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The peak oil and oil vulnerability discourse in urban transport policy: A comparative discourse analysis of Hong Kong and Brisbane

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ABSTRACT

The nexus of transport, energy and household expenditure garnered increasing academic attention during the period of increased oil prices during the decade from 2000 to 2010. Peak oil emerged as a widely discussed 'storyline' advocated by a globally connected discourse coalition. This study explores the effects of the peak oil discourse in influencing urban transport policy. Two distinct cases are examined in this paper: high density and public transport dominant Hong Kong; and, low density and car dependent Brisbane. Data was obtained from interviews with stakeholders, public documents and media concerning the period between 2003 and 2015 when oil prices were high. This study combines analytical tools from Kingdon's multiple streams framework and Hajer's discourse analysis to assess the effects of the peak oil discourse in Brisbane and Hong Kong. While different urban settings are likely to be major differentiators in the responses of participants from the two cities, higher oil prices have bolstered the voice of 'affordability' storylines that have emerged in both cities. Yet only Brisbane exhibited official usage of 'peak oil' storylines. Counter storylines are found to have been adopted by opposing discourse coalitions, either focusing on the need to develop and deploy technical solutions which can resolve 'peak oil' or to simply 'wait-and-see'. The framing of the issue of heightened oil prices can be seen as acting as a political catalyst, as evidenced by the rise of fall of the response to 'peak oil' and 'oil vulnerability' in Brisbane. As oil prices crashed after 2015, the affordability pressure on urban transport also reduced. When oil prices are low, policy makers or interested stakeholders should expect to adapt other storylines that feature climate and economic resilience which promote sustainable transport and measures to reduce oil vulnerability, no matter how car, or oil, dependent a local environment is.

1. Introduction

As evidenced by the volatility in energy prices during the past decade, there is growing concern about finite energy sources from fossil fuels. By the turn of the 21st century, awareness had grown regarding the risks inherent in society's dependence on oil, especially to fuel private automobiles. The recent period of extremely high oil prices between 2000 and 2010 attracted widespread attention. The notion of peak oil re-emerged, focusing on the uncertainty of reserves and limits to future oil supplies (McGlade, 2012; Simmons, 2005). This period is of interest because high oil prices brought forth a number of trends, including, 1) a re-evaluation of car dependence and its related urban form (Aftabuzzaman and Mazloumi, 2011; Shove et al., 2015); 2) a push to produce previously uneconomic unconventional sources of oil, such as shale, and tar sands; 3) alternative energy sources for transport which also became economically competitive, creating calls for a

transport energy transition (Li and Loo, 2014). In many jurisdictions, there is a mismatch of aims between policy makers who attempt to restrict car use by the implementation of sustainable transport policies for the car-owning public, or for those aspiring to car use who are averse to changing their expectations (Hickman and Banister, 2014). While there is increasing policy focus on reducing car dependence and oil use in the transport sector, progress was constrained by the enormous lock-in of socio-technical systems of car related infrastructure in the society (Newman and Kenworthy, 2015) and the strong aspiration to drive by the car-owning masses (Sperling and Gordon, 2009). During the oil crisis of the 1970s, oil supply shortages prompted various governments to ration fuel, limit speed on highways and establish strategic petroleum reserves. Yet, with the risk of energy shocks receding during the 1980s and 1990s during an oil glut, there was less research interest in this topic. Oil prices increased tremendously in the 2000s, and this has led to heightened research and public

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debate about the issue of oil vulnerability, in particular in the transport sector, as internal combustion engine (ICE) powered vehicles are dominant and there are high levels of car dependence in many countries. The discourse regarding ‘peak oil’ regained attention, created a global following and organisations were established to raise awareness of the idea and its implications. With increased public debate around the problem, governments in many cities also used the term to justify transport policy adjustment (Lee and Scott, 2007; Maribyrnong City Council, 2009; Smith, 2010; Sunshine Coast Regional Council, 2010). However, what is less understood is how the term entered the agenda of transport policy and planning, and what the results of that entry have been.

This paper aims to investigate how the discourse about peak oil entered policy making and problem framing in two cities – Brisbane and Hong Kong – during this critical period. The study assembles and analyses qualitative data to compare the experiences in addressing oil vulnerability in two contrasting cities in the Asia-Pacific region: Hong Kong and Brisbane (the state capital of Queensland, Australia). Because of the high levels of car dependence, Brisbane has been a pioneering city in researching and developing policy measures targeting oil vulnerability (Dodson and Sipe, 2015). Hong Kong is known for its extreme compactness and high public transport mode share, offering ‘natural defences’ against oil vulnerability. While geographic and cultural differences can partly explain such disparity, deliberate action and policy are imperative in creating more sustainable and less oil vulnerable means of transport. Yet the 21st century’s higher oil prices have generated political, public and academic attention on policies that attempt to reduce oil vulnerability in Brisbane. This is one of the reasons why authorities and researchers in Brisbane focus more on reducing oil vulnerability, thus recognising it as an issue, compared with those in Hong Kong.

The contributions of this paper can be summarised as: 1) providing in-depth cross-cultural understanding of how oil vulnerability and energy-related economic stress in transport are understood, in both car dependent and non-dependent cities; 2) to apply multiple, but theoretically consistent policy analysis frameworks to analyse how the peak oil discourse has resonated in Hong Kong and Brisbane; and 3), to reveal ways in which political and societal contexts shape transport policy outcomes and the implications for policy actors in advancing their agenda priorities. This requires acumen of policy actors to connect the ‘streams of problems, policy solutions and politics’ (as per Kingdon’s (1984) multiple streams approach), and to engage in ‘winning discourse arguments’ (as per Hajer’s (1995) argumentative discourse). These approaches will be explained in greater detail in Section 3.

This paper consists of seven sections. Following the introduction, Section 2 outlines the existing literature about the emerging study of ‘energy-related transport stress’ research in urban transport. Section 3 summarised the urban transport context of Hong Kong and Brisbane’s oil vulnerability. The theoretical framework and the discursive methodology of this study are presented in Section 4. The results are elaborated in Section 5, followed by a discussion in Section 6 and lastly, Section 7 concludes the paper.

2. Existing scholarship of oil vulnerability and ‘energy-related transport stress’

From the early 2000s until 2015, a period of higher and unstable oil prices sparked public and scholarly debates about the need to address vulnerabilities caused by volatile oil prices. Increased attention on oil and energy in transport research has sought to develop better understanding and identify possible solutions (Anable et al., 2012; Banister et al., 1997; Gilbert and Perl, 2007). In Australia, a notion of ‘oil vulnerability’ has emerged as Dodson and Sipe (2005, 2007, 2008) used visual mapping analysis to reveal the spatial extent of car dependence, social disadvantage and household affordability (based

on mortgage debt levels) in Australian cities. They referred to these combined variables of oil vulnerability as the “potential exposure of households to adverse socioeconomic outcomes arising from increased fuel costs” (Dodson and Sipe, 2007, p. 46). It was found that a disproportionately higher impact of higher oil prices is more likely to be borne by those living in outer suburbs, due to high car ownership, lower income levels and higher mortgage indebtedness, with inner urban cores being less impacted. Other studies also used oil vulnerability as an umbrella term for the wider vulnerabilities caused by the use of oil (Kerschner et al., 2013; Roupas et al., 2009). This issue is exacerbated by concerns of peak oil, the geo-politics of a continued supply of oil (e.g., the use of plastics, carbon emissions, food production, etc.) (Brecha, 2013; Coventry, 2013; Neff et al., 2011). In the context of transport, oil vulnerability refers especially to car dependence, in particular to the extensive use of vehicles fuelled by oil.

With readily available data sources and ease of use, this census-based spatial indexing approach was soon adopted by a number of researchers looking at cities in Canada (Arico, 2007), Australia (Fishman and Brennan, 2009), and the United States (Sipe and Dodson, 2013), demonstrating the transferability of this method. In later studies, advances in methodology were seen to take account of commuting distance and trip volumes derived from journey to work data (Li et al., 2015; Runting et al., 2011). Sophisticated simulation and modelling techniques, such as spatial agent-based microsimulation (Lovell and Philips, 2014) and minimum energy activity modelling (Rendall et al., 2014), have recently been experimented with in this area. The notion of vulnerability has also been expanded to look at the adaptive capacity (the level of resilience), exposure (oil use patterns) and sensitivity (the ability to absorb higher prices) to oil price increases (Leung et al., 2015). Oil vulnerability, however, is not the only concept used to denote energy-related economic stress in transport. A plethora of terms and frameworks have been developed to understand social disadvantage related to transport, urban form and energy price increases, volatility, and uncertainty. As noted by Mattioli (2014, 2015), terms such as ‘transport poverty’ (Lucas, 2012) from the UK, *précaritéénergétique* (energy precariousness) from France and *energiearmut* (energy poverty) from Germany, have also been used to study the impacts of higher oil prices on cities.

Whilst such diversity of terms has fostered academic debate and has appeared in many government policy initiatives globally, most scholarly studies used these concepts as a way to study urban issues such as the spatial patterning of urban form, transport and energy use (Mattioli, 2014; Mattioli et al., 2016; Mayer et al., 2014; Motte-Baumvol et al., 2009). However, there have been few studies about policy responses to oil vulnerability. Notably, these studies tend to focus on jurisdictions that have a higher level of car ownership and dependence, particularly Western industrialised countries (Australasia, Europe and North America). An understanding about whether oil vulnerability poses risks to other regions, such as in Asia, is relatively scant. Meanwhile, a number of qualitative studies have been produced on the perceptions of private car use versus public transport (Beirão and Sarsfield Cabral, 2007; Steg, 2003), and there have been local studies on car dependence in Hong Kong (Cullinane, 2002) and in Australian cities (Hensher, 1998). However, the wider issue of energy and oil use has not been addressed, in particular, how is the problem of oil vulnerability framed? What are the social and political context of the development of energy-related transport policies? Discussions about these issues are yet to be seen in the literature. In this paper, we attempt to use a discursive framework to examine the different responses of the case study cities during the period of higher oil prices.

3. Problem framing and discourse analysis in transport policy

Traditionally, policy making and its studies and analysis are derived from a positivist epistemology which follows a positivist view of

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