

Sustainable Development Study Tour

Freiburg, Germany

October 2006



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1 Foreword

In November 1944, much of the medieval centre of Freiburg was destroyed in a bombing raid. Yet its magnificent cathedral survived - miraculously unscathed - and many of the buildings in the 'Old Town' have since been rebuilt in their original style to delight today's residents and visitors alike.



But Freiburg's historical façade sits alongside some thoroughly 21st century technology in what has become known as Germany's federal capital of sustainable development. The momentum behind much that has been achieved can be traced back to the 1970s when the University community joined forces with local farmers and other citizens' groups to oppose the nearby construction of a nuclear power station.

Since then, the city's achievements have been nothing short of remarkable.

It boasts a public transport system which carries some 70 million passengers annually and is used by almost a third of the commuting population every day, while another 30% go to work by bicycle. Commuter car journeys have fallen dramatically since 1976, from 25 000 per day to 6000 with a consequent 50% fall in road accidents. Oh, and a monthly commuter's ticket will cost you a paltry £25.

Freiburg is also a 'Solar City', with a municipal energy policy based on conservation, new technologies and renewable energy sources, to meet the ambitious goal of reducing the city's CO₂ emissions by 25% of 1992 levels by 2010. The evidence is seen everywhere - solar panels on city centre buildings, factories manufacturing energy technologies, whole suburbs built with energy conservation in mind from the outset.

Recycling rates of less than 10% at the beginning of the 1990s are now over 60%. More importantly, the city has encouraged the reduction of waste through voluntary agreements with companies and residents. Freiburg now disposes of less than one fifth of the volume of waste it dealt with in 1988.

Yet this is no city of fundamentalist 'greenies'. The shiny German car marques sit in many driveways, McDonald's and Gap are as obvious in the shopping streets and there are even a couple of Irish pubs among the *bierkellers*. But with a population almost as big as Belfast's, the people of Freiburg make a much smaller footprint on the earth.

So we went to take a few German lessons.



2 Introduction

2.1 Tour Programme

Concordia organised a study tour to Freiburg in south-east Germany to investigate how this city has used the principles of sustainable development to guide its growth over the last thirty years. The visit offered participants an opportunity to see how the municipality has supported its business community and its citizens to reduce their ecological footprint while maintaining an enviable quality of life.

The purpose of the study tour was to demonstrate the application of those aspects of sustainable development that have been implemented successfully in Freiburg. Concordia wanted to promote inspiration and lesson-learning to all four of its social partners – agriculture, NGOs, public sector and trades unions - with the objective that their representatives on the tour would subsequently be active in the promotion of sustainable development within their own sectors in Northern Ireland. In addition, Concordia sought to promote positive links among the delegates from the four sectors.

2.2 Participants

Tour Facilitators

Jim Kitchen	WWF Northern Ireland
David Mark	Concordia

Participants

Tom Hegan	Director, Northern Bio-energy
Hugh McCollum	Farmer
Roy Campbell	Farmer
Rose Ferguson	Farming Partner
Robert Brennan	Director, B9 Organic Energy Ltd
Bryan Gregory	Director, RPS Belfast
Seamus og Gallagher	Policy Officer, NI Environment Link
Ian Cole	CEO, Tidy Northern Ireland
Ciaran Mullan	Area Manager, Sustrans
Jonathan Lamberton	National Trust
Neil Alldred	Irish Congress of Trade Unions
Eamonn Donnelly	Social Economy Solutions
John Gilliland	UK Sustainable Development Commission
John Anderson	Council for Nature Conservation & the Countryside
Lorraine McCourt	Craigavon Borough Council

2.3 Itinerary

- Monday: **Travel to Freiburg**
- Tuesday: **Presentations at ICLEI International Training Centre**
- Freiburg's environmental policy
 - Local Agenda 21 in Freiburg
 - Sustainable Procurement strategies
- Solar Power visits**
- The Solar Classroom
 - Solar Info Center
- Visit to the carbon-neutral Hotel Victoria**
- Wednesday **Visit to Vauban, a sustainable model district**
- Low-energy housing
 - Traffic-free suburbs
 - Solar design: architecture & panel manufacture
- Visit to 'Mobility Station'**
- Freiburg public transport policy
 - Cycling in Freiburg
- Thursday **Visit to Rieselfeld**
- City planning policy
 - Resource management in construction
- Rural land use demonstrating on-farm applications**
- Organic farming
 - Wind energy
 - Solar energy
 - Biogas production
 - Biomass heating
- Friday **Wrap-up workshop & travel to Northern Ireland**

3 Background to Sustainable Development in Northern Ireland

3.1 Government Policy

Following a lengthy gestation, Northern Ireland's first strategy for sustainable development, *First Steps towards Sustainability*, was published in May 2006. At the same time, the responsibility for putting the strategy into practice was placed with the Office of the First Minister and Deputy First Minister (OFMDFM). The strategy recognises that every department of government will make some contribution to its successful delivery, but the process will be driven by OFMDFM, putting sustainable development at the heart of policy-making in Northern Ireland.

Delivery of the strategy is to be guided by a series of implementation plans, the first version of which was published in November 2006. This initial plan has government departments as its principal focus and each department has been involved in identifying the key activities that will contribute to the achievement of the strategy's targets. It is intended that future iterations of the implementation plan will seek to augment the delivery of sustainable development by engaging other sectors of civil society

First Steps towards Sustainability identifies six themes and 63 key targets:

- **Sustainable Consumption and Production:** 7 key targets dealing with resource efficiency, public procurement and minimising the impacts of consumption.
- **Natural Resource Protection and Environmental Enhancement:** 14 key targets covering landscape management, biodiversity conservation, air & water quality and the care of the historic environment.
- **Sustainable Communities:** 13 key targets embracing economic development, health and well-being and the development of community engagement and citizenship.
- **Climate Change and Energy:** 9 key targets to reduce greenhouse gas emissions, prepare for the impacts of climate change and establish Northern Ireland as a leader in renewable energy technologies.
- **Learning and Communication for Sustainable Development:** 10 key targets to promote the skills and knowledge to promote SD and to bring about the behavioural change that will lead to a sustainable society.
- **Governance and Sustainable Development:** 10 key targets leading to the mainstreaming of sustainable development across Government and enhancing appropriate mechanisms for accountability.

3.2 Non-government involvement

Ours is a bountiful planet but not a limitless one. Research¹ has demonstrated that if everyone in the world used up resources at the same rate as we do in Northern Ireland, we would need three planets. We need to move from this 'three-planet living' to 'one-planet living', the real goal of sustainable development.

It is clear that the government must take a lead in ensuring a widespread acceptance of sustainable development across society and to begin by getting 'its own house in order'.

However, the process of sustainable development will involve every part of society – from public agencies to businesses, from the voluntary sector to every household.

¹ WWF: Living Planet Report 2006 http://assets.panda.org/downloads/living_planet_report.pdf

A range of organisations has already been involved in the preparation of the sustainable development strategy. In 2002, a long-awaited government consultation paper, *Promoting Sustainable Living*, generated over 80 responses from various quarters. However, because of 'competing priorities' in the Department of the Environment, then responsible for sustainable development, little progress was made on the issue until mid-2004, when the department established a small advisory panel of external 'experts'. This body was expanded into a much larger stakeholder group at the end of 2004 with terms of reference to, *inter alia*,

- Provide a forum for the various stakeholders to discuss and inform the iterative process in the development and publication of a sustainable development strategy for NI
- Outline potential implementation issues arising from the proposed strategy objectives and targets
- Identify and debate potential sustainable development indicators and their suitability for use in NI
- Advise on and contribute to raising awareness, informing and educating the public, business and government on sustainable development
- Co-ordinate activities between members to provide an integrated approach to problem-solving

The stakeholder group, still in existence, has a wide-ranging membership, embracing academia, the voluntary and community sector, the business community, public sector advisory bodies, trades unions, local authorities, education and consumers, among others. The government's sustainable development 'champions' also sit on this group – these are senior officers from each of the different Departments.

3.3 Concordia and Sustainable Development

Each of the constituent bodies making up Concordia has had a representative on the Sustainable Development stakeholder group. The Concordia Board organised a seminar for its members and others at which the SD strategy was discussed at length. Arising from that event, Concordia published its formal response to the strategy, which contained a series of recommendations for the Implementation Plan. This paper probably came too late to be able to influence significantly the content of the first Implementation Plan but its recommendations will be of value as work begins on the second iteration of that plan, early in 2007.

Following the seminar, Concordia agreed to support a study tour to Freiburg, allowing its members to see how one city in Germany has adopted policies and practices which seek to embed the principles of sustainability.



Study tour participants in Freiburg

4 Sustainable Development in Freiburg

4.1 Introduction to ICLEI and to the Environmental Policy of Freiburg

ICLEI was set up to help promote and coordinate the environmental initiatives of local governments; although the current tag line *Local Governments for Sustainability* more appropriately reflects its current remit. It is an international, membership-based organisation with a head office in Toronto, a strong European connection and a growing presence in Japan, India and more recently Africa. A number of British Local Authorities are members and Craigavon Borough Council became Northern Ireland's first ICLEI member.

Freiburg was chosen as the base for the European Regional Executive office after a competition in 1992. The organisation receives approximately 10% of its funding from membership fees, with the rest coming from project funds; it is not core funded. The overall mission of the organisation is to have many local governments working towards similar targets in order to achieve something significant on a global scale. The focus is primarily on environmental performance but its remit has expanded and there are now projects and targets relating to peace and development.

When new members join they must commit to working locally but also to become involved in the international exchange of knowledge and ideas. ICLEI helps these organisations to change and to introduce processes which will help them improve their performance. Universal targets are not imposed by ICLEI; rather, it negotiates and agrees specific targets with individual organisations. The achievements of ICLEI members are reported at international events such as the UN Conference of Parties.

Freiburg initiated its environmental and sustainable development policies more than 30 years ago, a clear demonstration of the need for a long term vision and a commitment to delivery. Before considering the policies the city has followed it is necessary to consider some particular aspects of the city's character which may provide some explanation as to why it has followed its chosen path:

- Many areas in the city were razed to the ground during the Second World War but the city fathers decided to rebuild the city in its original style.
- Freiburg did not follow the post-war pattern of other German cities in removing its tram system
- The city lies close to the heavily industrialised regions of Basel and the Rhine Valley but Freiburg itself is not industrialised. In fact, the University and the Municipality are the city's largest employers.
- Freiburg has been a traditional base for exploring The Black Forest.
- The city is relatively prosperous with few social problems.

The city's embrace of environmental policies began in 1969 with the adoption of a *global transport concept* which set out to provide a transport infrastructure which was friendly to people, the environment and the city. The city's interest in a more environmental paradigm was galvanized by a strong anti-nuclear movement which became highly popular in the 1970s and 1980s: the anti-nuclear movement was particularly interested in energy efficiency and alternative energy which goes some way to explaining the city's energy policy, heavily weighted towards renewables, especially solar power.



Rooftop solar panels in Freiburg

The city has identified 7 Priority Areas:

- **Environment and Climate Change:** Based on anti-nuclear. In 1996 the city set a target to cut carbon dioxide emissions by 25% by 2010, a target they are unlikely to meet as Freiburg is one of Germany's few growing cities. In 2004 10% of the city's energy came from renewable sources
- **Urban Planning**
- **Mobility/Transport Policy:** Trams are a key transport option but bicycles and cars are the most popular modes of transport.
- **Waste Management:** Energy from waste is important. Waste separation and reduction is enforced through charging systems.
- **Forestry:** The city is the largest forest owner in the region.
- **Water Management:** There is a public campaign to reduce individuals' water consumption which currently averages 120 litres per day. There are separate waste and storm water systems.
- **Nature Conservation:** Seen as central to tourism

Freiburg has a very powerful Lord Mayor who is elected to the position and acts as the chair of the Council and head of the administration. There are 3 vice-mayors, including one with responsibility for environmental matters. One of the other vice-mayors has responsibility for urban planning. The Green Party is one of the strongest political parties in the region.

4.1.1 10 Years of Local Agenda 21 in Freiberg

Local Agenda 21 was one of the most effective initiatives which emerged from the 1992 Earth Summit in Rio. It placed a responsibility on all local authorities around the world to take a lead in engaging their local communities in the production of a local strategy by 1996, in an attempt to co-ordinate civic engagement for a more sustainable future.

Europe responded to LA21 from different starting points:

Area	North West Europe	Central and Eastern Europe	Southern Europe
Main concerns	Self-governance	Economic and political change	EU the main focus
Themes	Environmental administration	Administration for restructuring	Planning systems
	Planning systems	Topdown	Environmental awareness through tourism
	Public participation	No environmental awareness	
Actors	Local and community	Local administrations	Local stakeholders
Actions	Sustainability projects	Adhering to EU standards	Action plans

There were several prevailing factors in the Freiburg of the mid-Nineties which made it well prepared to deliver on a local Agenda 21.

Its biggest employers were the University, including its teaching hospital and the city administration, so there was less dependence on the private sector for employment and very little heavy industry. The city has a respected and respectable 'alternative culture', with pioneering and innovative thinking, plus several energetic fringe movements. Levels of education were high, leading to enhanced environmental awareness. A proposal in the 1970s to locate a nuclear power plant some 20 kilometres from the city had stimulated a huge mobilisation of different groups against it, including farmers and churches; the legacy of that opposition was a healthy 'green' political movement. Local people had 'beaten' the big monopolies; people realised that politics can be changed. Other people from across Germany and beyond had begun to move to Freiburg, attracted here by its liberal reputation.

With this background, Local Agenda 21 prospered for some of the following reasons.

The municipal decision to 'go green' was a responsible reaction to the investment of much time by many stakeholders. This demonstrates the sincerity of the planning process to the participating citizens and gives the administration a mandate and the resources to coordinate the process. It also defines the link between the participatory planning process and the political decision-making process.



Tour participants viewing Sustainable Housing in Freiburg

Initially, eight working groups were established, involving about 150 active citizens. They had no mandate, no professional facilitation, no agreed methodologies. They simply sought to agree objectives. However, the management structures were very professional and closely interlinked - senior staff in strategic positions were responsible, reaching out to other Departments and to outside stakeholders. There were cross-departmental working groups, there was an LA21 Steering Group and there was a single city-wide administration, with some support from the larger political structure, known as the Region.

There were barriers too. Some politicians were pleased that 'difficult' individuals encountered opposition; some senior officials chose to ignore the Working Groups

However, the base laid by the Local Agenda 21 process has provided the platform for the successful city that Freiburg represents today.

4.1.2 Concordia Delegates Question & Answer session at ICLEI

On the municipality's responsibilities

- City is responsible for waste management, school buildings, kindergarten education, planning, some social housing, water supply, a share in the electricity generation company, some property taxes – but NOT for health
- French garrison land offered space (after 1996) where services already existed – this has become the suburb of Vauban (qv)
- Public were massively involved in deciding how to add 260 hectares of new developments, which became Reiselfeld (qv)
- City planning is much stronger than in NI but planners can influence decisions

On a civic participation strategy

- Be clear about what is offered
- Distinguish between stakeholders and citizens
- What to do
- Ensure there is sufficient time allowed for any participative process
- Plan an effective means of ensuring participation



Social Housing in Freiburg

On Facilitation

- Move from simply chairing to full facilitation
- Allow equal contributions
- Seek maximum consensus
- Visualise all contributions
- Engage skilled facilitators
- Define a facilitation budget

On a process timetable – plan the start and the end

- Lay out a clear timetable
- Agree milestones
- Plan a monitoring mechanism

On designing an information strategy

- Recognise that it is impossible to involve everyone
- Understand that SD involves everyone's lifestyles and actions
- Encourage people to talk about SD everywhere
- As only 2.5% actively participate, information delivery to others is vital

On achieving consensus between Working Groups and the wider community

- Ensure representation for all groups
- Ensure that multinationals don't disturb the decision-making process just because they have massive marketing power

4.2 Sustainable Procurement

The sustainable procurement programme developed by ICLEI promotes the purchase of goods against social and environmental credentials. ICLEI has a five person international team working with cities by facilitating projects and providing an international lobby function.

Under the RELIEF project the team has analysed product groups providing them with an environmental rating. So far six product groups have been rated including electricity, IT food, buildings, cleaning products, transport and raw timber.

To date the project has engaged 30 local authorities across nine countries. The team has developed clear guidance for Councils to follow, providing them with a step by step process on how to implement green purchasing and apply the necessary criteria to tendering processes.

The team also facilitates networking for local authorities, providing opportunities for Councils to meet and share experiences. ICLEI also provides training for Councils at a local level within the relevant country. All guidance given is adapted to ensure that it will work within the appropriate legal jurisdiction. The team also continues to lobby for improvements to international law, with a central aim of supporting and facilitating local action.

Other projects undertaken by the team include:

- DEEP project – energy efficiency for public buildings. This provides guidance on how to purchase green electricity and the criteria that should be applied. They also provide guidance on energy efficiency and appropriate design.
- Buy FAIR – fair trade for local authorities and guidance on how to build the requirement for fair trade goods into tendering procedures.
- Procuraplace – Providing access to international experts on public procurement.

Alongside their project work the team also undertakes event organisation providing training & networking opportunities. Various conferences have been organised including green procurement in Austria, events in Barcelona and one planned for Dublin in November 2006.

The team would like local Councils to show their interest in green purchasing in order to put additional pressure on national governments and also the wider European community.

A procurement manual is available giving detailed practical guidance on how to implement green purchasing within individual local authorities. The new website will be launched in Seville at the end of March.

They recommend trying to address the concerns of key decision makers to help win hearts and minds in the push to mainstream green purchasing. They are hopeful that the co-ordination of green purchasing criteria on the international stage will begin to reduce prices due to economies of scale.

The purchasing projects are currently orientated towards environmental considerations and promoted accordingly. There is no exclusion, however, of social issues. The promotion has prioritised environmental aspects due to the availability of corresponding legal frameworks.

Green purchasing is all about setting clear criteria during the tendering process, thereby ensuring open and fair comparisons between bidding companies. No Council has to accept the cheapest option but could instead choose the most economically advantageous option, building in life-cycle analysis and support for local economic well-being, as long as this is specified clearly in advance.

4.3 Freiburg – Germany’s Solar City

Freiburg has attracted a remarkable range of institutions, organisations and companies dealing with solar energy and the delegates visited several locations and projects which illustrated the range of activity being undertaken.

Solar power is everywhere in evidence. Arriving at the city’s railway station, one of the first buildings to be encountered boasts a huge façade of solar panels on the station’s main office block. Factories, housing, hotels, even the Freiburg FC football stadium all carry solar installations. Information is plentiful, research is rampant and the benefits are manifest for all of Freiburg’s citizens.

Solar Energy and Education: The Richard Fehrenbach Vocational School has a demonstration centre situated within its grounds. It allows students to gain experience with solar thermal and photovoltaic energy systems. Its focus is on practical skills and it is also used for continuing professional education. The site has a solar tower, a small wind turbine and a small combined heat and power plant. It is also used for school visits, where early learning about solar energy is conveyed through practical experiments.

Solar Information Centre: An office complex which has attracted a range of companies working in various aspects of the solar industry. Its construction adopts what it calls a “Structural Glazing Solar Façade”, an excellent example of solar architecture, designed to take maximum advantage of solar power.

The Heliotrop Solar House: Designed and occupied by its architect, Rolf Disch, this remarkable building generates five to six times as much electricity as it uses. The circular house rotates to track the passage of the sun, its panoramic glazing with heat-absorbing insulating glass functioning as a passive solar collector. A vacuum tube collector serves as an active solar heating system, producing hot water.



Heliotrop Solar House

Solar-Fabrik: a Solar Factory: This factory was the first medium-sized factory in the sector, completely financed by private capital. The factory is another wonderful example of solar architecture, with 570m² of solar power modules integrated into the glass front and roof of the building. Together with a rapeseed-oil fired combined heat and power unit, they cover the total energy needs of the factory. It is, therefore, a truly zero-emissions building. In what is then a virtuous circle, the factory's outputs are photovoltaic cells, manufactured to produce solar power in other buildings.



Inside 'Solar-Fabrik'

It was the massive protest against the proposed nuclear power plant in nearby Wyhl in the 1970s that triggered the new direction in Freiburg's energy policy.

The council not only opposed its construction but used its opposition to set new goals, allocating the highest priority to energy conservation and to stimulate the generation of renewable energies. In an area renowned as a wine growing region and generously blessed with sunshine, solar power was the obvious solution.

The city's energy policy has three principal threads:

- Conservation of energy: insulation; building low-energy housing; saving energy.
- Renewable energy sources: solar energy; water and wind energy.
- New energy technologies: combined heat and power stations; block-type thermal power stations; on-site and remote district heating.

Hotel Victoria: One of our visits demonstrated a full range of initiatives, illuminating sustainable development in action and merits a fuller report, below.

The visit to Hotel Victoria demonstrated the breath of sustainable development in action. Owned by the Spath husband and wife partnership, the hotel has been in the same family for three generations. Delegates were hugely impressed with the detail of the many actions and vision, which the Spaths have employed, an opinion mirrored by the views of many national and international judging bodies. The Spath partnership has won many awards, culminating in winning the “Environmental Award 2000” for the most environmentally friendly private hotel in the world. This was awarded jointly by the International Hotel Association and American Express.

Their ethos of “Environmental protection within a hotel means utilising intelligent technology, while offering our guests the highest level of comfort and encouraging others to follow our example,” is exemplary and one which all our delegates felt could and should be translated back to Northern Ireland.

The hotel’s energy consumption is typical of its kind. With each overnight stay, a guest uses 30 kw hours of energy, leading the Hotel Victoria to consume annually 210,000 kw hours of electricity and 450,000 kw hours of heat. This led to a significant challenge for the hotel, but they have now developed a “Zero emissions hotel.”

This has been achieved with great attention to detail, thus

- Energy efficiency
 - Thermally protected insulated glass, fitted in windows
 - State of the art mini bars using 30 % less energy
 - Energy saving bulbs using 80% less energy
 - Movement sensors to switch on & off lights
 -
- Water efficiency
 - Showers fitted with low flow heads
 - Ergonomically shaped baths using 30% less water
 - Flow controls on all basins
 - Toilet cisterns’ water capacity reduced from 9 to 6 litres
 - Towels only changed on request
- Heat generation
 - In 2002, oil boiler replaced by wood pellet boiler, with 100 tonnes of carbon neutral wood displacing 50,000 litres of oil per year.
 - 30 sq metres of solar panels have been placed on the roof, which on a sunny day can heat enough water for showers and washing.
- Electricity generation
 - The installation of photovoltaic panels on the roof, provides 7,000 kw hours
 - Investment in part of an off-site 1.3 MW wind turbine which supplies 100,000 kw hour per year to the hotel
 - The purchase of the rest from an eco tariff supplier

The use of non-phosphate detergents

The provision of local transport visitor passes free to guests and the provision of bicycles to guests.

The sourcing of most foods from the locality and the Black Forest, produced to the highest ethical and environmental standards

An active policy of waste avoidance

- Cleaning and refilling soap/shampoo dispensers.
- No beverages served from throwaway containers
- All paper sourced from recycled sources
- All packing material returned to supplier
- The rest taken to Freiburg waste recycling centre

4.4 Mobility and Transport

Freiburg has always had a well-developed transport system. Even a hundred years ago, it had four tram lines. Sadly, the whole city was extensively bombed in 1944 leaving the city with the decision as to how it should rebuild itself. In 1950, the discussion process took place and focussed around providing a city built for the car or whether, as they called it, 'history' should dominate. History won and the tramlines were repaired and upgraded, becoming the heart of the city's transport system.



Tram lines in the old city

The initial discussion to set up an integrated transport system was taken with public consultation and they decided how the system should operate.

- It should be child friendly
- It should facilitate cycle use
- It should make Freiburg a pleasant city in which to live, not dominated by the car

The transport concept adopted by the city embraced the following factors:

- Make use of the pre-war existing tram system and expand it with the tram having priority.
- Expand the then limited cycle network to include not only integrating cycleways into the existing street system but to build new cycle paths in and around the city.
- A series of 'Mobil' centres for the cycle user who wants to get to other places of work whilst living in the city. Freiburg people work in a number of nearby cities such as Basel which is less than half an hour away.
- Introduce traffic calming in all the city centre streets with the speed limit being 30kph.
- Pedestrians/play areas should be incorporated into the system.
- The car should have an equal share in the network but should not dominate.
- There should be a rationalised car parking system.
- 'Park and Ride' networks should be installed. This is to encourage people to use the tram and bus services available.

- 'Pay and Ride' systems should be created, whereby people are encouraged to get rid of their car and use public transport but have the option of using 'pool cars'.
- Car parking charges in the city should be set at a high level, relevant to German prices which at present are equivalent to £1.70 per hour.
- A regional transport card system was instigated enabling people to pay a yearly fee of equivalent to £290 per year, which would enable a person to travel anywhere in the region at any time of the day, with on Sundays the ticket available for use for the ticket holder plus partner and their children all free of charge.
- The final decision taken was to ensure that social contact should be a priority.



'Mobil' Centre

The tram system had 19km of track in 1930. Following post-war reconstruction, the same figure existed by 1986. In 2006, the network is 26km long. In addition, there is a system of Ski Buses in the winter, installed to encourage visitors to the region. In the summer the same system was converted to Hiking buses. A series of day/week/monthly tickets has been installed to satisfy the demands of the visiting public. There are 450km of bicycle lanes.



Cycle Lane, Freiburg

Two 'Model Districts' were constructed in Rieselfeld and Vauban to help satisfy the growing population of the city. It is important to note that Freiburg is one of the few growing cities in Germany and therefore needs to accommodate the influx of residents. In planning both of these districts, transport was one of the primary considerations. Tramlines were installed at both sites before there were any buildings, before any residents used the trams – an exemplar of excellent urban planning.

The infrastructure is funded between the local council and a private company with an initial fund from central government, although the operational costs to the council are now running at a loss of 30% per year.

Some of the statistics are impressive. 25000 car journeys a day have fallen to 6000 per day. Road traffic accidents have fallen by 50%. In the 20 years between 1976 and 1996, the change in transport modal split was marked, at a time when the city's population was growing.

- 1976 – 60% daily journeys by car (231,000)
- 1996 – 43% daily journeys by car (232,000)
- 1976 – 18% daily journeys by bicycle (69,000)
- 1996 – 29% daily journeys by bicycle (160,000)
- 1976 – 22% daily journeys by public transport (85,000)
- 1996 – 28% daily journeys by public transport (155,000)

The public transport company, VAG, had 27 million passenger journeys in 1980. By 2001, this figure had risen to 68 million.

The modal split is directly due to public policy. In the 1980s, parking fees were increased and public transport fares were reduced. The provision of season-tickets (the RegioKarte) made a big difference. Characteristic of these tickets is that they are not personal; at different times, different people may use the same ticket. Another variant of the ticket is that it is valid for one person at peak hours but otherwise available for several people travelling together.

Such innovations resulted in the substantial increase in ticket sales. The strong growth of car use in Freiburg was stemmed, with the compensatory growth of tram use.



Study group participants enjoying one of the many Cycle Paths in and around Freiburg.

It is not a model being widely used elsewhere in Germany. Only three others have gone down the same route because of the prohibitive capital costs of installing the tramlines. It is important to remember that Freiburg never got rid of its tram system thus saving the major part of the capital cost. However, Basel has a similar system and it has been shown to have a greater use of the tram/cycle system it has installed and fewer car journeys used.

4.5 Sustainable Suburbs

Vauban is a new district housing some 5000 people. It was built on a former military base and is being gradually extended beyond its original boundaries. It is a remarkable place, exhibiting many of the best aspects of sustainability.

All of its new buildings meet exacting energy standards, with almost 100 units built as 'passive' houses, requiring virtually no fossil energy. One developer is also building Plus energy housing, which generate more energy than they use. There is a district heating grid and co-generation plant and solar energy installations are readily sighted throughout the suburb.



Car-free residential street in Vauban

The concept of car-free living is well demonstrated in Vauban. There is no doorstep parking. Residents may drive to their door to deliver goods, but are prohibited from lengthy parking there. Instead, cars are parked in community multi-level car parks, two of which have been built on the periphery of the district. The cost of a car parking place is substantial. Public transport is cheap, frequent and reliable. There is also a car-sharing scheme; its members are further incentivised by the bonus of heavily subsidised public transport tickets.

The district has been designed to provide many local services to obviate the need for travel. A school, a nursery school, a farmers' market, several small retail businesses, cafes, recreation areas and workplaces for some 600 people are all within walking distance of the residential areas.

Many of the early buildings were constructed in a co-operative process. New inhabitants were able to contribute their labour in construction in return for economic benefits, with rent reductions of up to 15%.

The district also fostered a huge amount of social interaction and civic participation. An agency, the Forum Vauban, was established as an organisation to encourage participation

within the community. Its programme of events, training and advocacy has been very successful and the community centre's programme is inspiring.

Above all, Vauban has a 'heart'. The almost complete absence of cars creates a very harmonious atmosphere in the streets. Mothers ride bicycles with their infants being towed behind in buggies, a market square is bustling with high-quality fresh produce, people stop and talk to each other. These are intangible benefits, impossible to quantify but clearly observable and almost certainly the result of a conscious set of planning decisions.



Residents feel safe towing children in buggies while cycling on the roads in Vauban, as there are so few cars.

4.6 Alternative Uses of Land in the Freiburg Region



The country in this region is lush and green and hilly - a bit like Northern Ireland.

An Organic Farm

The farm is rented, comprising 160 hectares. It has been certified organic for 11 years. His main enterprises are:

- 60 cows (Flavel breed dual purpose) producing high quality milk and organic beef,
- 80 milking goats which he intends to expand to 150,
- 2500 free range hens.

His cow milk is sold to the local dairy with an average price of 25c per litre plus a premium of 8c for organic and 1.5c for quality giving a total value of 34.5c. All the goats' milk goes to a local farmer for processing into goats' cheese, yogurt and liquid milk. A proportion of these goods return to the originating farm for sale through the farm shop, which sells a range of locally produced organic goods.

Two of the tractors on the farm are run on rapeseed oil which is grown on the farm. The farming enterprises are subsidised largely by visits from schools and tours. The single farm payment is 230 euros per hectare which includes an incentive for going organic. There was evidence that nutrient management was being practised to prevent leachate from getting into watercourses.

Compared to farming practices currently common in Northern Ireland the density of livestock is much lower and a principal concern is that it would not be financially viable in our market place. The premium for organic produce, visits and farm shop sales seem to be the key elements in making it financially viable.

Farm no 2 – A Solar Roof

This farm was 38 hectares which is all rented to neighbouring farms. He has no stock at all left except 4000 hens. The main change to the farm enterprise was the addition of solar panels installed on the roof of the barn. These give a total output of 29.4 KW and are controlled by

four transformers. The control centre links via the phone lines to a control centre in Freiburg which manages the input of the generated electricity into the grid.

The project cost 135,000 euros and was financed by both private funding from the farmer and bank loans. The price received for the electricity is 54.5c per KW and this is guaranteed for 20 years under contract. In the future, such contracts will not be as attractive for newcomers to the business but this farmer gained best price because he was one of the first to take up the initiative. There is no direct state funding and a monthly management fee is paid to the power company for managing the system remotely.

There is still a wooded area maintained and wood is cut and chipped for heating the house on the property.

Farm no 3 – Biogas

Another farm diversification project on a 73 hectare farm. Of this currently the farm is broken up as follows:

- 28 hectares in grass
- 7 hectares in barley
- 4 hectares in wheat
- 27 hectares in maize
- 7 hectares of wood.

There are no livestock left on the farm, some of the crops grown are ensiled and fed into a biodigester for the production of heat and electricity from biogas.

He takes delivery of liquid slurry from other farms as the main component of fuel for the biodigester. This is delivered at no cost by local farmers and they exchange raw slurry for the digested slurry which is the end product of the process and acts as a better soil improver. Between 15 and 20 cubic metres of slurry is used per day. The slurry is mixed and bulked up with corn, grass and wheat in batches of 1 tonne at a time. Approximately 6 tonnes are used of these per day. The most important aspect is making sure that the mixture is kept consistent day by day. He also accepts poultry litter as a feed material.



Biogas Converter

Income is derived from:

1. Selling the electricity into the grid. (main income element)
2. The farm supplies a district heating system for neighbouring houses and the local sports ground.

The cost of the plant was 700,000 euros. This was financed mainly by the bank but he was offered a lower interest rate through a state bank as an incentive. This gave a reduction of 2% against the standard banking rate.

The rate achieved for the generated electricity is 10.1c per KWh with an additional top up of another 6c as an organic allowance for a guaranteed 20 year contract. His maximum output was not being achieved but if this was realised he would be able to generate 260KWh x 67000 hours per year.

There were a lot of problems getting permission to feed into the grid and this was the main obstacle for the project. In order to get a decision from the power company he had to pay 1300 euros just to get an answer and initially this was no. He would like more houses for the heating element of the scheme, but these are not available locally.

Sewage Plant

The sewage plant takes all of the waste water from a local highly residential area of roughly 40,000 inhabitants. There is very little heavy industry feeding into the plant. All of the standard waste water treatment processes were employed on site but the plant also allowed for the treatment of nitrogen and phosphorous. The main difference available on site compared with plants in Northern Ireland was the use of a biodigester producing biogas to power an electricity generator powering the site. This plant took all of the solid material from the waste water, treated it to reduce the pathogens and producing a compost-like material which is taken by local farmers. The farmers are paid 40 euros per tonne for the removal of the material and it is used as a soil improver for crops (some of which are food crops). The heavy metal concentration of the compost is low due to the lack of industrial effluent.

The site rarely feeds electricity into the grid, most is used on site and any additional power generated at night is sold into the grid.

Farm 4 – alternative energy production

This farm was situated well up in the Black Forest hills. It is a family dairy farm with all generations living in the farm house and working on the land. The herd is a traditional Friesian herd producing milk that is sold to a local dairy. The farmer has installed a heat exchanger for taking the heat out of the milk and using it to raise the temperature of the water for heating the house to a temperature of 35 degrees centigrade. This exchanger is so efficient that it produces 1 litre of water at 35 degrees to one litre of milk going through the system.

The farm also has a wood chip burner linked in which is used in winter to top up the heat from the heat exchanger to heat the house. All the woodchip burned is waste wood from the farm.

The wood burner is located in a large traditional cellar which housed a wide range of jams, fruit preserves, home made cider, schnapps and a traditional still. This was evidence of self sufficiency and a wide variety of traditional farm activities.

The farm has also rented land for a wind turbine and has become an investor in the generation of electricity. The turbine is a 1.2 megawatt machine and has been financed through a mixture of private investment by 140 investors (one third of total cost to a value of 1.2 million euros) and a major bank providing 2 thirds the cost. The total cost of the turbine was roughly 4 million euros.

The electricity generated gets a value of 10c per kWh by the power company. This is roughly equivalent to the price achieved within Northern Ireland, but Northern Ireland has much better wind resources that would allow for more electricity to be generated per turbine. The turbine was not generating anywhere near full capacity due to the lack of wind speeds over the last couple of years.

Concluding remarks

The overall conclusion on what was seen is that farmers in Northern Ireland are operating to equivalent standards to those farms visited during the tour. What was evident is that farmers around Freiburg have many more financial incentives to develop renewable energy schemes as a much needed source of income to keep farms alive in the longer term. The main opportunities for Northern Ireland's farmers may be the generation of electricity and heat from wind resources, short rotation coppice crops and using biodigesters. In order to make these a realistic alternative for local projects, an equivalent financial support system is needed and political will to ensure that the price offered by electricity buyers allows for profit.

5. Bringing it all back home

Recommendations from ICTU

1. Each union or trades council (and ICTU itself) to develop its own policy on sustainable development, copying best practice where possible.
2. Each union or trades council (and ICTU itself) to pass and implement resolutions on such specifics as:
 - Buying ethically traded (i.e. labour regulated) products and services wherever possible
 - Buying fairly traded (i.e. producer price guarantees) products and services wherever possible
3. Recycling whatever products can be managed by local recycling facilities
4. Ensuring that there is a policy for efficient water and energy management within each union of trades council
5. Promote training among the union movement on sustainability issues.

These ideas might be encapsulated in the acronym LOAF, as in Use Your Loaf –

Locally produced,
Organically farmed,
Animal friendly
Fairly traded.