The Ecological Modernization of Residential Construction in England: Rhetoric or Reality?

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Abstract

Recent literature that discusses the development of planning policy in England has suggested that it is underpinned by a discourse of ecological modernisation, meaning that policy makers have drawn upon the potential for a decoupling of economic growth from ecological protection as a justification for a pro-growth planning agenda. In this paper I engage with this concept further to ask whether the reforms are mere rhetoric or whether they actually amount to an empirically observable process of ecological modernisation in which ecological concern has become institutionalised within the institutions of modernity. Are decisions made increasingly on the basis of ecological concern and is ecological rationality emerging as an independent ‘sphere’, as EM theory would suggest? By tracing the development of the policy agenda over the last two decades I ask whether we can observe a reflexive appropriation of ecological concern by institutional actors and, thus, whether ecological rationality has emerged as an independent causal force. I conclude that in this case EM is more rhetoric that reality as: the market has failed to adequately institutionalise ecological concern, civil society has become increasingly excluded from decision making channels and a technological, economistic approach towards environmental governance has undermined the likelihood of achievable, sustainable outcomes. On that basis I argue the case for the involvement of local levels of government, who are much better able to respond to local needs and overcome these dominant economic, social and political rationalities in pursuit of ecological aims.
1. Introduction

Land-use and spatial planning in England\textsuperscript{1} has undergone considerable reform in recent years to incorporate an increasing focus on sustainability and energy efficiency for new residential buildings. A body of academic work from within the social sciences is emerging that explores the emergence of this policy agenda. There is a recognition within the literature that the sustainable construction agenda is underpinned by 'ecologically modern' rhetoric in so much as policies are directed at the decoupling of house market growth from environmental degradation (Lovell 2004; Goodchild & Walshaw 2011; Gibbs & O’Neill 2015). However, ecological modernisation can occur both on a discursive level and an empirical level.

In this discussion I ask whether this focus on ecological modernisation (EM) is merely rhetorical (i.e. discursive) or whether it is underpinned by the reflexive institutionalisation of ecological concern and thus whether it is an empirical phenomenon that will actually achieve the decoupling of economic growth from environmental degradation that EM aspires to. The answer to this question is important because it determines the extent to which reforms to the planning and building control system are likely to produce measurable gains as a result of the institutionalisation of ecological concern by societal actors, or whether they will amount to little more than green-washing.

In order to answer this question I will investigate how well the ecological modernisation theory can account for the development of this policy agenda. Ecological modernisation theory accounts for such processes with reference to the reflexivity of four institutions: the state, the market, science and civil society. In light of new ecological concern and pressures the reflexivity of these institutions leads to the increasing institutionalisation of ecological concern. As this takes place the environment moves towards the centre of decision-making. I discuss the evolution of land-use and spatial planning since the early 2000s in order to assess the

\textsuperscript{1} Devolution to Wales, Northern Ireland and Scotland means that there are enough differences between spatial and land use planning to preclude a discussion of the UK as a whole.
extent to which these institutional transformations have taken place and, thus, the extent to which we can observe the institutionalisation of ecological concern.

I argue that a reflexive response to environmental concern is most apparent in the state and civil society but that the market has failed to institutionalise ecological concern. In addition I argue that the optimism in the power of technology implicit in the emerging sustainable construction strategy places a considerable burden on market actors and raises questions about both the nature of the sustainability being achieved and whether ecological criteria is being subsumed under economic concern. I therefore conclude that whilst EM is more than a policy rhetoric the form being institutionalised is ‘weak’ because it relies heavily upon technology as the solution (at the expense of demand-led measures) and because ecological rationality has yet to emerge sufficiently from the auspices of economic rationality.

I conclude by arguing that the ‘weakness’ of this agenda is determined by the challenge of reconciling ecological and economic demands at the national level in a way that can satisfy the demands of both sustainable development and provision of housing. On this basis I suggest that local authorities have much greater potential and scope to set standards that respond to local needs where this trade off is not so stark. This kind of local standard setting would bring about a more targeted zero-carbon homes strategy that initially would avoid this trade off between ecology and growth, whilst at the same time increasing the chances of a stronger national standard emerging as costs decrease, expertise increases, and demand emerges.

In what follows I draw on government and industry publications, trade journals, secondary literature and fourteen semi-structured interviews with industry and governmental actors conducted between January 2013 and February 2014. Interviewees were selected on the basis of their involvement in the legislative agenda, whether at a national or local level. They were selected using a snowball sampling technique and lasted between thirty minutes and three hours.
2. Spatial and Land-Use Planning as a Process of Ecological Modernisation

Ecological modernisation (EM) is increasingly becoming the dominant discourse of environmental governance, both in the UK and elsewhere (Barry 2005; Mol, Spaargaren & Sonnonfeld 2014). There many variants of ecological modernisation (Mol & Jänicke 2009), but at the root they share the conviction that although environmental degradation emerged as a result the modernization process, it is a result of a ‘structural design fault of modernity’ rather than an inherent flaw of capitalist modes of production and consumption (Mol 1996: 305). Environmental degradation can be overcome by substituting unsustainable technologies for sustainable ones, increasing recycling and minimising waste, and through a decrease in material and energy inputs (Revell 2007). In this sense, environmental reform can be made to be economically attractive and economic growth can become decoupled from ecological degradation (Mol & Sonnonfeld 2000). This suggestion that growth and ecological can be ‘decoupled’ and that society is faced with an emergent sphere of ‘ecological rationality’ (Mol 1995) sits in opposition to approaches to environmental sociology prominent the 1980s, which argued that modernity was on a ‘treadmill of production’ antithetical to ecological gains (Schnaiberg 1980).

EM theory exists at various levels of abstraction (Revell 2007; Toke 2011). On the one hand Maarten Hajer (1995) understands ecological modernisation as a policy discourse adopted by policy elites because of its political attractiveness and because of the extent to which it resonates with their exogenously formed interests. Arthur Mol (1996), on the other hand, approaches EM as an empirically observable phenomenon that occurs through the institutionalisation of ecological concern by, political, technological and civil society actors.

Extant analysis of the sustainable and zero-carbon homes agenda in England has found that ‘the framing of low carbon housing is being conducted using ecologically modern discourse’ (Lovell 2004, 35) because of the way in which it advocates ‘win-win’ solutions driven by
reductions in energy consumption and investment in sustainable technologies (Gibbs & O’Neill 2015). The question this discussion takes up is the extent to which the emergence of the sustainable construction agenda can be conceptualized as mere policy rhetoric or whether it is symbolic of an institutionalisation of ecological concern into the functioning of the key institutions that structure outcomes.

3. The Theory of Reflexive Ecological Modernisation

For Arthur Mol, EM is more than just a policy discourse and it involves empirically observable transformations (1995; 1996; 2000; 2002; 2010). He argues that since the 1970s environmental concerns have become increasing institutionalized, first within political and social systems (through the emergence of environment ministries and through emergent discourses of environmental protection and so on) and then subsequently within the economic system. As a result, decisions have become ‘increasingly analysed and judged as well as designed from an ecological as well as economic point of view’ (Mol 1995, 49, emphasis original).

In formulating his theory of reflexive ecological modernisation Mol builds upon the work of Anthony Giddens (1986) and Ulrich Beck (1992) to discuss ecological modernisation as a response to the proliferation of environmental risks in an era of reflexive modernity. Reflexive modernity implies an era of modernisation characterised by ‘the constant examining and reshaping of social practices in light of new incoming information about those very practices’ (Mol 1996, 304). As modernisation enters an era characterised by the proliferation of risk – ‘hazards and insecurities inducted and introduced by modernisation itself’ (Beck 1992, 21) – at the institutional level ecological information and concerns become incorporated ‘into social conduct and institutional forms transforming the institutional order’ (Mol 1996, 304). The incorporation of risks requires the transformation of the institutions of modernity itself. Because ecological modernisation involves an acknowledgement of and response to risk (ecological degradation), ‘ecological modernisation can thus be interpreted as the reflective reorganisation of industrial society in its attempt to conquer the ecological crisis’ (ibid, 317).
Processes of ecological modernisation, he argues, are fuelled by the reflexivity of four key institutions: science, the market, the state and civil society. Technological progress has formed the backbone of ecological modernisation ever since Huber’s early theorizing on the potential for more efficient technologies to decouple the growth/degradation link that has marked industrial technological progress. What Mol refers to as the ‘central idea of the theory of ecological modernisation’ (1996, 37) is Huber’s oft-quoted statement that; ‘the dirty and ugly caterpillar will transform into an ecological butterfly’ (Huber 1985, 20 in Mol 1996, 37).

Dominant ‘end of pipe’, reactive technological fixes that dominated responses to environmental problems in the 1960s and 1970s were making way for new, curative ‘clean’ production technologies. These technological transformations result in the ‘ecologization of the economy’ (Mol 1995, 1996), where technology becomes more resource efficient.

Closely related is the notion of the ‘economization of the ecology’, where the environment (specifically environmental degradation) begins to be considered in monetary terms to it as it is brought into the ‘economic game’. Through measures like eco-taxes, tariffs, incentives, an increase in ‘green demand’ and environmental auditing nature can be integrated into the economic system such that technological deployment becomes attractive from an economic perspective primarily because ecological protection is also an increasing attractive option (or, rather, environmental destruction is increasingly unattractive) for market actors (Mol 1995).

These processes of ecologization and economization do not exist in an institutional vacuum. Whilst EM undoubtedly tends towards a laissez-faire, pro-market ideology it does recognise the importance of the state in laying the foundations for widespread societal transformation (see Mol & Buttel 2002). However, there are limitations to the role the state should play. The bureaucratic approach to environmental governance of the 1970s is criticised for, amongst other things, its inflexibility, inability to manage technological development and failure to stimulate sufficient institutional change amongst economic actors for them to engage more closely with sustainable technologies (Mol 1995). Within processes of ecological
modernisation the state is better placed ‘steering’ rather than ‘commanding’ over society, in order to create the necessary conditions for economic actors to engage with new technologies and to create new markets and demand. The state, then,

‘[w]ill need to focus more on steering via economic mechanisms and change its management strategy by introducing collective self-obligations for economic sectors via discursive interest mediation’ (Mol 1995, 46).

This is referred to elsewhere in the EM literature as a process of political modernisation (Jänicke 1997). Within processes of political modernisation the state opens up to new forms of involvement in line with a shift from government to governance in order to invite greater involvement from market actors and to shift an increasing number of responsibilities from the state to the market. In essence then EM theory advocates a reconfiguration of the relationship between state and market.

The opening up of the participative capacity of the state provides a greater level of involvement for civil society groups to act ‘as a counterbalance’ (Revell 2007, 116) and to drive the reflexive appropriation of environmental concern amongst policy makers and bureaucrats. As the institutionalisation of ecology continues within the political, social, cultural and economic domains of society they move from the outsider to the core of decision-making, and shift from ideological opposition to the state (through their support of counter-industrial rhetoric) towards sympathy with the principles of EM (Mol 1995, Mol 2000). In this sense they are constitutive of and influenced by the institutionalisation of ecology within society. Their role once ‘inside’ is well-debated. Some argue that they serve to challenge dominant discursive practices amongst institutional incumbents (c.f. Hajer 1995), others see them directly interacting with industry (c.f. Sonnonfeld 2000, Toke 2011a), and others still as incubators of new technologies (c.f. Toke 2011b).
Mol summarises these institutional developments into five key institutional developments that accompany the institutionalisation of ecology, and thus ecological modernisation (Mol 1995, 58):

1. Science and technology evolves from the production and design of end-of-pipe technological fixes towards preventative solutions that aim to achieve resource efficiency, minimisation of waste, energy efficiency and closed-loop production.
2. Economic actors and market dynamics become increasingly important in ecological governance and restructuring.
3. The state shifts from ‘government’ to ‘governance’, focuses more actively on decentralisation, ‘contextual steering’ and ‘negotiated rulemaking’.
4. Civil society actors become more active in negotiations directly with industry and the state, no longer opposing the direction of societal governance programmes.
5. Changing discursive practice, where the environment and economy are explicitly referred to in positive-sum terms, whether through discursive practices or in official institutions rules.

To what extent then can it be said that these institutional transformations have taken place in the context of English sustainable construction policy over the last two decades? Is it just a ‘rhetoric’, or is it increasingly a reality? The following section first discusses the evolution of the policy agenda since the 1970s, then having done that discusses the extent to which it can be said that ecology has become institutionalised and thus whether the central claim of Mol’s EM theory – that decisions are increasingly made on the basis of ecological and economic factors – can be said to be true in this case.

4. Reforms To Land-Use And Spatial Planning

4.1. 1970s-1990s

The development of the sustainable construction agenda has its roots in sporadic, niche developments in the 1970s bought to fruition by individuals and collectives adopting a deep
ecology perspective (Gibbs & O’Neill 2015). These developments were a manifestation of strongly held environmental beliefs by their developers, reflecting a view common amongst deep-green advocates that the path to sustainability lays in radical, localised societal behavioural shifts away from the machinery of government (Lovell 2004).

These pioneers did not see green building as simply about low energy use and reduced environmental impact. Rather, these were part of a broader critique of society and its values at that time. (Gibbs & O’Neill 2015, 134)

Accordingly, they had little initial influence on government policy and the issue of sustainable housing remained largely on the side-lines for much of the 1970s and 1980s, yet they did serve as incubators for novel technological solutions (Smith 2007) and exist as sustainable construction advocacy coalition (Sabatier 1984).

Sustainable housing emerged as a policy agenda item in the 1990s, when government and a number of housing developers began to take an interest in the provision of sustainable housing, both as a market opportunity and as a solution to a number of emerging policy problems. The early sustainable housing advocacy coalition of the 1970s rallied around a discourse of deep-green ecologism, advocating radical societal change in order to address the problems of environmental degradation and in doing so promoting a transition towards self-governing, small-scale and self-sufficient communities (Lovell 2004).

Sustainable housing in its early days then was a symbol of an alternative lifestyle, but as government became increasingly interested in the concept its purpose shifted towards a solution to the increasing pressures to address climate change (Lovell 2004). Rather than being a radical symbol of an alternative lifestyle, sustainable homes were being promoted as part of the solution to the concern over carbon emissions. Over a quarter of all UK emissions stem from the construction and use of homes (Osmani & O'Reilley 2009), and the potential for efficiency savings, emissions reductions and reduction in material inputs associated with the
construction and use of sustainable homes led to it being framed as a solution to environmental problems.

This was done alongside an increasingly prominent rhetoric of ecologically modern concepts such as ‘green growth’ and ‘win-win solutions’ being used by the Blair government as part of its modernization agenda. Barry (2005) points to numerous rhetorical devices used by the administration to justify an emphasis on super industrialisation as the solution to environmental ills. As a result sustainable housing was moved from the niche to the mainstream, and became a focal point of the legislative agenda. Lovell (2005) argues that an increasing number of actors became involved in that agenda, but rather than forming an advocacy coalition (which converges on shared values and beliefs) it instead bore more resemblance to a discourse coalition (where the convergence was instead around a share discourse, in this case of ecological modernisation).

4.1.1. Building A Greener Future

The first major legislative announcement was the 2007 publication of Building A Greener Future, which marked a step-change in the legislative commitment to the provision of sustainable homes. The Department for Communities and Local Government used it to announce a target for all new homes to be ‘zero-carbon’ by 2016, where ‘the net carbon emissions from all energy use in the home would be zero’ (DCLG 2007a, 5). To help achieve Part L of the Building Regulations (which concerns the conservation of fuel and power) would be reformed to require a 25% increase in 2006 levels by 2010, 44% by 2013 and 100% by 2016. In order to make these targets a reality the ‘2016 Taskforce’ was established. This high level steering body is chaired by both the Department for Communities and Government and the Home Builders Federation and is responsible for identifying and overcoming barriers to the implementation of these targets. Amongst its first actions was the publication of a detailed delivery timetable, drafted in collaboration with industry and civil society groups.
In 2007 the Callcutt Review of House Building Delivery (Calcutt et al, 2007) was published, which set out to investigate how the nature of the UK house-building industry would affect the potential for adequate housing provision in the future. It noted the disjointed nature of the industry. Although supportive of the zero-carbon targets it advocated the creation of an independent organization that could represent the needs of industry, civil society and government in order to take on responsibility for delivering zero-carbon homes standards by 2016. As a result the Zero Carbon Hub was formed in 2008. The hub reports to the 2016 Taskforce, and is responsible for the day-to-day management of the zero-carbon transition by: defining zero-carbon, undertaking research and engaging with industry to raise awareness (RSA 2012). It is comprised of representatives from the construction and supply chain industries, civil society actors and representative from local and national government.

4.1.2. The Code for Sustainable Homes

Another key weapon in the government’s arsenal to increase the provision of sustainable homes was the 2007 Code for Sustainable Homes (CSH) (DCLG 2006). The CSH is a technical standard designed to codify the development practices required to achieve defined levels of sustainability, measured across nine categories: energy/CO2; water; materials; surface water run-off; waste; pollution; health and well-being; management and ecology. Points are obtained for achieving particular levels within each of those categories, with minimum standards required for energy and water. Points tally to a rating from one to six stars, with level 6 being a zero-carbon home in which all emissions (including those involved in both the construction and use of the building) are offset on-site. The carbon/energy requirements are most significant elements of the Code, weighted to account for 21% of available points (McManus et.al. 2010). A home being rated under the CSH is assessed during the design phase and then again after construction is completed. Compliance with Code standards requires the adoption of novel eco-technologies, such as: solarPV cells, combined heat and power, biomass boilers, thermal water heaters, biomass boilers and low energy lighting. Compliance cannot be achieved on the basis of design alone.
In terms of sustainability, because the CSH adopts a ‘whole-home’ approach its requirements are broader than those laid out in national Building Regulations (McManus et.al. 2010; Gibbs & O’Neill 2015). The three step changes announced there conform to levels 3, 4 and 6 of the energy/CO₂ component of the CSH respectively, but compliance with the other CSH categories is entirely voluntary at the national level². The CSH was intended to provide a signpost to future reforms to the energy and carbon elements of Building Regulations, ‘therefore offering greater regulatory certainty to developers’ (DCLG 2006: i). Changes to Building Regulations in 2014 do indeed reflect that. Initially a 1* rating on carbon and energy represented an improvement over 2006 Part L Regulations. Today Part L compliance requires the equivalent of Code level 4. A home built in 2014 to these Building Regulations standards thus by definition meets level 4 of the energy/CO₂ component of the Code. However, a home that is rated as Level 4 against the CSH has achieved a greater level of sustainability because it has met minimum standards in other areas not covered by Building Regulations. Therefore, we can see that a house with a CSH rating is built to higher levels of sustainability that a house that achieves statutory Building Regulations compliance.

4.1.3. Supplement to Planning Policy Statement One

Between 2004 and 2012 planning policy statements (PPS) were the mechanism though which national planning policy was expressed. Local planning policies, embodied in the Local Development Framework (LDF), were required to conform to the strategic objectives and requirements laid out in the thirteen PPS, which covered a range of topics from pollution control to waste management.

A supplement to Planning Policy Statement: Planning and Climate Change (referred to as PPS1) granted powers to local authorities to introduce sustainable construction standards into

² Although between 2008 & 2010 a Code rating was mandatory (but not the achievement of any particular level) as part of the Home Information Packs scheme. In addition, as we will see, local authorities can introduce mandatory CSH requirements into their local planning policies.
the local planning policies where appropriate. This was a significant local devolution of powers away from central government. PPS1 permitted local authorities ‘to anticipate levels of building sustainability in advance of those set out nationally’ by ‘proposing any local requirements for sustainable buildings’ (DCLG 2007c, 17) that were in line with nationally recognized standards, and which did not adversely affect the viability of developments. In the real of residential construction this meant that local authorities were able to introduce mandatory Code targets into their local plans, provided that in doing so those requirements wouldn’t undermine the probability of the site(s) coming on the market. Alongside these devolved local powers PPS1 contained detailed guidance on how LDFs should seek to lower carbon emissions through the incorporation of sustainable development principles.

### 4.1.4. The National Planning Policy Framework

The 2012 *National Planning Policy Framework* (NPPF) was introduced to streamline the existing Planning Policy Statement system by codifying national land-use and spatial planning strategy into one document. The existing PPS documents, together with the ‘good practice guidance’ that accompanied them collectively spread over 1,000 pages (Cullingworth et. al. 2015). From an environmental perspective the most significant development with the introduction of *NPPF* was the ‘presumption in favour of sustainable development’, which ‘should be seen as a golden thread running through both plan making and decision taking’. For local authorities this means that when making their plans they should ‘positively seek opportunities to meet the development needs of their area’ and when deciding on applications they should approve ‘development proposals that accord with the development plan without delay (DCLG 2012, para. 14). For developers and individuals it means that ‘individuals and businesses have the right to build homes and other local buildings provided that they conform to national environmental, architectural, economic and social standards, conform with the local plan’ (The Conservative Party, 2009). In a written statement to the House, The Minister of State for Decentralisation Greg Clark affirmed the pro-growth logic of planning and clarified the meaning of this presumption by saying that ‘government’s clear expectation is that the
answer to development and growth should wherever possible be ‘yes’, except where this would compromise the key sustainable development principles set out in national planning policy’ (HC Debate 23 March 2011 C55WS).

In addition, the NPPF reformed the devolved powers granted to local authorities to set their own sustainability standards that were first witnessed in PPS1 to place a greater emphasis on the affect that sustainability standards would have on the viability of development.

In the past Local Authorities weren’t very good at assessing what the cumulative cost of all their local plan polices for things like affordable housing, payments for infrastructure and policies for sustainable design and construction. The cumulative cost of all those policies wasn’t thought out and then it reached a situation where developers were saying “we can’t afford to pay for all this” and Local Authorities saying “well tough that is what we require on our local plan”. So that was one of the things the Government wanted to tighten up upon with NPPF. It wanted Local Authorities to be more responsible for what they were specifying. (Interview with Industry Representative, February 2015).

Whilst by no means impossible, local authorities did find it more difficult to impose sustainable construction standards in their areas (interview with sustainability officer, January 2014). In some ways a choice had to be made, fought over and justified over whether to focus on affordability or sustainability if the housing market was insufficiently buoyant to allow developers to adequately incorporate cost-requirements for both.

4.1.5. The Housing Standards Review

The latest iteration of national planning policy contained in the Housing Standards Review (HSR), which at the time of writing is working its way through Parliament. The aim is to
remove more red tape, which the coalition government argued was slowing down growth in the market and contributing to a failure to meet housing supply needs (Gibbs & O'Neill 2015). The HSR proposes to ‘wind-down’ the Code for Sustainable Homes (which it argues is increasingly redundant) strengthen national building regulations to incorporate the Code’s energy performance requirements (DCLG 2014). However, at this time the transitional arrangements are not known. What is known, however, is that there will be no scope for local authorities to set their own local standards on energy performance, although they will be allowed limited flexibility in terms of water use and internal space standards.

5. Assessing The Relevance of Ecological Modernization Theory

To what extent, then, does the emergence of this policy agenda fit with Mol’s prescriptions about the institutional transformations that accompany ecological modernisation and which, in his view, signify the institutionalisation of ecological concern and thus the emergence of an independent sphere of ecological rationality?

5.1. Emerging ‘EM Discourse’

That sustainable construction agenda is characterised by a discourse of ecological modernisation is well recognised in the literature (see Lovell 2004; Gibbs & O’Neill 2015). By emphasising the ‘win-win’ of technological deployment and the continued growth of the housing market government is implicitly referencing the positive-sum relationship between housing supply growth and increased standards of sustainability (framed particularly in terms of energy efficiency and carbon emissions). This is exemplified in Building A Greener Future:

We need to build in a way that helps our strategy to cut carbon emissions — both through reducing emissions of new homes and by changing technology and the markets so as to cut emissions from existing homes too. We want to see a volume of new development which will deliver
It is also reinforced through the ‘presumption in favour of sustainable development’ and the progressive strengthening of Part L Building Regulations Standards, although as I will explore at a later stage there are question marks over recent iterations of each undermine the transition towards sustainability or strengthen it.

5.2. The Role of Science and Technology in Sustainable Construction

Clearly the sustainable homes policy agenda is contingent upon the development of new technologies, design principles and construction practices. Although government standards and targets do not prescribe the adoption of particular technologies there is an automatic preference for a technologically-led approach to reducing the emissions and increasing the sustainability of buildings. Lovell (2004) talks of a ‘smart-house’ storyline underpinning the agenda, in which ‘householders are not required to modify their behaviour in order to become less resource intensive’ because of the deployment of ‘low-carbon smart technologies’ (p. 49) used both in the construction phase and by home-owners in their everyday interactions with the home.

The Zero-Carbon hub has sought to define zero carbon, and in doing so has come up with three core requirements: a carbon compliance level that must be met through fabric energy efficiency standards, the deployment of on-site heat and power, and finally off-site ‘allowable solutions’. The Zero Carbon Hub working group on FEES sought to set the standard at a challenging level yet in a way that could be achieved by a variety of different technical solutions’ (Greenwood 2012, 22). It is a similar story with the provision of on-site heat and power.

The nature and scope of these requirements evolved from three policy communities, comprising members of the renewable energy, construction and energy efficiency sectors,
who have framed the issue of sustainability in buildings as one that can be achieved through the deployment of technologies incorporated into the fabric of the building. The outcome of this discourse coalition has been a technologically led solution, which de-emphasizes the social processes that led to the construction of sustainable homes in the early days of the agenda in the 1970s and 80s. Originally, sustainable homes were the outcome of a particular configuration of values and beliefs on the part of the developers. They are increasingly viewed as ‘technical demonstrations’ by contemporary developers (Lovell 2004, 52).

5.3. Economic Actors, Market Dynamics and the State

To what extent can it be said that Economic actors and market dynamics are becoming increasingly important in the restructuring of sustainable construction? There are two dimensions along which they can become involved, according to Mol. First, is through the increased important of economic and market mechanisms in ecological restructuring (Mol 1995). There is limited evidence that the state is relying heavily upon market mechanism, such as eco-taxes or subsidies, as a means to restructure the industry. Instead the opposite appears to be the case: the state is relying upon regulation and legislation in order to force behavioural change amongst economic actors (albeit, as we will see in the following discussions, in conversation with economic actors). There is one notable exception: the Treasury offered a stamp-duty rebate between 2007 and 2012 on any homes that are built to ‘zero-carbon standard’ up to £15,000, (DCLG 2006).

The second dimension along which economic actors and mechanism become involved is through the involvement of actors in the process of restructuring. Clearly there is a high degree of involvement. First, as we will see below, they are involved in the design of sustainable construction targets and subsequent reforms to national legislation. Second, they are involved as implementers of the policy, giving them considerable resources to influence the direction and pace of the future agenda. In her analysis of the built environment issue network, Yvonne Rydin (2012) shows that the most influential organizations generally stem
from the world of government and the developer industry: the Sustainability Forum (bringing together industry actors from across the construction industry), the Energy Efficiency Partnership for Homes (a network of almost 600 organisations) and the Building Regulations Advisory Committee (an Scientific Advisory Committee established by government) and the UK Green Building Council (whose membership primarily stems from the world of industry) being amongst the most influential in shaping outcomes. What’s more, as we will see below, the 2016 Taskforce and Zero Carbon Hub are primarily directed at collaboration.

The way in which the government has legislated for sustainable construction is characteristic of a shift towards a process of governance (Greenwood 2012). The 2016 Taskforce and Zero-Carbon Hub set out with the explicit intention of bringing together market and government actors to foster collaborative dialogue in order to produce standards that were both achievable and which had a limited impact on the economic prospects of industry. The taskforce is comprised of members of local government, civil society, trade associations, industry associations and government departments (HC Deb, 29 March 2011, c272W). The Zero-Carbon hub is comprised of a similar mix of industry and government representatives, although the composition here is much more tilted towards the former (Zero Carbon Hub n.d.).

We can see a further shift away from centralised government power with the devolution of power to local authorities. Local government has for many years adopted a prominent role in legislating for spatial and land-use planning through its ability to determine planning policies in its area. Changes at the national level to building regulations form part of the Building Control regime, the minimum standards against which all buildings must be measured. However, documents like the NPPF and the HSR are part of the planning policy framework, which set strategic objectives to which local planning policies must conform. For this reason they are necessarily broad and on the whole shy away from prescription. This on its own grants considerable scope to local authorities to formulate local plans that are contextually driven and which vary depending upon local resources, networks and priorities. However, because
PPS devolved sustainable-standard setting powers down to local authorities this already inconsiderable power was elevated, such that they became key legislative actors.

Industry though has an arguably stronger influence on the future pace and development of the sustainable construction agenda, particularly with regards to the level of involvement that local authorities continue to have. After the publication of *Building A Greener Future* and *PPS1* in 2007 it put pressure on the government, through the Home Builders Federation, to limit the extent to which local authorities were able to introduce local standards, citing concerns over viability and profitability and, ultimately, over meeting projected housing supply (interview with industry representative, February 2015). Industry concerns have been key in shaping the definition of zero-carbon that has emanated from the Zero-Carbon Hub, and in pressuring government to reform the methodologies used in the calculation of building emissions. As the prime implementers of any standards, government has recognised the necessary role they should play in setting the terms.

Its involvement has been long running, paying a crucial role in the framing of sustainable homes in ‘ecologically modern’ terms. Organisations from three policy communities were involved in promoting the cause: renewable energy, the construction industry, and domestic energy efficiency (Lovell 2004). The Association for the Conservation of Energy (ACE) for example, was heavily involved with government in lobbying for proposed sustainable construction standards in the Building Regulations to be embodied in terms of energy efficiency and carbon reduction (personal communication with Andrew Warren, ACE, January 2013). In another example, The Building Research Establishment (BRE) are the ‘owners’ of the *Code for Sustainable Homes* (as well as the non-residential equivalent BREEAM standard) and provide an important information gathering and dissemination role that has traditionally provided them with a strong voice and high levels of legitimacy (interview with industry representative, February 2015).
Because government policy is directed at setting objective standards, and has shies away from prescriptively outlining how those standards should be met. Mol recognises that the state will need to play a role when technologies are unviable in the context of a free-market, and when it does become involved it should remain as close to laissez-faire as possible. Although both Part L and the Code specify stringent targets that may seem to force the hand of developers and limit the scope of technological deployment, there is in built flexibility that can accommodate future technological developments. Overall then, it can be argued that government is providing the strategic, contextual guidance whilst industry is adding flesh to the bones by addressing the more difficult decisions concerning the definition of zero-carbon and the specific deployment of technologies.

5.4. Civil Society Involvement

Civil society actors were instrumental in the early development of sustainable homes in the 1970s. Early developments, as discussed above, were the product of particular constellations of social values and normative agendas and were intended as adverts for an alternative lifestyle and despite their aversion to influencing government policy these early developers succeeded in raising the profile of sustainable homes (Lovell 2004; Goodchild & Walshaw 2011). The policy communities that formed around the issue in light of increased government attention began to frame sustainable homes as a solution to particular social ills rather than as a manifestation of an alternative social world. As sustainable homes transitioned from ‘niche’ margins to ‘mainstream’ practice (c.f. Geels 2010) the policy community has matured, causing these early ‘radical’ actors to have been displaced by a discourse coalition coalescing around a shared values of technologically-driven ecological modernisation rather than values of deep-green ecologism.

However, only a handful social-movements have moved from the periphery to the core and have been actively involved in the creation and evolution of policy. In Rydin’s analysis discussed above (2012) there is little available evidence to suggest that civil society actors play a major role in the policy community, even if they have in the past been involved through
the Zero-Carbon Hub (RSA 2012). Even here the relationship has been tense. For example, the 2011 decision to include ‘allowable solutions’ in the definition of zero carbon and remove the requirement for emissions from unregulated energy sources (i.e. those attributable to the use of appliances within the home) led the WWF to leave the Zero-Carbon Hub, citing concerns that this amounted to a watering down of the zero-carbon standard and a disregard for the principles of sustainable development (WWF 2011).

6. The Relevance of Ecological Modernisation Theory

To what extent then can we say that ecological modernisation theory provides an accurate account for the development of the zero-carbon homes agenda in the UK? The conclusion is mixed. That there is an ecologically modern ‘discourse’ advocating a pro-growth rhetoric is well recognised. When it comes to whether ecological concern has become institutionalised and thus the extent that decisions are being made on the basis of ecological and economic concern the answer is less clear.

In line with Mol’s proposition, the state has shifted from ‘command and control’ towards more contextual steering, embodied in the creation of collaborative institutions such as the 2016 Taskforce and Zero-Carbon Hub, and through a decentralisation of power to the local levels of government. However, the highly political nature of planning has left the state susceptible to the economism driving market actors and the difficulties posed by a looming housing shortage (Cullingworth et al, 2015). Although it has been heavily involved in the deployment and development of innovative technological solutions and as a collaborator with government it lacks formal empowerment through formal institutional channels to be able to ‘economize’ the ecology through market mechanisms. Developers thus fail to see the logic in the ‘win-win’ rhetoric of ecological modernisation (Revell 2007). As a result decisions amongst market actors are infrequently made on the basis of ecological concern. Although there are a number of developers sympathetic to the ideals of sustainable construction the policy network at the
national level is dominated by the concerns of the biggest home builders, who are sceptical of the agenda (Rydin 2012, interview with industry representative February 2015). Although the state adopts a prominent role in the direction and pace of development that is indicative of a reflexive institutionalisation of ecological concern, the extent to which this leads to effective outcomes is hampered by a market that has failed to institutionalise that concern.

Although the initial normative concern over the sustainability of buildings emanated from civil society, those ‘deep-green ecologists’ became increasingly marginalized as the niche practice became mainstreamed. In their place is limited involvement by more mainstream organisation such as the WWF, but latent concerns over the value of their contribution remain. Civil society today plays a limited role in the direction and pace of the policy agenda. Pickvance (2012) recognises this in his study of the role of pressure groups in the construction of UK housing policy, arguing that ‘the policy has not been subject to a mass environmental movement’ (p. 329).

On the basis of this brief review it can be said that institutional reflexivity has taken place to differing extents across institutions of modernity, with some appearing to have institutionalised ecological concern more than others. The state appears to have undergone a necessary degree of political modernisation that has allowed it to channel ecological concern through new governance networks, but is being held back by a market that appears reticent to the principles of sustainability and a failure to fully engage with civil society. Although it could be argued that decisions are increasingly taking place on the basis of environmental concern as well as economic concern it has to be argued that economics is still the main driving force in setting the direction and pace of development in this policy area.

There are doubts about whether, given this arrangement, sustainability in housing will be achieved. The rise of ‘allowable solutions’ and the redefinition of local powers have been major successes for industry that it claims will help it reach the 2016 target, and have come from recognition by government that industry concerns over viability must come before
concerns over sustainability standards. This emanates from the high priority assigned to addressing a pressing housing shortage, and increasing the provision of affordable homes. Empowered by this agenda priorities developers are able to make a convincing case that sustainability demands should be lowered: in most cases it’s a trade off, they argue, between the provision of affordable housing and the provision of sustainable housing. Rightly or wrongly, the government focuses on the former.

This highlights a fundamental problem with the EM agenda in this context. Ecological modernisation has emerged as a discursive device, but the extent to which it can emerge as an empirical reality is hampered by the failure to institutionalise ecological concern within the market: a failure, in other words, to economize the ecology. The implementation of the policy agenda is too contingent upon the housing development industry, who in the words of Jänicke (2008) are ‘modernization losers’ in so much as they are expected to bear the brunt of the extra costs associated with increasing sustainability standards. This is because it is a ‘weak’ form of EM that relies primarily upon technological solutions to solve the environmental problem. Christoff (2006) distinguishes between ‘weak’ and ‘strong’ forms of EM, as depicted in table one.

<table>
<thead>
<tr>
<th>Weak EM</th>
<th>Strong EM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economistic</td>
<td>Ecological</td>
</tr>
<tr>
<td>Technological (narrow)</td>
<td>Institutional/systemic (broad)</td>
</tr>
<tr>
<td>Instrumental</td>
<td>Communicative</td>
</tr>
<tr>
<td>Technocratic/neo-corporatist/closed</td>
<td>Deliberative democratic/open</td>
</tr>
<tr>
<td>National</td>
<td>International</td>
</tr>
<tr>
<td>Unitary (hegemonic)</td>
<td>Diversifying</td>
</tr>
</tbody>
</table>

Table One: Weak and Strong forms of EM (Source: Christoff 2006, 191)
By focusing on technologically led solutions that are justified primarily in terms of their relation to economistic concerns over viability government is placing unrealistic expectations on the ability of supply-side actors to be willing or able to provide the necessary efficiency savings that would constitute a sustainable outcome. Objections from developers over the cost burden placed upon them by the Code (specifically how those sit on top of existing requirements associated with the provision of affordable homes and community infrastructure) have weakened the state’s position and led to a progressive watering down of the definition of ‘zero-carbon’ and the technical standards associated with it. A failure to adequately consider the demand side means that there is no ‘buyer premium’ associated with sustainable homes. As a result, costs cannot be passed onto homeowners in return for the promise of lowering operating costs into the future. ‘Green-demand’ is a key driver of the institutionalisation of the ecology, and a failure to adequately stimulate it has undermined the extent to which the agenda can be considered sustainable.

What’s more, there are concerns over whether the technologies that are implicitly advocated to achieve compliance with the Code and Part L regulations are in themselves conducive to sustainability. McManus (et al 2012), for example, talk of the considerable embodied carbon within solar Pv technologies and the inefficiencies of heat-and-power systems in the real world. They also cite concerns over how behavioural choices of home-owners (coupled with a failure of homeowners to de-materialize) may undermine any efficiency gains achieved through technological solutions. A downside to the ‘steering’ approach of Part L and the Code and the avoidance of prescriptive technological solutions is that developers may often deploy technologies that are the cheapest, with little consideration for their ecological credentials. Environmental protection in this scenario is achieved not because of an explicit concern amongst home-builders but solely in order to ‘tick boxes’ as cheaply as possible (interview with sustainability consultant, January 2015). There is only limited evidence to suggest that developers are voluntary sympathetic to goal of environmental protection (Osmani & O’Reilley 2009). This technological, economistic focus becomes problematic at times of stress. The 2008 financial crisis placed a considerable burden on homebuilders, not least because the pressure for more homes grew ever stronger in the same time-period. It was in this period...
that the most intense pressure was placed on government to relax standards, expectations and regulations.

The most effective transition to ecological modernisation in residential construction will only be achieved through a more targeted focus on the demand-side, and ecological concern needs to become institutionalized within market actors to a greater extent such that economic rationality becomes increasingly blinkered by ecological concerns. Whilst developments over the last two decades have certainly increased the sustainability of England’s new housing stock more needs to be done to ensure that this is driven less by economics and more by ecological concern, with a weaker reliance upon technological supply-side solutions and a stronger reliance upon a societal embrace of the ideals embodied within sustainable homes. Whether that is achievable when ‘weak’ EM typifies the UK’s overall environmental governance strategy (Revell 2007) is a question for future research.

The extent to which a strong, reflexive ecological modernisation agenda can emerge is limited by the relative dominance of economic, political and social rationality, which blinkers the emergent ecological rationality that, as we have seen, has emerged in the sphere of government. The national policy agenda has stalled, and the transition to zero-carbon homes at the national level is in doubt as the coalition government has introduced progressively watered down standards and regulations. This reduced uncertainty, which had three knock-on effects. First, developers were designing to meet particular requirements laid out in the original timetable and becoming outpaced by a changing regulatory framework. Second, it is leading to reduced investment in clean technologies and industries as investors pull out. On top of this, it also leaves a lot of work to be done in the final parts of the timetable.

However, economic rationality is likely to vary across the country as the housing market, incomes and local economic conditions change from place to place. The main challenge in rolling out the sustainable homes agenda on a national basis is the ability to achieve a compliance level that can both satisfy demands for sustainability and emissions reductions
whilst also avoiding a level that would restrict housing provision and lead to continued housing shortages. This challenge is presented because of the different economic conditions that exist across the country. Local authorities are in a much better position to respond to local needs where they exist to set sustainable construction standards, thereby avoiding this national-level challenge.

The core purpose of the national level agenda is to facilitate the adoption of novel eco-technologies by market actors. The state acts to force technological adoption by the market where otherwise it would not occur. Over time three processes occur: economic of scale reduce the costs of those technologies relative to traditional, ‘unsustainable’ technologies to the extent that they reach parity. Second, expertise increases amongst house-builders, architects, town planners and building control departments. Third, consumer demand increases as the issue becomes more prominent and widespread. The emergence of these three forces shifts the balance between ecological and economics, such that decisions become increasingly made on the basis of ecological criteria and the trade-off between the two is avoided. Local standard setting would speed up these processes and make the prospect of a national level ‘zero-carbon’ standard more realistic.

From PPS1 to the Housing Standards Review local governments had the power to set these kinds of local standards if they were willing and able, and my own research has shown a 50% uptake. Further research must ask what drives local authorities to behave like this if we are to understand the role that they play in processes of ecological modernisation (from both an analytical and normative perspective) and what affect their involvement has had on the institutionalization of ecological concern at the national level.

7. References


