the need to: (1) mitigate climate change and reduce regional air pollution and (2) stimulate the green energy economy (Government of Ontario, 2011; McRobert, Tennent-Riddell, & Walker, 2016). According to industry, wind energy also moved forward to help deliver clean, reliable and low-cost electricity (CANWEA, 2018a)—most of which is consumed in urban or peri-urban centres of Ontario (IESO, 2018). The growth of wind and other renewable energy was spurred by the controversial Green Energy and Green Economy Act, which eliminated municipalities’ veto power concerning projects in their jurisdictions (Fast et al., 2016). While there are exceptions to the rule, wind turbines are most efficient in rural areas, meaning there is a negligible number of active turbines in urban centres. Further promoting rural over urban

development of wind turbines in Ontario was the required setback distances to homes (>350-550 metres). Finally, large corporations (headquartered in large cities) own most projects and only a small minority of landowners receive significant financial benefits. This sets up a gap between ‘winners’ and ‘losers’ not only within host communities, but also between urban and rural areas (Walker and Baxter, 2017a).

At the time of publication, there was approximately 4900 megawatts (MW) of wind energy capacity—supplying 7.5% of Ontario’s electricity demand (CANWEA, 2018b). Despite success in terms of procurement, a number of problems have been suggested by wind turbines placed too close to homes. In the Ontario context, recent research has refuted the NIMBY characterization and instead is suggesting that perceptions of health effects (Songsore & Buzzelli, 2014; Walker et al., 2015), property devaluation (Vyn & McCullough, 2014) community level conflict (Walker et al., 2014) and ideas of procedural and distributive justice (Walker & Baxter, 2017a, 2017b) are much more important predictors of support/opposition. Indeed, in their recent summary article, Fast et al. (2016) suggest that four major factors are responsible for ‘wind energy disputes’ in Ontario: health concerns, the distribution of financial benefits, a lack of engagement, and the ability to address landscape concerns.

Interviews were conducted with residents living within one kilometer of an operational wind turbine within the adjacent communities of Port Burwell and Clear Creek in southwestern Ontario (see Figure 1). Together, the projects span more than 25 km along the north shore of Lake Erie and are home to 72 turbines with a capacity of 108.9 megawatts. The distance of 1 km was selected based on the province of Ontario’s guidelines (Ministry of the Environment [MoE], 2008), which states that beyond that there is little difference between wind turbine noise and ambient noise levels. More than 200 letters of invitations were dropped off inviting residents to participate, and 26 interviews were conducted with residents and policy experts across these two communities. Most interviews were with middle-aged or elderly males who had lived most of their lives in the surrounding area. Except for two cases, interviews took place in the homes of participants and generally lasted between 60 to 90 minutes. In order to ensure anonymity, no personal or demographic information was collected from participants. Interview questions covered issues such as changes to daily life, general opinion of the turbines, and community conflict. Using NViVO qualitative software, analysis was completed through line-by-line thematic coding.

3.2 Biosolid Processing

Biosolids (processed sewage sludge) are the solid organic by-product of municipal wastewater treatment processes. Municipal sewage treatment and disposal has evolved as an area where such waste products are treated and the by-product is utilized for agricultural purposes as a fertilizer supplement. Although biosolids have been land applied for decades in Ontario (Ontario Ministry of Agriculture, Food and Rural Affairs [OMAFRA], 2010), and are beneficial to the agricultural community, this technology was developed primarily as a sustainable means for urban waste management (Lystek, 2018). This has become especially concerning for rural communities in recent years in light of the increasing volumes of urban-based sewage and the promotion of land application over other alternatives by regulatory and governing agencies in Ontario. This issue is further complicated by

debates of whether biosolids are considered a waste or a resource, as well as the inconclusive evidence regarding human health effects of land applications (Beecher et al. 2004; Goven, Langer, Baker, Ataria, & Leckie, 2012; Krogmann, Gibson, & Chess, 2001; Mason-Renton & Luginaah, 2018). This has increased community conflict regarding the risks and benefits associated with these waste by-products as is seen in the Township of Southgate (Ontario) where a regional biosolids processing facility is now operating (Mason-Renton et al., 2017).

In investigating residents' perceptions of urban biosolid processing and land application, qualitative interviews (n=23) were conducted with residents of Southgate Township (see Figure 1), where a regional biosolids fertilizer processing facility was sited, and local agricultural residents gained access to the fertilizer product. Participants included village residents who live proximate to the facility in Dundalk (the only sizeable village within the township), as well as rural residents who will either be using or live near land application sites for the fertilizer product. For a detailed description of community characteristics see (Author, 2017). Interviews were conducted in the middle of the facility's siting process, with a later stage of this research following up with residents after the facility became operational to examine if and how residents' perceptions had changed (Author, 2018). Interviews were transcribed verbatim and entered into NVIVO for further thematic analysis to unravel the relationship between the response to this industrial development and the differing expectations of the rural landscape. Participants included a range of residents who were in favor, against, or uncertain about the facility and local land application of biosolid fertilizer in their community.

Figure 1. Location of Case Studies.



Source: VanKerkoerle, 2017.

4.0 Results

In the pages below, findings are organized by key themes and represent the convergence theoretical context with the qualitative data found across both case studies. We begin by sharing findings related to rurality (see 4.1), before turning to the results that emphasized environmental injustice driven by urban-rural divides and inequities (see 4.2).

4.1 Conceptions of Rurality

4.1.1 Disconnect from urban and the emergence of the rural idyll. Through initial observations in both case studies, it was clear that ‘the rural’ was indeed serving as an idyll for many. Many participants described the increasing number of residents who have emigrated from surrounding urban areas, such as Toronto, to escape the city and enjoy what country living has to offer. This influx of urban residents in search of the rural idyll is impacting political ideologies in expectations of and responses to changes in the rural environment. “Emma” (biosolids) describes the new residents in her community as “people who have moved from the city, usually Toronto, and are looking for an escape from the city and usually a more rural environment”. In conversations with those such as “Pete” (wind), it became evident that people chose their rural place of residence because of its freedom, sense of relaxation, and proximity to nature: “It’s just kind of a general feeling of freedom... It’s a whole different environment. Here I don’t have to worry about anything but me”.

4.1.2 The rural as a space of (invisible) conflict. Though feelings of the rural idyll were present amongst the majority of discourse we uncovered, community-level strife and conflict was also evident. The nature of rural communities examined here is a source of conflict, political action, and general heterogeneity. Residents described the changing socio-cultural nature of their community and how this is impacting community cohesion and changing local priorities. In both case studies, differing priorities lead to community conflict and strife as the two communities are proving to be not as homogenous as previously thought. This was prominently seen through community divides. ‘Matthew’ admits his urban perspective of a homogenous community was challenged upon moving to Port Burwell:

When we moved in we sort of viewed it as you know, a homogeneous community of, of farmers [but] after a year or two, we began to realize there were people in that group that didn’t like one another, you know, there were people who hadn’t paid their debts (laughter). So it was not as peaceful as we originally thought.

4.2 (Rural) Environmental Injustice

4.2.1 Rural areas burdened by increasing urban demands. Feelings of the rural landscape as an idyllic environment set apart from its urban counterparts seemed to amplify residents’ feelings of inequity regarding the distribution of risks and benefits of sustainable techno-industrial developments. Indeed, that rural residents feel burdened by urban problems, was a major theme that emerged from this multiple case study. Residents expressed this as a spatial inequality of costs and risk whereby rural areas are being used to absorb the demands and problems of

urban centres. In the case of wind, there was a sentiment that because it is people from cities who want to generate more electricity through renewable means, they should be the ones playing host. 'Charlene' represents a common voice in the community:

What I am in favour of is putting tiny generators on the utility poles in cities. You want power? You want power from wind? Get it in your own city! Get it in your backyard! Instead of mine! And see how you like having these things zimming around the whole time. It should be generated where you are living.

Similarly, when debating regional biosolid processing in their locale, Southgate residents opposed this process on the premise that it is not even their own waste. 'Ryan' (biosolids) stated:

It's not even from our own area, so if it was Dundalk's and the surrounding area's and we needed this process then whatever, but the fact that it's being trucked from all over the place where Toronto doesn't want it. I mean that's the biggest thing, I think, it's not even our own, if it was our own problem and we needed to do it we would accept it.

This inequity became a key rallying point as residents opposed the intrusion of exiled waste from cities such as Toronto as well as the production of renewable energy to meet the province's growing demands. Many residents agreed that they should not have to deal with someone else's problem. Still others such as 'Christine' and 'Don' trusted the decisions made at the provincial level with regards to wind energy yet felt there was a lack of benefits at the local level—a place where they should be the most prevalent. 'Christine' (wind) mentions her community was disappointed when reductions in electricity bills never materialized:

Well, we pay very high hydro. And a lot of people thought we were going to get a big cut in our hydro. You know, those wind mills [were promoted] as such so everyone thought that 'well, we'll get our energy from that'. Whereas they send it down to the transformer station... it certainly hasn't affected our bills.

'Don' (biosolids) likewise sees most benefits leaving his community:

I mean that company is there because they are going to sell it to BFI, Waste Management, or it'll be one of them, one of the four. That's fine and it'll be billions of dollars and we'll just be a casualty.

Not only did residents oppose the burden or urban demands, they also felt that these urban-based companies have no interest in or care for these local communities. It is notable how these perspectives reflect a particular scale of

identity politics that emphasizes the rural and urban over other characteristics that may be shared such as provincial and national identities.

4.2.2 Fault of urban policies and policy makers. Whether through wind energy or biosolid processing, there was a clear feeling among rural residents that local problems were brought forth by an urban-based governance system. In these cases, local residents described how they felt that urban politicians were too far removed and were not in a position to make such important decisions. ‘Emma’ (biosolids) from Southgate is one such person who feels regulators are too far disconnected: “Like any large um, regulating body, their view is zoomed away from the local issues and therefore their rules are a little bit more broad sweeping than I would prefer.”

The perception was clearly that provincial or regional politics—dominated by urban values and interests, and often housed in urban centres—can have a disconnected interest in rural communities. Seemingly because of this detachment, rural residents seemed ready to explain how ‘the urban’ have misconceptions of wind energy generation. ‘George’ (wind) explains how these people often fail to understand the local conditions needed for the production of wind energy:

You have people coming from the city and I’ve, I’ve actually talked to people right at the road. And somebody will say ‘well how come [the turbines are] not turning around?’ I said, well there’s no wind. And they said oh ya but they’re way up on the high there, up there, they’re way up high. I said it doesn’t make any difference. That’s misinformation they’ve that people have thrown at you. Because you’re coming from the city and you don’t really understand what’s going on here.

Another key theme that emerged as an important problem in our rural cases was the lack of perceived control by both local residents and government. Residents felt that there was a form of utilitarianism in policy making and that these developments and processes are being solely controlled by government with little concern for rural communities. ‘Andrea’ (biosolids) added: “Um I think that they’re all run by the government (laughs) which is all for profit also I don’t think they really care about the land or people out here.”

Instead of municipal councils making decisions regarding energy production for example, provincial policy and mandates seemed to ‘rule the day’. This feeling was shared in Ontario by people like ‘Charlene’ (wind) who stated how the former provincial premier Dalton McGuinty was responsible for taking energy planning rights away from local councils. During a lengthy interview, she stated:

Mr. McGuinty is in trouble for this because he took all control out of the hands of the municipal government. So what I said about getting them onside doesn’t matter anymore because McGuinty, the green energy plan has taken all that away from, from the government, the local governments.

Building on historical reference to these wind energy policies, other rural residents expressed concern that it did not really matter what they say because it will be out

of their control as well. 'Don' (biosolids) fears that local residents will have little to no input in to where these wastewater treatment by-products are being spread on land or to where the processing facility as a whole will be located. There is a clear feeling of hopelessness when he speaks:

It won't matter what we say. What they say out there that's where it's going. That'll be it. I will prove my point by saying about the windmill situation, you can fight it all you want, but the provincial government said 'sorry about your luck it falls under a new regulation called the Green Energy Act, your municipality doesn't have a say anymore.

5.0 Discussion and Conclusion

From the perspective of rural residents of Ontario, this research highlights felt regional inequities concerning the development of sustainable technologies for mostly urban interests. In the context of broader goals to achieve increasing proportions of renewable energy, the number of wind turbine projects has increased rapidly across rural regions of the province. Similarly, with rising urban populations and the increasing accountability towards waste management practices, sewage sludge by-products are increasingly being processed and applied in rural communities.

Both cases in this research signal a deeper level of political, social, and emotional valuation. Within the broadening definition of environmental justice (Schlosberg, 2009), notions of fairness and equity are questioned, as one region is left to support the demands of another and risks and benefits are seen as out of balance. This paper aligns well with recent research in this area which has, among other things, suggested that rural communities are—through external forces (Ramsey & Smit, 2002)—losing to the 'urban bully' (see Ashwood & MacTavish, 2016). In the age of connectedness, residents from our case studies were well aware of this system of winners and losers (Walker and Baxter, 2017a) they were a part of. Rural communities we studied felt the lack of control was problematic but so too was the absence of local (economic) benefit. Combined, the discussion of these two issues seemed to catalyze conflict locally and between urban and rural communities.

That rural geographers, sociologists, and others are now using the environmental justice framework is encouraging, but more work needs to be done. With increasing populations and patterns of consumption, urban resource demands are only likely to increase. Further, in the context of increasing divides between urban and rural regions and a further transition of rural residents' values and expectations of their landscape, it is likely that opposition towards these types of technologies may be amplified.

Strong notions of the rural idyll were shown to propagate opposition toward development perceived to disrupt a natural or pastoral ideal (Halfacree, 1995; Larsen, 2008). The emergence of the idyll in this context, therefore, provides further proof that changes to ways of 'rural life' are indeed related to opposition to many types of rural development (see Farstad & Rye, 2013; Parr, 2010; Somerville et al., 2015). Future work examining techno-industrial developments in rural areas should recognize that these factors play important roles in how acceptance can be cultivated and equity achieved. Ultimately, better understanding residents'

attachments to their community will help to better contextualize residents' evaluation of the equity of risks and benefits associated with proposed developments even if benefits are largely urban in nature.

These findings also show that as residents migrate to rural areas, any political and ideological differences between these regions may continue to widen. This can act to propagate perceptions that their community is separate from (rather than interconnected with) their urban counterparts—a notion challenged by processes such as wind energy development and biosolid application. This has significant implications for sustainability as many of these complex problems are best solved with regional or even global goals in mind (Robert, Parris, & Leiserowitz, 2005).

We cannot overlook the felt impacts of environmental injustice some rural residents are experiencing at the local scale. By better understanding these constructs in the context of growing urban demands, policymakers and developers alike can strive to better balance risks and benefits in these communities. Indeed, there is evidence that developing infrastructure in ways that respects local communities, leads to both short and long-term advantages for all parties involved (Gross, 2007; Wüstenhagen, Wolsink, & Bürer, 2007). Addressing 21st-century environmental problems in Canada will mean that traditional relationships in the multilevel governance system will be strained and made even more problematic if urban needs continue to dominate regional policy making, and environmental costs are externalized to rural communities.

Another important implication from this work is that industrial wind turbines are most commonly sited and biosolid fertilizer products are spread on agricultural lands. This results in local benefits (monetary compensation or a cheaper source of nutrients) being unequally distributed among only the agricultural public (Mason-Renton & Luginaah, 2016). The non-agricultural rural population meanwhile has to deal with the sights, sounds and smells of these developments without such benefits. This exemplifies a paradox of competing ecological priorities over the local landscape that can act to propagate environmental conflict (Robbins, 2011).

Many rural residents we spoke with, expressed how they felt both urban-based policy interests and urban communities in general held disdain for these rural regions. It is not only that urban municipalities are making decisions directed at rural regions per se, but that provincial and federal governance systems are both housed in urban centres and consist of primarily urban-based representatives. It is these larger political structures that are creating broader environmental goals, policies, and regulations that allow for little input from the local rural municipalities regardless of how impacts are felt locally. It is clear that in conversations with rural citizens, they feel this urban-based paternalistic power structure (Newby et al., 1978) is restricting the control local residents have in what developments do or do not come to their area. In the same conversations, participants expressed alternatives; in the case of wind energy, electricity should be generated where it is used most. Meanwhile, residents living near biosolid processing similarly expressed that waste should be treated where it is created. These feelings are even more pervasive when perceived benefits (financial or otherwise) are concentrated in urban centres. In order to increase equity and fairness in techno-industrial siting, policy-makers should require more local control and/or consultation during the planning and siting stages of development.

Previous studies have highlighted the debate between industry and communities, whereas this research shows that rural residents are not only blaming the industries behind these developments but the urban regions and policies which are creating them. This fuels inter-regional and inter-community conflict between these urban and rural regions and propagates the divide residents perceive. Rather than the commonly disputed not in my backyard (NIMBY) explanation for opposition (Hunter & Leyden, 1995; Wolsink, 2000), these residents show a somewhat altered form of NIMBYism where the feeling is 'No Outside Problems In My BackYard' (NOPIIMBY). It is not that these residents merely do not want to deal with these risks in their locale, but that they feel it is unjust they have to deal with someone else's intrusive problems or demands especially when they themselves are not set to reap the benefits.

Residents' expectations of their surrounding rural landscape are evolving in such a way that they no longer prioritize primary production or extractive industries but value many of the natural, recreational and restorative aspects. Understanding the diverse expectations and responses of these rural populations must remain a priority if we are going to act to mitigate social impacts observed in many techno-industrial developments. Policy makers and developers alike cannot adopt the rural idyll and assume all rural residents will respond to development in the same manner. Further, understanding residents' motivations for migrating to these rural areas will help to conceptualize residents' resistance towards the urban areas—and the associated by-products and resource demands they acted to separate themselves from. Together, these concepts have capacity to greatly increase the validity of studies surrounding regional techno-industrial development in Ontario, as well as other regions experiencing this rural/urban divide globally. In turn, this should help better inform the policies that will shape future construction and operation, while acting to mitigate felt impacts in these rural communities.

Going forward, researchers and policymakers need to be more accepting of a possibility that rural areas are indeed a centre of political protest and that conflict can arise in otherwise 'tranquil' environments. Much like Somerville et al.'s (2015) research, we present stories that question the (urban) construction of what it means to live in rural communities. This "new and problematic" rural landscape (Clope, 1997; p. 374) must be better recognized, especially as rural populations become more diverse and are increasingly the minority. Most notably, in an attempt to achieve broader sustainability goals, regional policy directors must keep in mind that rural regions are feeling unjustly burdened by techno-industrial demands and are blaming not only industries but urban biased directives as well. These policies and related facility siting processes may need to be transformed in order to mitigate locally felt impacts of rural-urban environmental injustice.

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