

We Need to Talk about 'Development'



Professor Sandy Halliday, Principal of Gaia Research gives her perspective on the awesome challenge humankind faces to reverse unsustainable trends and why the challenge is an exhilarating prospect.

Sandy is a chartered engineer working in research and design of sustainable buildings and places. Her degree in Engineering Design & Appropriate Technology focussed on socially and environmentally responsible engineering, when such things were very unfashionable. She is the author of **Sustainable Construction** (2008) Butterworth-Heinemann.

'**Sustainable development**' has suffered from an image problem. It requires us to act in a sensitive manner towards natural systems, and has for many years been seen as a restraint on '**development**' per se.

A clue to the image problem lies partly in our use of language. Currently the 'S' word is rarely out of the press, lecture theatre or office. For something this ubiquitous it is remarkably poorly understood, and the source of much debate and disagreement. Many of those who take issue with the placing of '*which*' and '*that*'; engineers who justifiably splutter at their students' random use of '*power*' and '*energy*'; and politicians who can fit a bus between '*government*' and '*parliament*'; are content to use 'sustainability', 'environment', 'global warming', 'climate change', 'carbon' and 'energy' interchangeably. It doesn't help, and it does highlight a real confusion. It appears that increasingly people talk about sustainability like 10 year olds talk about sex, a lot, but without any great insight. We need to talk about the 'D' word. Sustainability is about how humanity *develops*.

Only recently, 40 years after the 1st meeting of The Club of Rome, 35 years after the 1st international conference on the environment, and 35 years after I first read about the impact of climate change (in my biology text book - 2.8°C increase by 2020 – much the same as current predictions) is it emerging that sustainability is a totally justified restraint on **inappropriate development** and a major driver of reversing unsustainable trends and hence improving quality of life for all.

We should be encouraged. Human skills and ingenuity have transformed the environment. The quality and quantity of life in recent decades has vastly extended, for many. However, for some, '*inappropriate development*', means that good life quality has become a distant memory, and for many others there have been unintended consequences that can take the edge off any urgency for celebration. These unintended consequences - disaffection, inequality, pollution, an obsession with consumerism, or erosion of the rights of the elderly - portray the extent to which our activities lead to unsustainability.

There is much to do. Across the globe there is a realisation that pursuit of progress has unintended consequences that need to be recognised and avoided. Resolving the dilemmas that result from human progress, and taking frequent reality checks to ensure that what we are doing is taking us in the right direction, is **the** most progressive, positive agenda, and perhaps the most awesome challenge we face.

However, I find clients, designers and students most responsive to the concept of sustainability when they are presented with the emergence of the fundamental principles, rather than a definition. A multi-dimensional perspective on the issues and challenges provides a good grounding and a basis for creativity and problem solving to emerge.

the history of international action

Much visual art, religion and poetry would suggest that concerns for the natural environment are deep rooted in the human psyche. Yet it was very recently that environmental protection became a respectable concern. In the 1950s such concerns were perceived as a preserve of the elite and of the politically subversive– strange bedfellows in other times! A change in attitudes began in the 1960s mainly in developed countries, with concerns about pollution, disaffection, wealth imbalances and urban sprawl. Rachel Carson's work on toxicity played a seminal role in highlighting the fact that all things are connected.

The first Club of Rome meeting in 1968 opened up the international debate on "How we develop?" The resulting 'Limits to Growth' report stated – I paraphrase - "it is not the number of babies, cars or refrigerators that put stress on an environment, but the efficiency with which we use resources and minimise pollution and net waste". It delivered the, to my mind, optimistic conclusion "that there are limits to growth but no limits to development." Development is largely in our power of design, invention and creativity.

The UN meeting in 1972, at which 113 countries were represented, transformed the environment into an international political issue and signalled the birth of agencies and legislation to resolve the conflicting dilemmas of growth, development and environment. It was recognised as pragmatic and in every country's interest to do so.

By 1987, and the Brundtland Commission, sustainable development was firmly established as international policy underpinned by agreements on the precautionary principle, inter and intra-generational development, protection of bio-diversity and internalising external costs...and that's over twenty years ago, so where are we now?

sustainable design is that which delivers real benefits

Most countries have ignored the agreements and are adopting styles of development that are inappropriate and unsustainable. The quality of most built development, for example, is a disgrace. Global improvements are the exception, not the rule. There is ever increasing demand on the earth's limited resources, escalating pollution and growing inequity. With evidence of massive environmental damage in developing nations it can seem pointless to try to do anything.

So, it is now more important than ever to appreciate that *sustainable design is that which delivers real benefits*. We need look no further than pedestrianisation to see that rules and guidelines reap instant rewards! And that there is much to be done!

The legislative context is unhelpful, and typically two decades behind best practice. Instead of seeking best value, healthy, efficient buildings our government and policy initiatives are looking for one-dimensional margin chasing technical fixes, which will leave a sorry legacy. The opportunity to drive forward successful, affordable, healthy new build and refurbishment initiatives by and for communities is ignored because many people do not know what they do not know.

Alongside the environmental destruction there are exemplar projects that address social, economic and environmental issues simultaneously and challenge people to think about what is *appropriate* development.

How good would it be if all future development of land, buildings and the economy were *non-toxic, equitable, supportive of community and bio-diversity and resource-efficient?*

This is sustainable development. It is not difficult. It is not expensive. It is not ugly and it is not all about energy. It's about design. We have the knowledge. We just need to commit to making development appropriate. It's up to us.

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May 2009 North East Mainline Train Kings Cross - Edinburgh

Sandy initially worked on design of socially useful products. She moved into the building services sector as a research manager to develop & disseminate information on passive design, resource efficient & clean technologies, healthy buildings, and benign processes, products & materials. She established Gaia Research in 1996 to develop sustainable solutions for the built environment where she works collaboratively with architectural, engineering, urban design and landscape practices in responding to the challenge of making sustainable buildings and places.

Sandy's work now extends to a capacity-building service to assist clients and design teams to deliver their aspirations for more sustainable buildings as well as policy and design and process guidance for government and private sector clients; training.

Between 2001 and 2004 she wrote a continuing professional development course for built environment professionals and ran courses in London and Edinburgh. This was updated and published by Butterworth-Heinemann as Sustainable Construction (2008) www.get-sust.com/newsletters/issue35/35_reviews2.html It is a resource guide to the delivery of a more sustainable built environment.

Gaia has an extensive range of other publications available, many on-line, including design and construction of sustainable schools, low allergy housing, dynamic insulation, solar air-conditioning and design for toxic chemical reduction in buildings.

Business Activities

Gaia Research (1996) specialises in developing and disseminating sustainable design strategies, processes and technologies for the built environment. Our aim is to support delivery of healthy, resource efficient and affordable buildings of excellent design quality. We offer research, design advice, design development, policy development, brief writing, tender review, training, community consultation, feasibility studies, option appraisal, engineering strategies and post-occupancy appraisal. We are increasingly involved as specialist advisors for clients looking to develop an affordable sustainable approach.

Gaia Research is renowned for high quality training and broad ranging research and guidance. We have been involved in innovation in the field of process guidance (Green Guide), ventilation systems (dynamic insulation), materials (animal architecture) and new technology (solar air conditioning) since our inception. We have developed expertise at the forefront of practice in sustainability into training packages for clients, designers and contractors.

In response to increasing demand Gaia Research have joined forces with Gaia Architects to offer a sustainable design advocacy service to clients, project managers and design teams. Sandy first undertook such a role for the BRE Office of the future team in 1993 and has since gone on to work on a wide range of projects including the new campus for Queen Margaret's University College (£120M) at East Lothian. She is currently advising the University of Strathclyde on the £350M development of the University Campus.

Gaia Architects (1984) has pioneered affordable, sustainable building design. They have real practical experience in delivering quality sustainable built development projects (refurbishment and new build) in the UK; including large and small scale award winning developments in urban, suburban and rural situations. They are recipients of a UN World Habitat Commendation for Fairfield in Perth, and the RICS International Sustainability Award for the Glencoe Visitor Centre. Howard Liddell, Principal of Gaia Architects, is increasingly sought out by other architects to provide sustainability advice. Howard has the only A-rating in the RIAS Sustainable Design Accreditation scheme based on third party assessment of work from design evidence, client feedback and a combination of the scale and levels of complexity and innovation of delivered and monitored buildings.

The unique practical experience and professional expertise in taking responsibility for design, management, cost and delivery in practice gives enormous added value to training and consultancy. The experience in delivering real projects brings knowledge of the process aspects of design and an understanding of the real practical difficulties in delivery of sustainable buildings and importantly in how to overcome the difficulties.

When needed we call on additional best practice expertise and with a core team who have worked together extensively for many years we embrace architectural, urban and environmental design, graphic representation, material specification, engineering systems, infrastructure, landscape, water, finance, modeling, ventilation and indoor air quality.

It is our experience that it is possible to deliver much more sustainable buildings at the same cost as standard construction, and that this relies on bringing together an effective combination of aspiration, commitment and information with the right balance of incentives and prescription. We consider it is important to analyse processes and to "do the sums" so that vital elements to success can be communicated. This is added value. We are particularly keen to target those aspects of construction activity that are not optimised such as mechanical services that are an escalating aspect of building costs.

Gaia Research Current and Recent Projects

Fife Schools for Fife Council – Environmental consultants to the Architecture Services in the design development of two new schools.

Urban Design Summer School for CABE - Gaia successfully bid with members of Aston University and others to run the Summer school and have special responsibility for fully integrating sustainable design. The core purpose of the school is to promote the creation of a high quality public places. Over four days delegates build the knowledge, the desire and the capacity to procure, design and deliver this objective. Bristol is the venue for 2009.

Kijiji Project for the Children of Songea Trust. Gaia has adopted the Trust as our charity of choice for 2008-2012 and are volunteering design and personal time. The charity works with a community in Tanzania to improve the life chances of children affected by poverty & HIV/AIDS. Gaia is helping them to break the cycle of dependency by assisting the move from rented buildings to a new site that is ripe for self-build and agricultural development.

Ingrebourne Visitor Centre for Havering Borough Council Gaia are working in a consortium with Maccreanor Lavington Architects on a Visitor Centre in East London. The team was awarded the contract due to a combination of the exciting hall design, the eco-minimalist approach and the experience in community consultation.

Activities Centre, Golf Club, Educational Facilities for Wigan Council and English Partnerships. Gaia are engaged in a joint venture at a former opencast mine being reclaimed for recreation.

Indoor Air Quality and Energy Efficiency in Traditional Buildings for Historic Scotland - a brief overview of indoor air quality and energy efficiency issues in traditional buildings.

Sustainability Guidelines and Policy Development for Port of Leith Housing Association- Training, policy and brief development.

Refurbishment of Renewable Technology Laboratories for Scottish Enterprise - Brief development and design guidance on low carbon regeneration of 60's, 70's, 80's and 90's buildings. The project will set a precedent for the affordable regeneration of vast amount of stock from the latter half of the 20th C.

Sustainability Guidelines and Training for Camden Borough Council- training on policy development for a sustainable Camden.

Sustainability Guidelines and Training for Fife Council - development a framework for use by development control, building control and others to underpin planning policy at all scales from individual houses to masterplan development and aid development of sustainable places and sustainable communities.

Sustainability Guidelines and Training for The Urban Design Forum London – training on best practice approaches to housing design and place making.

Sustainability Advisor for The University of Strathclyde: developing and overseeing the sustainability strategy for the £350M development of the campus and providing real-time guidance to design teams. Includes design guidance for new sports and health, and faculty buildings, research facilities and a number of major refurbishments.

Development of Planning Guidance for Clackmannanshire Council – analysis of planning proposals for both public and private sector developments within Clackmannanshire Council area against an innovative framework.

Sustainability Guidelines and Training for Hackney Borough Council - training on policy development for a sustainable Hackney.

Sustainability Guidelines and Training for the Big Lottery Fund – development of a framework to be used to appraise the sustainable development aspects of applications. It allows grants officers to make measured, informed and objective assessment of the answers received to questions about sustainable development.

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A Model Brief for a Housing Development for Clackmannanshire Council - Sustainable Design and Construction Guidelines in the form of a brief for a best practice public and private sector developments.

Acharacle Sustainable School for Highland Council: Gaia was successful in winning the contract to design and build and to monitor the school post occupancy. The project was handed over in May 09 and is the first passive standard school in the UK.

Sustainability Advisor for RE-LOCATE: developing and overseeing the sustainability strategy for the relocation of Queen Margaret University from locations in and around Edinburgh to a new £120M campus comprising library, sports, staff and student accommodation and a range of office and teaching spaces.

Sustainability Advisor for North Staffordshire Council – developing and overseeing the design for an education centre that will be the focus of the LA's climate change strategy.

Sustainable Design Framework - Laurieston for Glasgow City Council and New Gorbals Housing Association –developing a framework for sustainable development for the Masterplan which can carry through to appraisal of developers.

Sustainable Construction and the Regulatory Framework for the Scottish Executive: Strategic and specific input on issues to be addressed by the Building Regulations following the implementation of the Building Scotland Act 2003 in which furtherance of sustainable development became a fundamental requirement.

Sustainable Construction CPD for the DTI: A ground-breaking, interdisciplinary programme of sustainable design education and cpd for building designers, clients, their advisors and all those involved in sustainable development of the built environment. It is modular. The 15 elements form part of Gaia's consultancy, research and development thinking.

Co-Author for a book on Exemplar Sustainable Schools for the DFES: Developing text and case studies for a book to exhibit best practice in schools design.

The Book of the Norwegian and German Schools for the Scottish Executive In 2003 Gaia organised a tour to Norway for the Executive, local authorities and building designers to

investigate sustainable schools initiatives. This was repeated in October 2004 in Germany. Gaia was commissioned to write up the case study projects.

Client Guides to Sustainable Construction for the Scottish Executive and the Lighthouse:

Development of building procurement guides for social housing, private sector housing, schools and offices.

A Brief for a Sustainable School for Highland Council: Following the tour of Norwegian Schools, the Gaia Group were commissioned to write a brief for a sustainable school for a specific location in the Highland region. The project involved extensive community consultation – workshops with adults and school children – a full access and landscape strategy and a sustainability audit of design options based on local resources. The brief was subsequently used as the basis for an invitation to tender for architectural and engineering services for the school.

A Sustainable Vision for North Lanarkshire Council: with members of Gaia International from Finland, Hungary, Norway and Denmark, Gaia undertook a study tour and organised workshops for the planning, housing, transport sectors to assist NLC in developing a vision and strategy for a sustainable future.

Sustainable Construction Policy and Development Framework for East Riding Council:

Setting an overriding policy framework and guidance for this leading edge unitary authority's approach to the built environment.

Green Guide to the Architect's Job Book for the DETR: The publication sits alongside the Architects' Job Book as an environmental aide memoire for busy professionals to enable them to formalise the management of environmentally sound practice..

Sustainable Design Consultant for The Seabird Centre: Advisor to this award winning project providing guidance on cost and energy savings through reduced M&E services.

Low Allergy Housing for the ODPM Building Regulations Division: Developing and monitoring an affordable low allergy building specification applied to 14 new build houses. To investigate the financial implications of allergy free housing, and to provide information on extending the scope of barrier free design.

Living Lottery Bid for the Regeneration of the Shotts/M8 Corridor for North Lanarkshire Council and Scottish Coal - to expand, package and position a series of inter-related development proposals into a Strategic Masterplan for Regeneration for the M8 corridor.

Toll House Gardens, Perth for Fairfield Housing Cooperative - 14.no 1,2 and 3 bedroom flats and cottages. The development features a low allergy trigger specification and best practise airtightness detailing, was designed in tandem with a DTI / RIBA research award.

Leslie Court, Perth for Fairfield Housing Cooperative Gaia designed 18 apartments with sun scoop form, breathing walls and natural finishes.

10 Nicolson Street, Edinburgh for Edinvar Housing Association - the refurbishment of a traditional tenement involved housing with high ecological specification including airtightness detailing, moisture control and low allergy material specification.

Aviemore North Master Plan, Aviemore: A threefold client group appointed Gaia to produce a sustainable development master plan for 200 houses.

Publications

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Design for toxic chemical reduction in buildings, (2008) Scottish Executive & SEDA,

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Energy Efficiency & Indoor Air Quality in Traditional Buildings (2009)

www.historic-scotland.gov.uk/gaia-research-report-indoor-air-quality-and-energy-efficiency-in-traditional-buildings.pdf

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Underfloor Heating (2008) Sportscotland

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Sustainable Construction and the Regulatory Framework (2004) Gaia Research

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Sustainable Rural Housing, (2000) Scottish Executive

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Working with Participation: Eco-City A model for children's participation in the planning & regeneration (co-authored), (2000) Children in Scotland

www.childreninScotland.org.uk/html/pub_tshow.php?ref=PUB0019

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<http://daylight.sportscotland.net/Understanding%20Daylight/Index.htm>

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A Theoretical Evaluation of Solar-Powered Desiccant Cooling in the UK, BSERT (1999) Vol. 20 (3).

Guidance on Environmental Building Design, (1999) Gaia Research

Dynamic Insulation- Past Present & Future, (1998) Gaia Research

Dynamic Insulation in Practice, Seminar Outputs (1998) Gaia Research

Solar Air Conditioning – Seminar Proceedings (1998) Warwick

Solar Powered/Gas Hybrid Air Conditioning (1998) CIBSE Conference

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