Beyond Eco-towns
The Economic Issues

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Written and researched by URBED

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BEYOND ECO-TOWNS: THE ECONOMIC ISSUES

This working paper deals with how to manage growth in a smarter way. It takes up the lessons and recommendations from the research report *Beyond: Eco-towns: Applying the Lessons from Europe* with particular reference to the critical issue of cash flow. The report is based on case studies of major housing schemes in Northern Europe that have succeeded in reducing energy consumption, cutting traffic, and creating balanced neighbourhoods. They were chosen because they are recognised as exemplary in terms of design and sustainability, provide over 5,000 homes (like the proposed UK Eco-towns), and are substantially complete and therefore in a position where they can be assessed. The research was undertaken by a team from PRP, URBED and Design for Homes, and was sponsored by major organisations involved in building better homes (Grainger plc, The Guinness Partnership and Scott Wilson, who took part in the three study tours, and helped the team reach some practical conclusions, along with advice from other experts.

The summary report draws out a number of policy conclusions, but possibly the most important is the need for a different approach to procurement though local leadership, integrated spatial planning, and creative development finance:

- **Connectivity.** Successful new communities in Europe are closely linked to thriving urban conurbations. As a guideline this means a choice of jobs within half an hour's travel by good public transport, plus primacy for walking and cycling within the new settlement.

- **Community.** They have a balanced population, with a mix of housing that reflects demand in the wider area, and the community is closely engaged in building up the social infrastructure. This means that social housing for rent should generally not account for more than 20% of the total, with other forms of intermediate housing accounting for the balance of affordable housing. Also it should be indistinguishable to look at, so there is no stigma, and spread around.

- **Climate Proofing.** Eco-towns have clear targets for saving natural resources in teams of energy, water, waste and good land. In practice this means avoiding good farming land, and using the new settlement to help improve the image and appeal of the wider area. None of the case studies were trying to achieve zero carbon buildings, but all were aiming at doing significantly better than national standards.

- **Character.** Successful settlements have a strong identity, and offer a choice of attractive places to live in a green and pleasant setting, which helps them to grow relatively fast. In practice they were the work of a large number of designers and developers catering for different markets, but linked together by a very high quality public realm. Theming and branding can help appeal to wider markets than new housing in the UK currently reaches.

- **Collaboration.** The processes for planning and implementation are key. New communities enjoy local authority support and are developed by agencies with a long-term interest and

with active civic leadership. Though the relationships varied, there was none of the adversarial and legalistic approach to development that has marred many recent developments in England.

- **Cash Flow.** Infrastructure is generally funded and provided from the outset and funded separately from the house building budget using relatively low cost public finance. There is a wider range of 'entry' opportunities for people to move in due to the importance of private rented housing.

In essence, the places we visited have adopted a different approach, which might be called 'smarter growth'. The idea of 'smart growth' is to make the most of locations with high accessibility, such as a railway station or town centre, by redeveloping poorly utilised land at higher levels of density and then sharing scarce infrastructure between a number of uses. However smarter growth is about more than physical development. It also takes in the economic and social dimensions of what makes places successful and sustainable. The exemplars we studied had all created attractive places to live that were future-proofed through, for example; promoting balanced communities, taming the car, living with nature. But these innovations were not just the result of visionary masterplans. They were achieved through a different approach to procurement that involved sustained local leadership, integrated spatial planning and creative development finance

The study tour to new settlements around the Dutch town of Amersfoort concentrated on the issue of cash flow, and how to apply the principles behind Eco-towns in ways that are economically viable – or what might be called eco-economics, that is closing the gaps between costs and values. The conclusions are set out in Making *Eco-towns Work: Developing Vathorst, Amersfoort NL*. This working paper should help discussion and further work by drawing out lessons for each stage of the development process from the case studies

To make a new community work economically as well as environmentally and socially, let alone achieve eco-town standards, both government and the private sector needs a route map to navigate through the various hurdles. This could lead on to a 'charter' that could be adopted by public stakeholders, and private developers, like the Charter for Smart Growth promoted by the Congress for New Urbanism in the USA (www.cnu.com) or the Cambridgeshire Quality Charter for Growth in the UK (www.cambridgsehirehorizons.co.uk) from which the framework of six C's is drawn.

This working paper deals largely with how we can improve the process of procurement. It addresses the tricky issues of 'eco-economics' or closing the funding gap between what new settlements are worth and what they cost to build. Though the case studies are drawn from the nearest equivalents we could find to the planned Eco-towns, the conclusions are equally relevant to new housing neighbourhoods of over 2,000 homes or 5,000 residents, whether free-standing or not in areas outside the centres of major cities.

The paper is in five sections:

1. **Addressing the risks** deals with the challenges of achieving higher environmental standards in a very uncertain financial situation
2. **Learning from the past** draws messages from previous attempts in the UK to innovate
3. **Learning from Europe** summarises the main lessons from all the case studies under the six themes, with relevant examples
4. **Breaking the barriers** considers the current situation and the relevant lessons in terms of the main stages in the development process, land assembly, masterplanning, infrastructure, house building, climate proofing, and management
5. **Transferring the lessons** applies the findings to three main hurdles of local leadership, spatial planning, and development finance.

1. Addressing the risks

The initial idea of 'Eco-towns' generated considerable interest, with some 50 proposals submitted in response to the *Eco-towns Prospectus*.[1] As the report from BioRegional and CABE *What Makes an Eco-town* points out, the impetus is not only about providing more affordable homes, but also *'living within our ecological limits'*.[2] This requires a different approach to the masterplanning issues of water, the design of healthy neighbourhoods, green infrastructure and biodiversity if we are to cut our ecological footprint and live within the resources of one planet. The 'eco' label, like sustainable communities, is now widely used and in danger of being devalued, where it is used to brand schemes that had previously been rejected for being located in the wrong place for sustainable living.

However new housing schemes also have to be economically viable. Escalating energy prices and traffic congestion along with the drying up of mortgages is causing many house builders to rethink what they are producing, and there will be little appetite for schemes that involve major upfront investment in masterplanning and infrastructure provision. When the market starts to

[1] Eco-towns prospectus, www.clg,gsi.gov.uk

[2] What makes an eco-town? CABE and Bioregional, 2008, www.cabe.co..uk

recover, it is likely to be with a different set of players and products, judging from previous recessions. Doubts have been expressed over whether the concept of building New Towns of over 5,000 homes could ever work outside a few exceptional cases, unless the development risks are substantially reduced.

The original 'prospectus' was issued by the Department of Communities and Local Government when the housing market appeared strong. It drew on advice from David Lock and the Town and Country Planning Association (TCPA) with the declared aims of [3]:

- Building additional affordable homes faster
- Creating mixed and stable communities
- Cutting carbon emissions (and saving energy)
- And securing good use of land.

The government asked for responses on how to improve the bids and on how the benefits '*can most effectively be delivered*'. The stated aims remain relevant even in a recession. Indeed the highest rates of house building in the UK were achieved in the 1920s and 1930s as private house builders took advantage of sites opened up by the arterial roads on the edge of cities that were built to create jobs, and built over 2 million homes, largely semi-detached [4]. The assumption before the property market went into decline was that innovation in Eco-towns could be largely funded through the uplift in land values when planning permission is granted and through planning shortcuts. The scale of the proposed New Towns was expected to yield sufficient economies of scale.

But though new housing is high on the political agenda and there is still a pent up need for some three million new homes, new settlements have to compete for very limited investment resources. New homes have to sell against second-hand ones in neighbourhoods that are a known quantity, and where there is certainty over the provision of schools, shops and transport facilities. Research had shown that the costs of achieving higher standards could make zero-carbon homes uneconomic; for example surveyors Cyril Sweet estimate that the costs of achieving Code 6 of the Code for Sustainable Homes could add £20,000-£40,000 to the costs of a home[5] whereas Code 3 would offer much more value for money. This has led to the idea of focussing on the neighbourhood rather than the individual home, and the use of measures such as off-site renewable generation.

In addition all new developments have to provide a subsidy for affordable homes (estimated by house builders at approximately £30,000). A further uncertainty is the cost of infrastructure and

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[3] Eco-towns prospectus, CLG, 2008 www.communities.gsi.gov.uk

[4] Building the 21st Century Home, David Rudlin and Nicholas Falk, Architectural Press, 1999

[5] A cost review of the Code for Sustainable Homes, by Cyril Sweett for English Partnerships and the Housing Corporation, 2007 www.cyrilsweett.com

the possibility of being asked to contribute another £10,000-£20,000 toward funding the Community Infrastructure Levy, depending on what each County or Unitary authority decides to charge. Even if builders were able to cut the costs of building a new home to £60,000 as John Prescott sought to do through a competition run by English Partnerships, there is a real danger that insufficient homes will be built to draw any lessons for housing as a whole.

Innovation in procurement methods is therefore critical if the Eco-towns (and their derivatives) are to demonstrate that '*living a greener future'* is viable on a scale that will be worth the effort. This means addressing and reducing the main uncertainties. With little prospects of major public subsidies, (which are unlikely in a time of recession and falling tax revenues), savings must be secured through both how and where we build by breaking down the barriers.

Barriers to higher standards

- Unrealistic landowner expectations about values, which tend to ratchet upwards over time (as doing nothing costs little)
- Expenses and risks in submitting a planning application, which can cost millions and take years particularly if there is organised opposition
- Uncertain demand with the collapse of 'buy to let' and mortgage lending to first-time borrowers
- Unknown costs of decontaminating and servicing brownfield sites (e.g. airfields) and dealing with environmental surprises (such as Great Crested Newts)
- Extra cost of high density flats outside central areas
- Reluctance of developers to innovate on every front simultaneously, for example both lower carbon emissions and mixed communities
- Costs of managing an extensive public realm, which neither first-time buyers nor social renters can afford.

2. Learning from the past

Britain once led the way in Europe in building new communities because it pioneered mechanisms that unified public and private interests. Some of those mechanisms could well be applied to the challenge of making Eco-towns economically viable. Recommendations from the series of government reviews also need to be acted upon::

- 19th century philanthropic settlements, such as Saltaire and Bourneville were built by successful businessmen to demonstrate that improved living conditions would produce a better workforce, and hence were not utopian. They led to higher building standards, for example access to light, which were implemented in mass-housing supported by Building Societies where workers pooled their savings.
- Early 20th century garden cities, such as Letchworth and Hampstead Garden Suburb, provided a compromise between the attractions of living in a city and living in the country, without the drawbacks (Ebenezer Howard's famous three magnets). Architect designed masterplans provided ample space and light for a broad social mix. Some of the design

features, such as semi-detached homes or short terraces, were taken up in the inter-war schemes that the cartoonist Osbert Lancaster called *'Bypass variegated'* (which led to the Post War Planning Act to stop urban sprawl).

- Post-war New Towns, such as Harlow and Milton Keynes, used public finance to provide a planned solution to the problems of relocating industry and providing better places for workers to live away from the 'muddle' of the cities. Development Corporations bought the land at 'existing use value', and installed the infrastructure, including ample open space.
- Attempts to produce private sector New Towns since then have failed (though Span almost succeeded in New Ash Green). A few new villages, such as Poundbury in Dorchester, Kings Hill in Kent, Notley Garden Village and Newhall in Essex have relied on responsible landowners promoting better design, but these are very much the exception.
- English Partnerships has been involved in a series of innovations, including Millennium Villages such as in Greenwich, which sought to apply similar principles to the Eco-towns on a small scale, as well as major schemes such as the extension of Milton Keynes.. Its successor the Housing and Communities Agency, brings together the financing of social housing with experience in procuring infrastructure, and is planning to enter into 'single conversations' with local authorities to bring forward suitable sites.

Faced with disappointingly low rates of house building and widespread unaffordability, the government commissioned a series of studies into why Britain has not built more. Though local authorities are being urged to be more proactive in 'place-shaping' reliance has continued to be placed on private markets to drive development:

- The *Egan Review* on skills by a former motor industry leader pointed out that while local authorities should be leading the process, they lacked both the leadership and project management skills to do so. The review showed that building sustainable communities involves far more than just housing. There are eight spokes in the Egan 'wheel', which form the basis for a series of programmes to provide training and advice. The Regional Centres of Excellence and the Academy for Sustainable Communities along with CABE and others have sought to provide advice but have suffered from the shortage of capacity within local authorities.
- The *Barker Review* by a Bank of England economist put the blame for house price inflation on production rates lagging behind household formation. The ponderous British planning system leads to builders profiting from planning permissions rather than their efficiency in building what customers want. The review recommended using the uplift in land values to help finance related infrastructure. After an abortive attempt to tap 'planning gain', the Community Infrastructure Levy has emerged as a means of securing developer contributions without all the hassle of Section 106 negotiations.

- The *Callcutt Review* by the former Chief Executive of Crest Nicholson and English Partnerships looked at the business model used for new housing. The rate of sales on individual sites was surprisingly low (typically only one a week) suggesting that volume house-builders may prefer to avoid competition. The report recommended that more land should be made available for small builders and that institutional investors should become involved, not just volume house builders, through an '*investor model*'. Since then the British Property Federation and others have expressed interest in the idea of institutional investment in properly managed private rented housing.
- An important report into social housing by Professor John Hills who is Director of the Centre for Analysing Spatial Exclusion at the London School of Economics, highlighted the problem of 'residualisation' whereby most social housing tenants today are workless. This has led on to reviews of the benefits system, and to the idea of encouraging investment in private renting. The fundamental issue of who should get new social housing remains unresolved, and the results of neighbourhood renewal continue to be disappointing.

3. Learning from Europe

Faced with growing demands to build more homes and falling levels of private investment, there is an urgent need to look beyond Britain. In recent decades countries like Germany, the Netherlands and Sweden have far outstripped the UK in the number, size and quality of the housing they have built every year, often in places that are comparable with those found in the UK. They have succeeded in regenerating older industrial areas that have lost their original purpose[6]. They have provided much more in the way of rented housing. They also appear to have created more harmonious communities. The study tours not only looked at places where many of us would gladly live, but also learned about very different approaches to the barriers summarised earlier.

- The study tour to **Kronsberg** (built for Hanover EXPO 2000) and **HafenCity** in Hamburg, which is the largest regeneration project in Europe, discovered that the development process was clearly spelt out in site specific manuals that had benefited from community engagement. Schemes were designed to change behaviour and minimise car dependence. In all cases high quality transport infrastructure from the start helped in building up a community very rapidly. The much greater quality of the public realm and transport systems encourage people to leave their cars behind for most short trips.

- While the experience of **Vauban and Reiselfled** in Freiburg in achieving modal shift is probably the most advanced in Europe in changing behaviour, similar approaches were being used in all the case studies. The key point from the table below is the increased use of bikes and walking for shorter trips, (which applied to all the exemplars) whereas in the UK the trend has been the other way.

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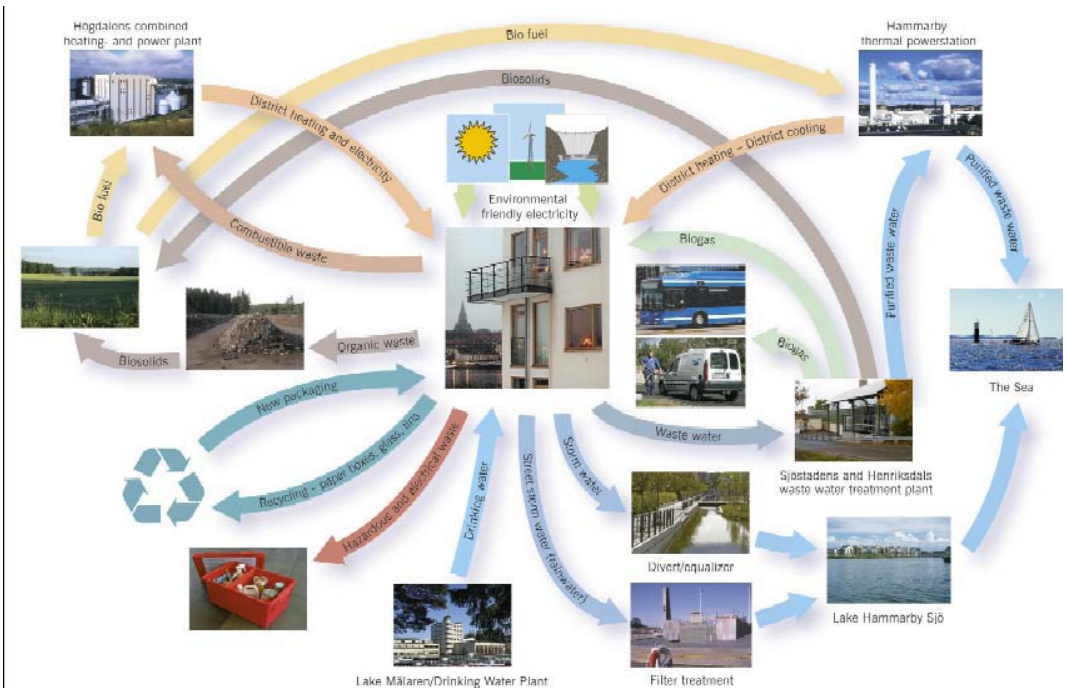
[6] Regeneration in European Cities: making connections, URBED for the Joseph Rowntree Foundation, 2008

	Cars	Public Transport	Bikes
1976	60	22	18
1989	48	25	27
1999	43	28	29
2010	34	33	33

Source: Freiburg City Council 2008

- The study tour to **Hammarby Sjöstad**, a high density extension in what had been derelict docklands in Stockholm, found that the exploitation of natural features like water created a place with a strong positive image. High rates of sales in turn helped pay for a very advanced system of utilities. The so-called Hammarby Water Cycle model works not just because it is technically advanced, but also because the place itself attracts people who can afford to pay a premium for living in an ecologically sustainable settlement. Doubts have been expressed about whether anything similar could ever be achieved in the UK. David Lock comments "*above all else the people are civilised and communitarian in their behaviour, and appear to be gentle and courteous in their dealing one with another*" [7]. However the same could be said of the settlements in the Netherlands and Germany, and the places we visited were not unique.



[7] Unattainable Hammarby, David Lock, Town and Country Planning September 2008

Previous research by PRP found that European local authorities have played a greater role in getting innovative schemes off the ground and then maintaining exceptionally high design standards[8]. Study tours have been struck by how far local authorities were involved in 'place-making' not just responding to developers' proposals, without the political arguments and frequent changes of personnel that we are used to. By sharing the responsibility for creating and maintaining communities, social democratic countries avoid some of the traps of a consumerist society, where people expect everything to be done for them, and focus on their homes rather than their neighbourhoods. These differences in the way ordinary people live and behave may also hold the key to reducing risks and improving returns on investment. There is also a much lower reliance on private home ownership and greater respect for communal space Research by a group of international experts, convened by the LSE, suggests that the UK may be trying to achieve the impossible in encouraging the further extension of home ownership, when it is already the highest in Europe. The collapse of financial institutions that have over-lent to poorer households may force a rethink about how we save and what we invest in.

Housing tenure in European countries (%)

Sector	Owner occupation	Private rental	Social rental	Number of social units
England	**70**	**11**	**18**	**4,230k**
Sweden	**59**	**17**	**21**	**780k**
Netherlands	**54**	**11**	**35**	**2,400k**
Germany	**46**	**49**	**6**	**1,800k**

Source: Social Housing ed. Professor Christine Whitehead and Dr Kathleeen Scanlon, London School of Economics

The leadership role of local authorities is also brought out in case studies comparing European regeneration success stories with the situation in England, and there are moves to encourage local authorities to adopt a similar approach, for example through the Sub-National Review and the idea of Local and Multi-Area Agreements with government, on a contractual model [9]. Visitors on study tours from Cambridgeshire were impressed by the combination of clearly

[8] Super Density report by PRP et al

[9] Regeneration in European Cities: making connections URBED for Joseph Rowntree Foundation 2008

expressed visions but greater flexibility in implementation, which allows cities to ride the tides of changing markets and business conditions. There is not the same adversarial situation that pits land owners and developers against the public agencies responsible for providing the social and physical infrastructure. The greater sense of collaboration undoubtedly helps to improve the cash flow, and speeds up the process of building better new homes.

As attitudinal and behavioural changes take a long time to achieve, the starting point must be examining each stage in the development process to see where economies might be made that would help reduce or contain costs, and add value.

4. Breaking the barriers

We have drawn lessons for each stage in the development process by comparing the key factors for success in the case studies we visited in Europe with the situation in the UK. We have drawn on work Cambridgeshire Horizons has been doing into funding infrastructure, as the sub-region around Cambridge is growing faster than anywhere else in the UK. There are six main stages where innovation is required: land assembly, masterplanning, infrastructure provision, climate proofing, house building, and estate management.

Land Assembly

The first barrier to break is the high cost of land. The value of land is essentially the residual of the value of what can be developed and sold; less the costs of providing the infrastructure and building the homes and related facilities, and so rising standards should lead to lower land values. However a minimum is required to bring sites forward and every landowner will have expectations, however unrealistic, while the holding costs of doing nothing are quite low. Traditionally land was thought to account for around 30 or 40% of the value of a home in the UK, but in recent years, with higher densities and house price inflation, the proportion has risen to almost half the cost in high value locations such as London Docklands. The land value of a home at a typical net density of 40 to the hectare could amount to £70,000 or nearly £3 million a hectare, assuming an average house price of £200,000. As the land value is essentially created by the provision of infrastructure, not just the granting of planning permission, it is important to appreciate how much public investment is going to be required.

Lessons from Cambridge The essence of infrastructure is that it is required at the start, not at the end of development. Insights into the costs come from studies undertaken in the Cambridge

Growth Area, including the *Long Term Delivery* Plan prepared by Deloitte's for Cambridgeshire Horizons. The *Regional Spatial Strategy* proposes building 73,000 new homes between 2001 and 2021, which would increase the housing stock by over 40%, far more than anywhere else in the UK. The programme of infrastructure investment comes to £4 billion, of which only 6% had been spent between 2000 and 2006. Most of the investment is on transport, basically new roads (57%) followed by health (14%), utilities (12%), and education (10%), with the balance being made up of other social infrastructure of open space and community facilities (7%). The total infrastructure investment works out at around £55,000 per new home, though of course most of the demand comes from existing activity, for example cross-country freight to and from the Port at Felixstowe. About a third is currently expected to come from the private sector through Section 106 agreements, which still leaves a huge investment that needs to be made up front. One possibility is to save on the cost of land (as this is only a transfer payment). But Northstowe, which was to have been a 'demonstration Eco-town', is having difficulty even funding measures to generate energy locally, such as Combined Heat and Power or renewables, despite Cambridge having particularly high levels of sun and wind. English Partnerships are said to have paid the Ministry of Defence £100 million for 288 hectares of land (a former airfield and barracks).

In all the European case studies, the local authority played a key role in assembling land. Where developers had already acquired interests, as in Vathorst and Kronsberg, the land was put into a joint venture and effectively pooled so that developers do not necessarily get back the same sites they started with. In Vathorst developers pay 30% of the expected value of the site when they start work for serviced plots that have utilities and road connections. In the New Town of Zoetermeer near The Hague an urban extension proved a 'cash cow' for the local authority, after paying as low as 20% of the sales value for social housing and up to 28% for higher priced housing. Figures from Freiburg suggest a similar proportion of around a fifth for land that has to be decontaminated before it could be built on. If a similar principle was adopted in the UK for land without planning permission for housing (as with the Development Corporations), the saving might be as much as £50,000-£60,000 per home, which would make a huge difference to eco-economics. It would still leave a value of over £1 million an acre, which should more than enough compensation for a farmer (providing, of course, it has not already been sold on to a developer at a higher value).

The municipality has played a leading role in three planned extensions to **Amersfoort**. Local authorities in the Netherlands can raise low cost capital for development projects through the Bank Nermeenten (BNG) that specialises in serving the public sector. Funds are used to assemble land and commission the basic infrastructure. In Amersfoort the local authority has set up a joint venture company with major developers for its largest scheme **Vathorst** through which land is pooled. The company raised a loan of €750 million at 5% repayable over 15 years to upgrade the land. Serviced plots are sold to house builders, including housing associations, who build for sale as well as rent, typically in units of 80 or so homes, which are largely in terraces. Sites for new homes are linked up to district heating systems, including the use of ground source heat pumps, and rainwater runs into new canals.

Masterplanning

Before a planning permission can be secured that sets the value of a site, a detailed planning application must be made with its associated Environmental Impact Assessment (EIA). Costs for producing a detailed application for a settlement of over 5,000 are expected to be in the region of several million pounds, of which the EIA can account for over a fifth. The process generally takes several years, (which is no slower than in Europe). But major new communities, such as Northstowe, a New Town outside Cambridge, can take up to ten years before the developer sees any return, and all the time the investment is at risk. Much of the time (on which fees are based) will be taken up with meetings and consultations, often acrimonious, not to mention changes in policy, the timing of new infrastructure, or the masterplanners and developers. While the cost of masterplanning on a big scheme is equivalent to only around £3,000 per home, it has to be paid up front, whether or not planning permission is secured. Hence it is expenditure that is very much at risk. In periods of uncertainty, such as a recession, it is hard for consortia of landowners or builders to fund the process, or spend time in high risk situations. Also because the developer has to fund these cost up front without the certainty of success they tend to do the minimum of work, which leaves many issues unexplored, which are subsequently found to be important, leading to a re-work of the masterplan. It is the constant re-working of plans as schemes become more certain and issuers become clearer, that that extends programmes and leads to high costs.

In Europe we found the planning process is largely funded by the public sector. Though time is taken overcoming objections, the process is a lot less adversarial than in the UK, with more reliance on mediation and less on legal disputes. The masterplans are produced in depth from day one but guidance is far less specific. Community opposition is less of an issue, with greater stress being placed in The Netherlands on the role of intermediaries such as city based Architecture Centres, to secure a more informed debate. Also full-time councillors with executive responsibilities lead the process, supported by experienced development professionals. Once the broad parameters have been agreed with government, private masterplanning teams are generally used, often as a result of competitions in which the public can express preferences.

Hence many of the issues involved in consulting communities who are opposed to any development can be overcome before builders are asked to bid for sites. Development risks are also greatly reduced because the local authority owns or has acquired much of the land. This could significantly reduce the costs of preparing the masterplan as it avoids duplicating most of the initial work and avoids re-working plans which fail to meet local aspirations.

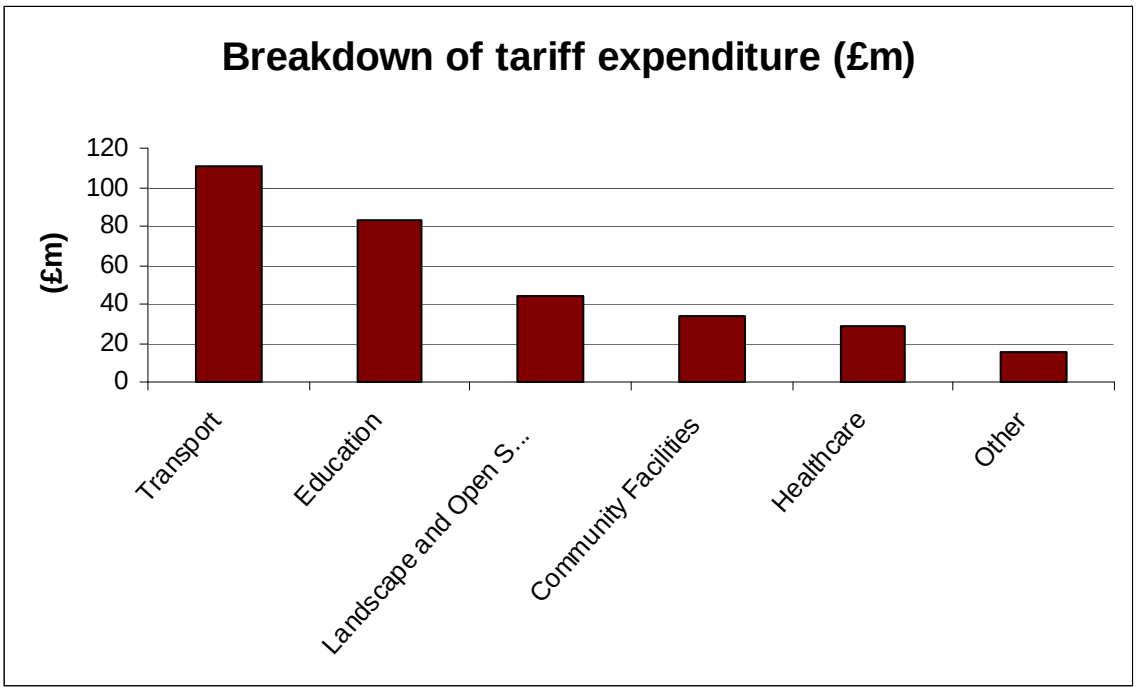
Possible economies

- Focussing development in each sub-region where the prospective returns on investment are best
- Commissioning publicly funded environmental studies
- Being more flexible about what is required in an application for a major site
- Using charters or protocols to agree on the big picture before getting into detail
- Ensuring that feasibility studies take account of social as well as physical infrastructure costs.

Basic infrastructure

Before houses can be built and sold, land has to be decontaminated and regarded, roads and streets built, and pipes for utilities such as water and gas installed. Some of the costs are essentially directly attributable and would be collected through regular Section 106 negotiations, whereas others are more strategic, and apply to the wider area. As well as the hard physical infrastructure, communities require investment up front in social infrastructure, ranging from schools and shops to open space where children can meet each other.

Lessons from Milton Keynes. In Milton Keynes some £278 million is being raised through a tariff of £18,500 on 15, 000 new homes, plus a levy on commercial property which produces a further £33 million. The tariff produces some £310 million out of a total investment of £1.67 billion, a huge amount. But even in the most favourable of circumstances developers' contributions only cover a fifth of the total infrastructure costs. Figures from an analysis carried out for by English Partnerships for the Milton Keynes tariff or 'roof tax' suggests that the main element of cost are transport (£111 million) followed by schools (£63 million) and landscape of £44 million). Together these account for two thirds of the investment. Other items that add value and make the scheme much more sustainable, such as leisure and waste, cost far less (£15 million and £4 million respectively) and could be lumped into a general community charge.



Some idea of the funding gap can be seen from the government's commitment to provide £100 million investment for schools and hospitals in 20 towns. Though this sounds large it amounts to only £1,300 a home. If Eco-towns are also trying to get greater investment in superior utilities, for example underground waste storage or water recycling, then some of the expenditure on roads and transport needs to be reduced through 'value engineering' by applying some of the good practice we observed in the case studies, and new ways must be found of funding infrastructure over the longer term.

Possible economies

- Tapping into good existing public transit systems (rapid transit is only feasible at densities of over 50 to the hectare)
- Designing narrower residential streets and only catering for lighter vehicles away from the main roads, for example by using underground waste storage which reduces the need for municipal waste vehicles to get everywhere.
- Building the main infrastructure in relatively large stages (Hammarby Sjöstad uses the model of a 'fishbone' with loops off a central transit spine, which is similar to Vauban and Rieselfeld), whereas Vathorst and Kattenbroek rely on building a 'rim' road and then building neighbourhoods off it.
- Allocating much of the landscape in the form of communal green spaces to be looked after by the residents that overlook it. (Though this adds significantly to the service costs for residents it can be more acceptable if the costs come under local control.)

House building

The costs of building homes in the UK is a surprisingly small part of the total value of a new home This is partly because new English homes are much smaller than the continental equivalent, and the specification does not generally match European standards, for example in terms of insulation. Work done to produce homes that would cost less than £60,000 for English Partnerships suggested tha**t** a combination of modern methods of construction plus ingenious space planning could produce attractive products, but it may be worth spending a little more to get somewhere more spacious. However the real challenge is how to produce new homes on the scale required to justify investment in modern methods of construction. The greatest benefits incidentally are likely to come from being able to respond to demand as it arises, just like a car manufacturer does, rather than tying up capital in unsold stock.

Our case studies suggested European rates of building some ten times the UK equivalent, which would make it much easier to secure economies, and hence produce larger and better specified homes. In fact increasing the volume of a home produces a greater increase in value than it does in cost. Though British homes have been sold in the past terms of the number of bedrooms rather than the size of the space, let alone the operating costs, this is likely to change as the industry becomes more competitive and new standards start to bite. It also appeared that many more, and smaller local builders, are involved in building new settlements. In Freiburg cooperatives achieve building costs that are two thirds of what owner occupiers have to pay.

Other elements of house construction, including fees and profits, can be reduced if the risks born by house builders) are cut. A house builder may aim to make 30% margins on developments because of the cost and uncertainty of development. With a steadier and more predictable demand, for example because more of the homes were rented rather than sold outright, individual developments would secure the economies that come from going down the 'learning curve', as each house was produced more efficiently than the last one. This would produce higher quality as well as lower costs. It would also mean that the margin required for fees and profits could be reduced.

Possible economies

- Involving a larger number of builders to generate competition and choice and hence faster sales
- Purchasing components, such as windows or heating systems, in sufficient bulk to get scale economies
- Working with private investors in rented housing and coops to sell homes in advance of construction
- Using Modern Methods of Construction, so that most of the building work is done off site.

HafenCity and **Kronsberg** show that it is possible for the local authority to set exacting standards for new developments, provided the location is right, and to enable a mass of builders to work simultaneously. Manuals are produced in both German and English making it easier for builders to see what is required. In **Vauban** and **Rieselfeld** in Freiburg, the municipality has provided leadership over nearly two decades, under the same Head of Planning, and with the active support of the Mayor. Project managers have stayed with the job which means real continuity. Contracts with private consultants have been used to supplement the city's development expertise. Private firms of masterplanners have also been used. The principles in the key document, the Bauplan, are summarised on one large piece of paper.

Climate proofing

The greatest innovations are required to be in the way energy, waste and water are dealt with as these have the most obvious impact on carbon emissions. However this could easily be negated if every trip was made by car because shops and services were too far away. Reducing operating costs requires greater investment up front, and so far experience in the UK has been disappointing even in the well publicised demonstration projects such as BedZED in the London Borough of Sutton, and Greenwich Millennium Village. The reasons lie partly in the misuse of unfamiliar technology, but also in the difficulties of grafting an innovative development on to our standard systems. Thus Combined Heat and Power (CHP) is the single

best way of reducing carbon emissions other than increased insulation, as it improves efficiency of supply, but it requires uses for the excess waste heat in summer,. At present in the UK capacity is limited to 1MW, and it can only be made to work where densities are greater than 50 units to the hectare, and uses are mixed, for example in a town centre.

We saw CHP at work in almost all the case studies, and Sustainable Urban Drainage systems are universal. We also discovered some innovative approaches to waste collection that appear to save space, and reduce the need for streets to be designed to handle municipal garbage trucks. Indeed it has been argued that the Swedish underground pipe waste disposal system is no more costly when vehicle movements are factored in. The key point however is that all of the schemes involved greater investment in the foundations before builders started on the houses.

Possible economies

- Negotiating contracts on the basis of the assured demand from new settlements (without the freedom to contract in and out to secure the lowest prevailing tariff at the time)
- Requiring higher levels of insulation as the best way of making energy resources go further and reducing carbon emissions in the process.
- Using CHP, and connecting up to District Heating Systems, and also burning surplus waste in incinerators that generate local energy (CHP saves around 30% of the energy used, and hence carbon emissions)
- Containing rain water on site

Hammarby Sjöstad's rapid build-out rates are some ten times faster than in Greenwich Millennium Village, which is in a similar location. This highlights the importance of a strong masterplan that avoids over-dependence on the private sector. The scheme is for 11,000 dwellings in an area of 200 hectares. An extension to the city's tram system provides the central spine to the 'fishbone' layout, and enables neighbourhoods to be developed economically off the linear plan. While it took six years before the masterplan was submitted and approved, infrastructure went in soon after. The first phase was completed four years later, and five years after that the scheme was half way complete, a rate of some 550 homes a year or ten a week. All homes have to be linked to the municipality's district heating system. There is a high quality 'water cycle' that recovers waste heat and other useful products from sewage. Methane is used to generate energy and the remaining solids are used to grow trees faster. The investment has been made by utilities on the basis of long-term contracts.

Estate management

Criticisms have been levelled against many new developments such as Cambourne near Cambridge because of the delays in providing the means to make social contacts, including new schools, shops and meeting spaces. This seems to apply even to developments that are exemplary in other respects. A report by Shelter criticised schemes such as Ingress Park and Greenwich Millennium Village for the delays in providing promised community facilities[10]. Though complex negotiations take place to achieve social benefits, Section 106 agreements can take several years to ratify, and are seen by developers as onerous and unresponsive to changing needs. Nor do they necessarily produced mixed communities that work as intended. For example, social tenants may well be around all the time, while those buying their own homes are more likely to be out at work, and may sell on as soon as they can. A school designed to provide community facilities may still not used because no one is prepared to pay for the caretaker and other running costs.

Most of the elements that produce sustainable neighbourhoods as opposed to just low energy homes require ongoing management. For example the government expects that 40% of the land in Eco-towns will be green space. Neither the local authority nor house developers really want to take on the job and some other arrangement is required such as a Community Land Trust. But this needs to be properly resourced. But the costs of a service charge, particularly if unknown at the beginning, can easily lead to disputes when they have to be shared by people with different levels of income and expectation. Avoiding lifts and communal entrances can pay off, as can developing a sense of community pride at the block or neighbourhood level. The three storey terraced house, as found in most Dutch developments, is probably more in line with British taste than the blocks of apartments found in Stockholm, for example, and requires much less in the way of communal management and social discipline. But in all the case studies there was evidence of a real pride of place, with virtually no graffiti or rubbish on the ground, and it does appear that management is built in and not left to be worked out later.

In some cases management can be provided by a housing association, and certainly Dutch housing associations play a wider role as 'area caretakers' than would usually be the case in Britain, including dealing with vulnerable groups. In other cases 'extended' schools play a wider role as 'community hubs', but need to be incentivised to do so and not just concerned with academic targets. But whatever the arrangement, the key is for the local authority to take initial responsibility for neighbourhood management and for ensuring that the design of the settlement supports community development. Greater levels of social interaction and walking and cycling

[10] Neighborhood Watch. Building new communities: learning lessons from the Thames Gateway, Penny Bernstock, University of East London for Shelter, 2008
http://media.shelter.org.uk/imagelibrary/detail.asp?MediaDetailsID=751

produce healthier citizens, which should reduce demands on health services, and action to tackle vandalism and opportunistic crime. None of the places we visited had concerns about mixing rented and owner-occupied housing at the neighbourhood level, and generally social housing accommodates a wider range of households, (which avoids stigma).

Possible economies

- Building balanced communities with as few extremes as possible, and monitoring occupancy satisfaction to provide regular feedback
- Combining new developments with efforts to improve existing neighbourhoods to avoid siphoning off the most able, while providing incentives for people to look after their homes and neighbourhoods
- Attracting 'eco pioneers' who can promote more sustainable life-styles and take on the role of community building
- Setting out the social infrastructure required at a very early stage (i.e having a full planning brief) so that there are not lengthy negotiations over what should be provided, and agreeing what the public sector is going to provide to match private investment
- Supporting communities in getting to know each other through voluntary associations and community development workers, resourced through some form of trust or foundation funded out of the development
- Providing superior sports and cultural facilities for example by redeveloping and relocating an existing secondary school as housing, as in Rieselfeld in Freiburg
- Ensuring good enough and cheap public transport so that residents in new communities can access jobs and services in adjoining settlements before they get used to relying on their cars.

5. Transferring the lessons

Applying the economic lessons from European experience to the British situation requires financial or business model that can justify investing upfront in the extra costs of higher standards through the expected benefits or values achieved. It also needs to be flexible enough to minimise risk over time. The Callcutt Review called for an 'investor model' where longer-term returns are sought than house builders tend to expect. What we saw in places like Vathorst in Amersfoort or Kronsberg in Hanover is that model applied on a major scale[11]. Such an approach is needed in the UK to support higher levels of investment in infrastructure without them falling

[11] The Callcutt Review of Housebuilding Delivery, Communities and Local Government Publications, 2007 www.callcuttreview.co.uk

foul of Treasury rules. The bulk has to come in one form or another from private investors in the short-term and from private house buyers or landlords and their tenants over the longer-term. Different approaches are required at three levels which present hurdles or stumbling blocks: sustained local leadership, integrated spatial planning, and creative development finance.

Sustained local leadership

The process of building a new community is inherently complex and long-term: like planting a forest of oaks they take time to grow. The process therefore has to be led by leading local politicians and chief officers, supported by development agencies in some cases, with government encouragement and active community engagement only once the basic parameters have been set. Our case studies demonstrate the importance of sustained and visionary local leadership:

- European local authorities have acquired the necessary technical and financial capacity (through multi-disciplinary teams, local development agencies, and in some cases public private partnerships with private developers). They are less dependent on house builders who want to dispose of houses quickly and control the rate at which their land bank is developed.
- Local authorities provide the required balance between meeting social objectives and maximising returns for developer and landowner. By not ceding responsibility, but being flexible about phasing, the public sector ensures that developments are built to the standards originally envisaged, making trade-offs where necessary between different aims
- Leading full-time councillors take on the role of selling the benefits and ensuring that existing communities do not lose out and stick with a project over several decades
- The public sector negotiates with utilities and transport providers to ensure that a higher quality of infrastructure is provided early on before the bulk of residents have moved in.

Integrated spatial planning

The UK is moving towards the Continental model of devolution to regional and sub-regional public agencies, and the ideas of Multi-Area Agreements and of integrating economic and physical strategies offers great promise. All the success stories demonstrate that new settlements have to be located close to growing urban conurbations so that they can share infrastructure and access to jobs and services in the early stages. But they should also be separate places or neighbourhoods, with their own names, distinctive identities and community facilities.

- They need to be located where there is not only housing need, (and hence the requirement to provide affordable homes), but also an expanding population because as an attractive place to live or due to proximity to new work opportunities. This helps to achieve much faster build rates than in the UK, and associated economies in spreading the overheads.
- The settlements are relatively compact, with densities that support good quality infrastructure and walking or cycling, and hence offer a better quality of life than existing suburbs. Saving energy has long been a priority for countries with colder winters and lacking the UK's coal

and oil resources. Homes that are better insulated will cost much less to run, and hence will be worth more over the longer term. Triple glazing is common with greater use made of ambient solar energy, wind, and ground source heat pumps. Electricity can be used for space heating supplemented by local energy generation in the form of CHP, through district heating schemes, plus the use of renewables so that the scheme as a whole is zero-carbon

- They make good use of water to create places where people can live close to nature, and without risks of flooding (which in The Netherlands in particular has long been a priority), which means that the new settlements have to be linked into the wider issues of water management in the catchment area.

Creative development finance

The hardest task of all is ensuring that there is sufficient funding to join up the physical and social infrastructure, and ensure that it leads rather than follows housing growth. European municipalities play a leading part in commissioning the masterplan so that they achieve consensus, avoid duplication and reduce the risk to private sector participants. Public financial institutions then supply long-term debt finance at low rates of interest for installing infrastructure, to be repaid from land sales, rather than relying on a 'lottery' of grants or ministerial favours. Greater planning certainty reduces development risk. As a consequence private investors and housebuilders have a lower cost base, and with less risk capital committed require lower levels of return.

- There is major investment up front in high quality public transport in the new communities, such as light rail and cycle ways. This means that targets for reducing energy or car use are stretching but realistic. The targets are related to what is already being achieved locally, against national targets.
- Large sites are broken into smaller parcels (typically around a hectare) and serviced plots are then sold to a wide range of private developers, housing associations and cooperatives at a price that reflects the value of what is built. This enables the initial investment in land assembly, planning and basic infrastructure to be recovered from private investors.
- The proportion of social housing is between a third and a fifth, and designed so that it does not become 'residualised', for example by providing ongoing community development and neighbourhood management. In addition there is a provision for a broader range of subsidised housing through cooperatives and housing associations so that most residents are likely to be in work, and able to pay their way. A much larger private rented market enables communities to grow much more rapidly so that development is not dependent on having to sell another house or secure a mortgage for the first time.
- Eco-infrastructure is not funded by house builders. Access is funded through long-term finance available at lower rates through publicly owned financial institutions, which makes the whole delivery process much simpler and less risky. Other elements of the infrastructure, such as energy supply and water are provided by private companies who bid for the contract and then take their profit through long term contracts.

- Experience has been built up (and shared) in designing and building more sustainably through a host of local component providers and through factory built sub-assemblies (not hand-made on site)

Conclusion

Transferring the lessons from both the past and contemporary European experience will require more than 'worksheets' and checklists. Some form of ongoing collaboration, for example through exchanges, and seconding staff would pay dividends. It is extremely hard in the UK to secure funding for practical research, but the pay-off could be huge. The overall message is that lasting success will depend as much on innovations in the processes for procuring and managing development as it does on the physical masterplan and what the schemes look like. There are no shortages of good ideas for producing some breakthroughs, and which would justify further investigation by those involved in building new communities in places where there is undoubted demand.

As well as testing out the application of the possible economies listed here to specific schemes, it would be well worth undertaking a full comparison between similar schemes to understand more about how costs are contained and value added in the case studies we have used. This is not an easy task, as it is essential to compare like with like and to understand the implications of different funding mechanisms. There are likely to be major Treasury concerns with any attempts to raise significant funds locally, or to provide any form of public security that would count against the Public Sector Borrowing Requirement. But desperate times may cause serious reconsideration of the way the public and private sectors work in partnership. They may also lead to closer collaboration across European boundaries, including the involvement of Continental utilities and builders in meeting the higher standards that are being demanded.

Five practical ways of increasing the value of 'Eco- towns' :

1. **Land values.** Create a more realistic but sustainable supply of land based on minimum acceptable design, social and environmental standards that set a value benchmark. The aim might be to reduce initial payment to landowners from say 40% of sales value to 20%, payable when homes are sold and occupied (and possibly at the same time as the Community Infrastructure Levy and Section 106 agreements are complied with). Greater certainty may more than compensate.
2. **Planning and design.** Use carefully run limited competitions to procure services efficiently with an agreement on the overall concept to avoid duplicating work e.g. charters and also flexible designs in the public buildings to allow for changing needs. Masterplanners would be assured of continuing work once the scheme was approved. This could cut the cost of planning and ensure that lessons were learned and applied.
3. **Infrastructure.** Save on road construction by minimising space dedicated to the car, the need for foundations on side streets and through innovations such as the use of service ducts and shared surfaces. Extra investment would be recovered as rapidly as possible from the sale of serviced plots. It may also be possible to phase facilities, for example providing a simple railway halt at first and then building the station later.
4. **Construction.** Use simple basic designs and prefabricated components to respond rapidly to demand, achieve energy savings and go for builders committed to quality and training**.** Lean and flexible methods of construction will help match supply with demand and build up indigenous sources of supply. It is possible that the application of commercial approaches to house building e.g. shell and core, use of cranes rather than scaffolds, would pay off.
5. **Affordable housing.** Facilitate stair-casing and movement within the development as personal circumstances change and provide for a balanced population to even out demands on social services. Care should be taken to avoid allocating homes to households that require too much support in the early stages. There may be major scope for the involvement of volunteers in community building and environmental maintenance.

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