

Sustainable construction and renovation is the route for a low carbon economy

Speaking notes for MEP Mrs Julie Girling: Biodiversity and sustainable construction¹

I became an MEP in 2009, a date which is significant in many ways for me, but should be noted is after the financial meltdown of 2008 and well into the period of decline in economic growth and the start of the recession.

We're all, in our various roles as policy makers or industry leaders, in the position where we've been learning a lot, and maybe having a few surprises.

Here is one thing I have learned, and you may be surprised that I didn't know it before, of course I did, but I didn't realise the extent of its importance. The thing is - the construction industry is absolutely vital to growth for the European economy. It is not just one of the drivers, but probably the key driver. So it is vital that it sits high in the mind of legislators and regulators.

Even in the developed economy of the EU we have houses to build and infrastructure to improve and invest in.

But we also have an increasing demand from our citizens to care for the environment that we live in. In the past this duty of care has often focussed on the obvious visual impact of development (How development fits in the landscape) This mindset is, to a large extent, changing. We now want to examine the sustainability of construction. Along with energy efficiency and recyclability of materials we want to look at biodiversity.

¹ I thank IUCN for the help they provided me with the drafting of my speech

Biodiversity means the variety of life, in all its forms and at all levels. This ranges from genes to species to ecosystems - everything that collectively forms the biological diversity on Earth.

Why is biodiversity important?

Biodiversity is essential in maintaining our quality of life and a healthy environment. The continuous decline of biodiversity has serious consequences and its protection and enhancement are essential for a sustainable future. We depend on biodiversity for food, health, natural resources and a range of ecosystem services such as air and water purification, soil fertility and plant pollination.

Construction projects, whether commercial developments, housing estates, infrastructure or public-sector projects, all have the potential to damage natural habitats, threatening wildlife and plant species.

Moreover increasing urbanisation is contributing to the decline of biodiversity due to the loss and importantly division and fragmentation of natural habitats. Providing opportunities for biodiversity in our built environment is one way that it can be protected and enhanced. The construction industry has an important role to play in protecting sensitive sites and minimising damage to ecology.

According to the Cities and Biodiversity Outlook launched last month during the Convention of the Parties for Biological Diversity 60% of the area projected to be urban in 2030, still has to be built. This is an astonishing figure.

This urban expansion will heavily draw on natural resources, including water, on a global scale, and will often consume prime agricultural land, with knock-on effects on biodiversity and ecosystem services elsewhere. But developing awareness of the values of biodiversity and natural infrastructure in urban planning, offers many

opportunities for strengthening conservation and sustainable use of those resources in an urban context and the construction sector has an important responsibility in this respect.

Let's take a look at the Opportunities for integrating biodiversity in construction and renovation and urban development

Impacts on protected species are significant. Bats are those most commonly affected, along with several bird species which in many cases are seen as an inconvenience and an impediment. Construction needs land and the use of land can have direct impacts in terms of destruction of habitats and more subtle effects on biodiversity such as disturbance and fragmentation. We often hear the phrase "nobody makes land anymore," it is a finite resource and must be treated with respect.

- **Noise and light** generated during construction processes may not directly harm individual animals but it could affect feeding and breeding behaviours which could have negative impacts on long term population levels.
- The use of land may also **divide up land and separate** habitats which were previously adjacent. This can influence population dynamics especially for mobile species which rely on large habitats.
- Furthermore, **the materials** used and their processing and production will have a major impact on biodiversity. Timber, gravel, sand, iron ore, rocks etc are all major materials needed for the construction industry and the production of these materials can impact heavily on biodiversity.

Providing opportunities for biodiversity in our built environment is one way that it can be protected and enhanced. The need for low carbon buildings has led to changes in construction techniques and materials and increasingly airtight buildings present fewer opportunities for many bird and bat species. Incorporating simple design

features in our buildings can provide nesting and roosting potential that would otherwise be lost.

Buildings should aim to be permeable to wildlife and incorporate design which helps to sustain and increase particular species. Such measures will also play a significant role in helping to adapt to climate change. There are many approaches that can be included in the detailed design of development, to help achieve permeability – such as sustainable drainage schemes and green roofs and walls.

While small and often low-cost, bolt-on design changes can make buildings suitable for bats, birds and invertebrates, some design features (for example green roofs or rooftop permaculture farms) will require early consideration of building form and structure (especially roof loadings) so that habitat requirements can be accommodated from the outset. Due to habitat loss, some species are almost solely dependent on our built structures to roost or nest. These include bats, barn owls, house martins, house sparrows, starlings, swallows and swifts. In order to ensure that development integrates and enhances biodiversity within urban environments, planning conditions could require both extensions to existing properties and all new developments to provide sites for species that nest or roost in buildings.

Urban green space offers a unique landscape capable of supporting a diversity of flora and fauna and provides an ever-expanding human population with direct access to nature and all its benefits. Urban habitats and species are sometimes considered to be less important than their rural counterparts but cities host a surprisingly rich and diverse natural environment. As such, they can have an important role to play in halting biodiversity loss and improving human well-being.

Urban areas host rich biodiversity and there are a growing number of examples that show how cities have successfully integrated the benefits of biodiversity and ecosystems in planning and development:

- Victoria Gasteiz (Northern Spain, second largest in Basque Country behind Bilbao, 240 000) which is the Green Capital of Europe in 2012 has made great progress in greening a traditional urban environment by creating a green belt around the city.
- 15 years ago, the city of Basel in Switzerland invested 1 million Swiss francs in a green roof programme funded by a 5% tax on energy bills. In just 10 years, one quarter of the city's flat roof areas were greened. The programme saves 4 GW-hours per year across Basel and significantly reduces the urban heat island effect. The life expectancy of the roofs has almost doubled. Finally, the roofs have become habitats for endangered invertebrate species and birds.

There are many documented benefits of green roofs:

- Reduced storm-water runoff, and hence potential savings to developers, as the number of drainage outlets required on a building can be reduced;
- Reduced urban heat island effect by reducing building heat loss and increasing evapo-transpiration;
- Creating natural green spaces in urban areas;
- Reduced energy consumption and fuel costs, since green roofs provide cooling in summer and thermal insulation in winter;
- Benefits for biodiversity;
- Reduced air pollution;
- Extended roof life, since the green roof protects the roof's waterproofing membrane, almost doubling its life expectancy;
- Many of these benefits help to address climate-change related risks;

- The UK Green Building Council Chief Executive Paul King said: “All too often our mindset is simply to reduce the negative impacts from construction and development. But it’s important to think about how we can actually increase positive impacts - for people, wildlife and the economy.

“Development done well can and should actually create habitats in which wild species thrive, and a habitat for the human species that we can all enjoy. Green roofs, living walls, and good old-fashioned parks and green spaces in our built environment can make us all feel happier and healthier, and give something back to nature. There is also evidence emerging of the economic value of biodiversity enhancement, which will be a critical driver for the industry.”

- The City of New York invests \$ 2.4 billion in green infrastructure to improve water quality and manage for storm water. In New York, untreated storm water and sewage regularly flood the streets because the ageing sewerage system is no longer adequate. After heavy rains, overflowing water flows directly into rivers and streams instead of reaching water treatment plants. New York City will invest in green infrastructure on roofs, streets and sidewalks. This promises multiple benefits. The new green spaces will absorb more rainwater and reduce the burden on the city’s sewage system, air quality is likely to improve, and water and energy costs may fall. The agreement marks a clear shift from 'gray' infrastructure to green infrastructure and also includes fines if the city fails to meet its targets.

Examples of green infrastructure projects include: blue roofs and green roofs, which use mechanical devices or vegetation to slow roof water from draining too quickly and overwhelming sewers; porous pavement for parking lots that allows water to seep through it and be absorbed into the ground rather than

running-off into the sewer system; tree pits and streetside swales for roadways that allow water to pool in underground holding areas until it can dissipate in the ground or transpire through plants; wetlands and swales for parks; and rain barrels in some residential areas.

Green spaces and green roofs can increase carbon storage and uptake. Although there is considerable variation in green space across cities, there is overwhelming consensus that urban green spaces offer numerous ecosystem services, among them shade provision, rainwater interception and infiltration, and pollution reduction. Forests can contribute indirectly to climate-change mitigation by providing more shade and cooling, thereby reducing overall energy consumption. Finally, green spaces can significantly reduce the urban heat island effect, where urban areas are warmer than surrounding regions.

An example:

Mexico City was the first Latin American city to implement a Climate Action Program. One of the components of the overall program places biodiversity at the core: The Green Roof Program aims to create 10,000 square meters of new green roofs annually, to improve air quality, regulate humidity, reduce temperatures, and provide new biodiversity resources across the city. By increasing environmental awareness among citizens, the program also plays an important educational role.

We are not starting from a zero base in many of our cities.

Rich biodiversity can exist in urban areas

Brussels, for example, contains more than 50 percent of the floral species found in Belgium.

In just about any city, local interventions can increase native biodiversity. For example, cities can identify the habitats that used to exist locally and restore them. Gradual enrichment or reintroduction of plant and animal species will increase the

complexity of ecosystems and the services they provide. Planting native plants in parks, roadsides, gardens, vertical and rooftop gardens, and other such areas will diversify the environment to support native mammals, birds, reptiles, amphibians, and insects. Creating small wetlands, such as ponds or marshes, will support the provision of a range of ecosystem services. Recent studies highlight the importance of even small urban gardens in providing habitat for native pollinators such as bees, which have declined alarmingly in recent years. Two often-used strategies are the creation of biosphere reserves or green belts around cities, and the “green” reengineering of major highways and infrastructure projects.

To conclude then...

Considering the broad environmental, social and economic impacts of construction, nature based solutions offer a great opportunity for sustainable design and construction practices, including generating optimal conditions for integrating urban plant and animal habitats in the design.

There are broad benefits to be gained from applying the principles of sustainable development to house building practices. In design and construction, the use of ecologically friendly materials, such as porous pavements, green roofs and non-toxic paint provide the key to connect ecology with an urbanism that is not in contradiction with its environment. It requires making the connection between ecology and architecture, landscape architecture, planning, and urbanism and implies thinking about homes as more than bricks and roof tiles: aspects of layout, location, liveability, landscape and design all need to be considered with the environment in mind.

Cities are centres of ecosystem-service demand as well as sources of global environmental impact. The efficiency of governance efforts depends on collaboration of multiple jurisdictions as well as involvement of stakeholders to address the

multiple drivers of biodiversity loss. Involved actors should come from all sectors and levels of decision-making. Cooperation is important to synchronize and harmonize actions “vertically” (i.e., at international, national, sub-national, and local levels) and “horizontally” (i.e., across divisions such as environment, construction, planning, transportation, education and finance).

All actors united here today have a role to play in increasing the awareness of the value of biodiversity and strengthening the capacity for its integration in construction and renovation, thereby offering cost-effective sustainable solutions as well as the integration of green infrastructure in urban development.

If we are to effectively grow our economy we must embrace these principles and convince the public that sustainable construction is an essential element of development not just a "nice to have" add on.