

SmartLIFE: Government, industry and education adapting to climate change

David Arkell
SmartLIFE Project Director
and Head of Innovation & Partnerships,
Cambridgeshire County Council

Introduction

The SmartLIFE project is a contemporary example of stronger and urgent local government leadership in the face of climate change. SmartLIFE illustrates how government, in a ‘triple helix’ with education and industry, can engage the construction industry and the consumer in the process of adapting to climate change through tangible and convincing actions that maintain choice but change behaviours. But, perhaps more crucially, rationally conceived objectives and activities can move us emotionally. If we connect our desires and quality of life aspirations with ethical, affordable and ecological solutions, then there is more hope of innovation before, rather than renovation after, the ‘flood’.

Cambridgeshire County Council leads the SmartLIFE partnership with Sweden and Germany, delivering at every level of government. The spirit of committed partners working with a desire to effect change delivers outcomes very quickly. In four years, Cambridgeshire has built an eco-exemplar business and training centre and 106 SmartLIFE homes, and established training courses and qualifications (5,000 SmartLIFE graduates to date), outreach educational programmes, conferences and seminars, and publications.

The terms adaptation and mitigation (of climate change) imply to some a reactive mindset. SmartLIFE is proactive and adopts the ‘precautionary principle’, recognizing the need to build homes in growth areas but understanding that this would damage our health and environment unless under the imperative to bring on innovative and sustainable methods of construction. The aims and outcomes are clear, but the complex change process and inventiveness of human beings – necessary for success – must be emphasized. Sharing enough detail here is vital if we are to truly learn, improve and scale-up our impact.

Emotional and reflective research can be drawn upon to support the notion that our limited behaviours and often predatory instincts, as illustrated by the economic recession, can be balanced by awakening our creative instincts. We cannot, we must not, wait for others to respond to climate change impacts, but must shift our thinking and actions now so that partnerships of government, education and industry can mobilize change and mainstream sustainability.

From rhetoric to reality – making sustainability happen through education, government and business partnership

This article explores the birth and emergence of a new project that concretely manifests the principles of sustainability and shows how government, business and education can work together when hearts and minds are connected.

‘To affirm life and integrity of the world is to reinhabit it just as it is, via the local modality of place ... It is to embrace our own role in those unfoldings, both at the level of sustainable practices and at the level of communicative exchange...’ (Matthews 2005 in Wooltorton 2006)

Talking about sustainability all sounds very nice: the right thing to do. And I believe it is right to maintain high-profile debate, even rhetoric, to increase global and local communications, but the essence of living sustainably is about change – now, for yourself, others and for future generations. My short article resonates with Wooltorton (ibid.) through the SmartLIFE example, a large-scale international sustainable development project funded by the European Union through the Interreg programme (North Sea Region).

The project was brought about through a creative human process of interpreting policy through an open, extensive, innovative partnership to promote and build capacity to supply sustainable homes and buildings. The project secured EU backing and set up a chain-reaction, translating highest level policy with local actions in the streets of Cambridge in the United Kingdom, Malmö (City Council) in Sweden, and Hamburg (AzB Technical College) in Germany.

The interconnection of cultures, disciplines, governments, politicians, legalities, finances, time and place came together as an imaginative act of sustainable action on



Cambridge SmartLIFE Centre.

the ground. SmartLIFE continues in this way today, and so is sustainable in its business offer, and in essence sets out to ‘reinhabit reality’, as Matthews (ibid.) calls it, as a platform exemplar to practise and learn to live sustainable lives. I believe SmartLIFE’s success lies in the way it centres on people and their basic need for shelter, housing, homes – so emotionally connecting need with the economic (affordability), social (community) and environmental drivers of the initiative.

I have a job that allows me to practise sustainable development at different levels in the local and international contexts, and part-time doctoral research into a reflective way of engaging our emotions in the workplace. Together, these activities enable me to discover things about myself and others in interconnective relationships that reflexively power change into innovative outcomes.

The frontline community work on SmartLIFE and other projects opens up dialectical debate across international perspectives but with shared organizational visions. Similarly, my research community has local and international perspectives within academia. Sustainability in the twists of the triple helix demands a participative epistemology in our postmodern, post-industrial times. This needs multiple methods of inquiry and multiple voices to be heard within our societies, and a knowing process to be authenticated alongside growing scientific knowledge about sustainability. It is about making the science meaningful and touching people’s lives – otherwise what motive is there to change?

The imperative for local authorities to use their power for step change

In the United Kingdom, with whichever government is in power, the local democracy must and can engage communities in low- and then post-carbon education, industry and behaviours. As David Mackay (2009) states, if we all do a little then we shall only achieve a little, but with tuned governance that leads and listens to people, there can be whole policy and action coordination to bring change – now. Everyone must know, want and desire a post-carbon future as this is the only known future, and so it is local authorities that have the duty to connect with people to lead and facilitate concerted



Cambridge SmartLIFE Centre:
building a house within the centre.

and individual changes to help establish post-carbon products, services, jobs, skills, behaviours and living.

The SmartLIFE example is different, and we are working with it as a changing barometer of low-carbon collaboration. It has evolved by responding to opportunities to intervene and thrive in a projected low-carbon marketplace. Cambridgeshire County Council and partners, and the local people, have supported this development into the next phase. SmartLIFE experience has been a springboard to further low-carbon ventures in the public/private/voluntary realm.

SmartLIFE homes

The project made no assumptions about the industry or customer position. From first principles, SmartLIFE engaged in focus groups and seminars to identify barriers and opportunities. In summary, the offer of flexible design, energy efficiency, reasonable costs and fast construction – to name but a few attributes of ‘modern methods of construction’ (MMC) – was very attractive. But education, industry and government were ill-informed about the actual and potential benefits of MMC. To some extent there was an urban myth to explode that pre-fabrication – or ‘pre-fabs’ – were cheap and of poor quality – a legacy from different periods of the 20th century.

In the United Kingdom, SmartLIFE partnered with the Building Research Establishment (BRE) to work with the housing industry in order to assess how MMC could play a role in delivering more housing at lower cost to more rigorous sustainability standards, while wrestling with site skill shortages and extra costs. To add to the challenge, issues such as quality, sustainability, and health and safety have continued to move up the agenda. Thought-provoking reports by Latham (1994) and Egan (2004) recommended new ways of working to improve and successfully deliver buildings against these challenges. In response to these drivers, MMC’s innovative approaches to design and construction were developed. These include offsite fabrication of bathroom pods, and use of pre-manufactured steel and timber frames for housing. There has been a concerted effort by the housing industry over the past decade to apply MMC to developments, with varying degrees of success. Although the technologies have been around for some time, their application still seems to be surrounded more by myth than fact. Research in the field of construction methodology is so lacking that often it is difficult for developers or contractors to compare and select the right approach for their requirements, whether conventional ‘brick and block’ methods or MMC.

BRE and its partners thought it was time to unravel the dark art of MMC by producing hard data for both conventional construction and MMC. The SmartLIFE project set out to apply scientific measurement to compare the construction of MMC and conventional systems. Where possible, it has also standardized the design, site and work packages to ensure that accurate data are collected. Many people have seen the SmartLIFE project as the project that would finally pinpoint what system is the ‘best’, and by how much. However, more importantly, SmartLIFE has highlighted that all systems have benefits, and selection of the right method depends on each project’s characteristics and requirements. Through the projects highlighted in this report, we have been able to show that long-term partnership, first highlighted by Latham (1994),

is the most crucial factor, and with this in place an MMC system can deliver housing more quickly and cost-efficiently than other methods. It was noted that, technically, a home could be built within two weeks, compared to around eight weeks or more with conventional methods. Crucially, the roof can be fixed very early in the build process to allow trades to work in the dry.

SmartLIFE built 106 homes using conventional and different types of MMC design. This demonstrated that it is possible to deliver conventionally constructed housing to a high level of sustainability. The main causes of delay and high costs are poor understanding of the systems and lack of communication, whether using conventional construction or MMC. BRE is not claiming that these findings are new or innovative – most construction professionals know instinctively that better teamwork makes better buildings. However, the difference is that there are now hard data to quantify the issues and benefits, and this is the first time that this has been achieved. The SmartLIFE Fenland project is now complete, but this is the first of a number of projects. The project was undertaken to show that good, independent data can enable the whole supply chain to understand the issues and act on them from an educated position. With these informative data, the myths around construction and MMC can start to be dispelled, and the most appropriate methods can be applied to our projects to the benefit of the industry and occupants alike.

The triple helix interventions: education, business and government

I now wish to reflect how a clear vision and shared passion realized change and results. SmartLIFE's continued sustainability was as much about a collective and emotional holding on to the 'common good' purpose in the public sector (by all staff working directly or indirectly on the project), with managed commercial partnerships unfolding to ensure product and market delivery to customers.

We are at a time of huge change and confusion, not about the facts of climate change *per se*, but about where to invest and how to change things to make repair and set out new ways of living. The SmartLIFE project takes on the powers, funds and motivations of vertical (levels of government) and horizontal (education, business and governmental sectors) degrees of partnership to make a substantive intervention to the supply side for sustainable development. The idea is that the demand side (or market) will connect with a local economic, environmental and social need for sustainable development. This is a very basic economic model, but to make it work in reality people must be resolute with belief and give emotional energy and commitment to making it happen. SmartLIFE shows that this can work.

SmartLIFE is a physical and emotional nexus for different people to (re)interpret sustainable objectives in the built environment. Put simply, it is through a creative process of 'doing the project' that people can identify with sustainability. Pulling the activities together that feed into physical manifestations of change is cathartic and intrinsically emotional, as it draws on excitement, passions and desire for a difference.

Sparkling from a simple but catalytic idea that local government must get involved in building affordable and sustainable homes and communities – and not leave it to largely disconnected agencies and the un-finessed market economics – a meeting of

local and international minds adopted a vision. This was a simple vision: to build capacity for affordable and sustainable homes. The emphasis was on real homes, across mixed tenures of full social, shared-equity and full commercial properties that, in their markets, were affordable and replicable – and appealing to customers.

SmartLIFE vision and outcomes

The vision is to create capacity to build and maintain sustainable homes. A range of outputs and outcomes have been established that in combination provide a legacy of infrastructure and knowledge that supports and energizes further development work.

Outputs

1. Three SmartLIFE Centres in Cambridge, United Kingdom; Malmö, Sweden; and Hamburg, Germany. (The UK focus is on MMC training, business exchange and conferencing; Germany on refurbishment using modern methods; and Sweden on building dialogue between professionals, moving into innovative low-carbon seminars/training and business start-ups). The Cambridge SmartLIFE Centre is a timber-framed MMC construction with 40 per cent of energy needs met from renewable sources. The Hamburg and Malmö centres are eco-refurbishments with retrofit of renewable energy technologies.
2. MMC training courses/qualifications.
3. 106 demonstration homes.

Additional developments comprise:

- renewable energy training and awareness for students and decision-makers (e.g. Development Control Committees);
- UK roll-out of training into a 16-19 year olds' diploma course and enrichment training;
- SmartLIFE retrofit and refurbishment projects for existing homes;
- a new low-carbon education and enterprise park incorporating a SmartLIFE Low Carbon Centre and Innovation Park of world-leading eco-exemplar housing.

Getting immersed and connecting the issues

The project team assembled all the policy documents and established the gap in the capacity of all stakeholders to supply affordable and sustainable houses. This gap analysis created an impetus for change and a determination to cut through the fear of 'getting it wrong'. The application to the EU Interreg programme was supported by the UK government and provided the vehicle to move quickly. But this was in 2003, before the more directive policies and multi-agency work (and hence powerfully convincing rationales to satisfy funding stakeholders) drew on our collective emotive and imaginative energies. We had frustrations and set-backs in applying for funds, but



Cambridge SmartLIFE sustainable houses.

ultimately succeeded in packaging together a programme of funded project activities – from student exchanges, new course development and marketing to major capital funds to build three eco-exemplar SmartLIFE Centres.

From this beginning a partnership was quickly established, and Swedish, German and British friendships and mutual respect galvanized around the excitement and building profile of the project. A vital part of early success was the cross-fertilization of disciplines and ideas, especially through exchanges of students, teachers, businesses, consultants and politicians. This created a family of trusted members working for a unifying goal.

We set up early dialogues with industry and other agencies, and soon discovered that this project should not be rooted in a single sector (construction) but must provide a cross-discourse, multidisciplinary approach pivoting around a real community-owned sense and reality of place – provided by the SmartLIFE Centre. Rapidly, public and private sectors wanted to come to the SmartLIFE ‘playground’ to share ideas, products and materials and be part of the solution.

We also recognized that sustainability needs innovations to arise in both the supply of products, services, training and skills (capacity), and in demand – a demand that is not based on paper policies and general awareness but a consumer base and democratic power that buys into sustainability. However, the social and environmental footings of sustainable development must be supported by economic justification – a business case that ultimately the market can sustain.

Evolution of the SmartLIFE business platform to facilitate change

The SmartLIFE story is a leading example of collaboration between the public and private sectors. The success of exchange of experience and learning has been a therapeutic education process, allowing innovative thinking to come through and



Hamburg SmartLIFE Centre: schools and colleges engagement.

provide a type of social enterprise service. The ‘easy’ route is to commercialize the public sector’s intervention, and possibly close down the enterprise or at least pass this on to a private body to operate. But this pattern has been replaced by the collective emotional movement in the partnership to keep the partnership alive. This not-for-profit enterprise is managed by a public-controlled board with licensed partnerships with other sectors. SmartLIFE attracts income to pay for developing the service and partnership as a public-sector venture. This raises income that maintains and develops the SmartLIFE business and its position in the marketplace. This structural position is as important as the work outputs themselves, and is central to collaboration for sustainable development – a ‘win-win-win’ for the public, private and education sectors.

Within this example are typical stories of ups and downs, summarized here all too simply as natural and changing human ambitions. Many individuals involved in SmartLIFE have contributed a great deal and then progressed onwards in their careers (taking SmartLIFE experience of practical sustainability with them). I believe the holding of SmartLIFE as a partnership and encouraging flexibility and inclusion of different players is a powerful feature of success in achieving a vehicle to deliver meaningful and felt sustainability.

The barriers of financial, legal and other conventions have sometimes held things up but, for the most part, people rally round the project’s purpose with extra support to seek positive results. Political support has grown through communications and tangible outcomes. As one senior official put it at a recent meeting in praising the significance of the project, particularly its tangible assets, ‘SmartLIFE is sustainability you can kick!’

Student engagement is the lifeblood of the project. SmartLIFE outreaches into primary and secondary schools, to engage students in competitions on creative ideas for sustainable homes and how we communicate to society. Teachers include SmartLIFE in their geography and science curricula. The new 14-19 year olds’ diploma in Construction and the Built Environment has embraced the SmartLIFE example. Students aged 14-16 undertake enrichment training and are particularly enthused by being able to build a full-size home within the SmartLIFE Centre in a day. There are many examples of delivering training and qualifications, but most inspiring has been vignettes, such as the two 13 year olds who, inspired by SmartLIFE outreach work, progressed to SmartLIFE vocational NVQ2 (National Vocational Qualification stage 2) courses to then set up as an entrepreneurial company employing other SmartLIFE graduates.

Not a concept, paradigm or even a particular worldview

Sustainability is by definition everything to do with that on Earth and of the Earth, within the bounds of whatever we think is our cosmos. Ontologically it is the world, the planet, our lives, futures and our very lasting existence as human beings. This existence is at the core of emotive actions that connect human souls in a community of sustainable living. I do not want to appear romantic or overly simplistic, but if sustainability or survival is our goal, there is no alternative hypothesis, or ‘do-nothing’ option. There must be more and more a re-connection of body, mind and soul in channelling emotional energy into essential change. As we attempt to meet climate

change targets there is the imperative to transform thinking and actions over a very short timescale. SmartLIFE has shown how new ventures can establish themselves very quickly and intervene with influence in the government, industry and education market places. From idea to project completion it has been just three and a half years.

Sandra Wooltorton (2006), writing for a SmartLIFE-sponsored book, calls for a 'reconnective learning' to tackle the rhetoric-reality gap. In line with critical theorists, there needs to be a dialectical process and reflective practising to engage our passion. SmartLIFE continues to progress through being a physical, operational and independent meeting space that welcomes open innovation and imagination. At the centre of the project is the lifeblood of young people (16-19 year olds) learning sustainable crafts and modern ways of building sustainably. Now we are progressing projects to interconnect this to the veins of school curricula, higher education and business entrepreneurs to embed and engender a low-carbon economy.

Further development: The Hive

The success of SmartLIFE has been recognized by education, industry and government. Building on this cross-sectoral foundation, SmartLIFE is diversifying and broadening its reach in the business of capacity building for a low-carbon built environment. A partnership of education, government, industry and social enterprise is developing an education and enterprise park called The Hive, located near the SmartLIFE Centre in Cambridge.

An eco-excellent SmartLIFE Low-Carbon Centre will open in 2011. At its heart will be the teaching of skills essential for technological products and services alongside business ventures and partnerships. Demonstration of new SmartLIFE eco-homes and retrofitted existing homes will be accessible to industry and public alike. On the same site a major social enterprise development will house small and medium enterprises, start-ups and social enterprises. Together, an ethical business and education ethos will underpin a rich mix of activity and creativity. Crucially, this will be in a single place that is open to all, to be part of a major vehicle to inform sustainable choices as we de-carbonize our society. The Hive project was publicly launched in December 2009.

No conclusion...but an onwards knowing process

A final word pays reference to Abram (1996) who studied cultures that have a sensorial and emotional interconnection with the Earth. He feels that 'When reflection's rootedness in ... modes of experience is entirely unacknowledged ... reflective reason becomes dysfunctional, unintentionally destroying the corporeal, sensuous world that sustains it.' I say we must embrace and embody all our senses in a relatedness of the conceptual, experiential and soulful in order to innovate and collectivize sustainable behaviours and living. I see honest reflection of people caring together to enable the 'bringing forth of a world' (Maturana and Varela, 1987). This must be a co-creating with imagination and soul so that we reflect in our actions, '...knowing how we know... a process of turning back upon ourselves'.

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Biography

David Arkell is the originator and Director of SmartLIFE – an international initiative building capacity for sustainable homes, and leader of the Hive programme (an education and enterprise park for a low-carbon economy). As Head of Innovation & Partnerships at Cambridgeshire County Council, he works across international and local partnerships to attract funding, develop ideas and deliver solutions to shared challenges.

He is a chartered planner, engineer and marketer with a wide-ranging career in the public sector. With a passion for lifelong learning, he has post-graduate degrees in planning and engineering, marketing, management, and business. He is also researching and writing on emotional intelligence and reflective practitioning.

David.arkell@cambridgeshire.gov.uk