



GALVANIZING AND  
SUSTAINABLE CONSTRUCTION  
AN OVERVIEW

## INTRODUCTION

Carbon footprints, renewable resources, energy efficiency – suddenly sustainability has become a real hot topic, but what does it really mean? This booklet gives a brief overview of the important role galvanizing has to play in sustainable construction.

With the Earth's natural resources at more of a premium than ever, the need to be environmentally aware when it comes to construction is a must.

Galvanizers Association has been a major contributor to the European Initiative for Galvanizing in Sustainable Construction. Many independent experts have contributed to this initiative including Prof. Tom Woolley, a well known advocate of green and natural building. The aims of the initiative were to help architects, specifiers, engineers, developers and their clients consider how to use galvanized steel in the context of sustainable construction.

*"The galvanizing industry can undoubtedly make many improvements, but I welcome their willingness to address the issues and take a hard look at themselves to see whether they can contribute to the sustainability imperative."*

**Tom Woolley**  
Professor at Graduate School of the Environment, Centre for Alternative Technology (CAT).

This booklet serves only as a taster for the key information and findings of the initiative. For comprehensive information request a free copy of "Galvanizing and Sustainable Construction - A Specifiers' Guide" compiled under the guidance of Prof. Tom Woolley, by visiting [www.sustainable-galvanizing.com](http://www.sustainable-galvanizing.com) or contact Galvanizers Association directly on +44 (0)121 355 8838.



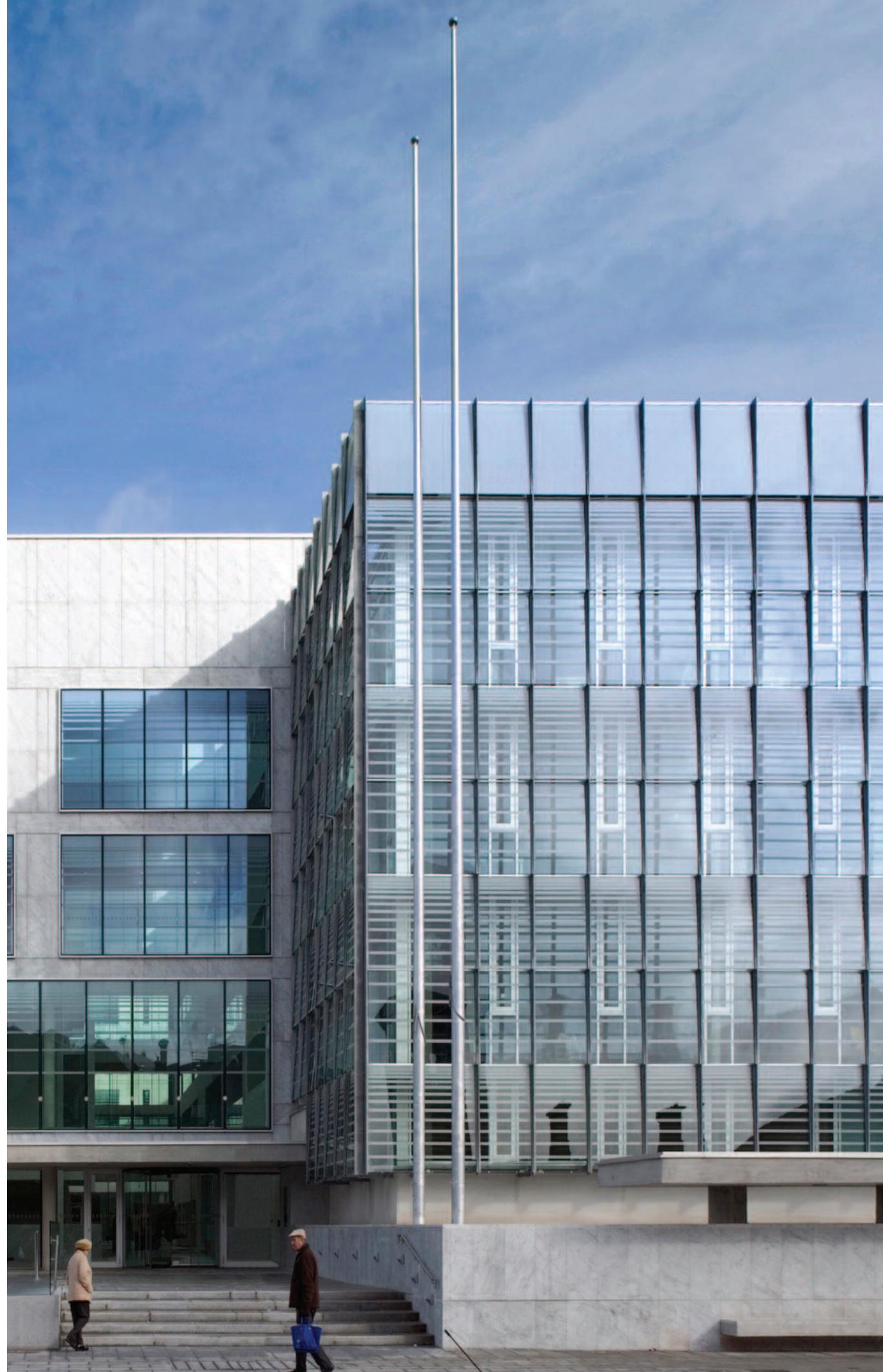
## SO WHAT EXACTLY IS GALVANIZING?

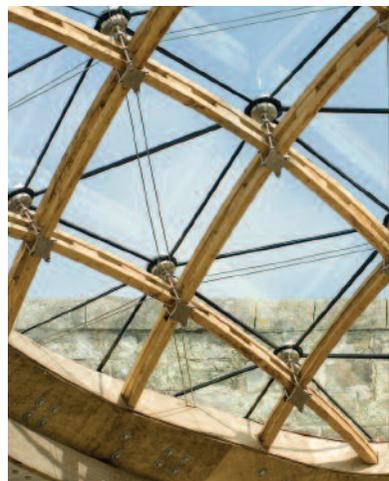
In as simple terms as possible, Hot Dip Galvanizing is the process of coating steel with a layer of zinc. And the benefits? As well as providing long-term durability and protection from corrosion, a real benefit is the relatively low environmental burden associated with the whole process.

When clean steel is dipped into molten zinc a unique coating develops that creates a strong bond with the steel. This protective coating is tougher and more resilient than other coatings that only bond chemically or mechanically.



DISCOVER MORE ABOUT GALVANIZING AT  
[WWW.SUSTAINABLE-GALVANIZING.COM/GALV](http://WWW.SUSTAINABLE-GALVANIZING.COM/GALV)





## WHY GALVANIZE?

Galvanized steel is everywhere; in the lighting columns that brighten our roads, the high voltage pylons that power our homes, even in the cars and trucks that get us from A to B. In fact, anywhere that corrosion protection and long-life are essential, you're likely to find galvanized steel.

While undeniably versatile, steel does have the unfortunate drawback of being susceptible to corrosion when left out in the open – amazingly many countries estimate 4% of GDP is lost to corrosion. That's when employing galvanizing can make all the difference: long-term durability, a tough and resilient coating – the benefits are clear. What's more, galvanizing also provides improved economies of scale by eliminating repeated on-site maintenance and replacement costs.

- A galvanized coating can provide more than 60 years of maintenance-free life
- The coating can be more robust than the steel it is trying to protect
- The coating is simple and easy to apply
- All parts of the steel are coated - external and internal



## INSIDE A GALVANIZING PLANT

While galvanizing plants have been around since the late 1800s, it's fair to say a lot has changed since then. Present day plants feature computer controlled processing technology that play an integral role in managing the process.

They are also being designed with their environmental performance and recycling in mind. For example, plants are designed to reuse water and waste heat throughout the galvanizing process. What's more, galvanizing plants are continually implementing new ways to make them more efficient than ever.



## HOW THE GALVANIZING PROCESS WORKS

The galvanizing process can essentially be split into two important stages: **cleaning** and **galvanizing**. The cleaning stage chemically washes the steel so that it is ready to react with molten zinc. The steel can then be submerged into a molten zinc bath to obtain the coating.



FIND OUT MORE ABOUT THE GALVANIZING PROCESS AT [WWW.SUSTAINABLE-GALVANIZING.COM/GALV](http://WWW.SUSTAINABLE-GALVANIZING.COM/GALV)

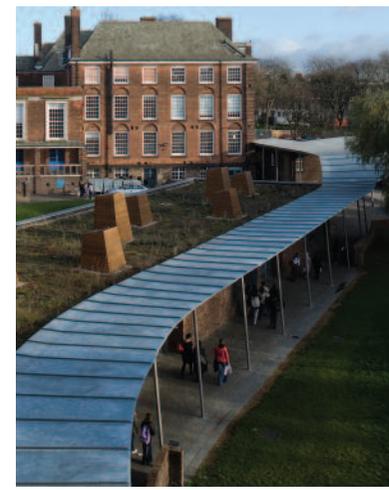


## ZINC - THE NATURAL PROTECTOR

It's fair to say zinc can be found pretty much everywhere. Not only is it naturally present in rock and soil, you will also find it in water, plants, animals and even the air. In fact, zinc is an essential mineral necessary for sustaining all life. Furthermore, it is highly abundant and can be indefinitely recycled.

Zinc protects steel against corrosion by both forming a physical barrier and through electrochemical protection. When it reacts with air, a surface film that is insoluble in rainwater forms a barrier. This prevents moisture and oxygen from reaching the steel and corroding it.

- Zinc is a natural component of the Earth's crust and all living organisms need zinc
- Zinc is used in sun block products, shampoo and vitamin supplements
- 30% of all zinc comes from recycled sources
- Zinc for galvanizing contains a high proportion of recycled zinc



## STEEL - THE ADAPTABLE ALLOY

Steel is rightly considered a highly versatile material. It plays a major part in our modern lives, from our buildings and transport systems, to our home appliances and the tools we rely on in the workplace. Steel can be recycled continuously without significant deterioration to its quality, making it highly sustainable as very little is ever wasted.

Ideal for construction, steel has many qualities that make it simple to work with. For starters, it is lightweight making it easy and quick to erect, it can also be pre-engineered to cut down the need for manpower. Then there's the fact that steel is easy to modify or reshape whilst remaining stable at all times.

- Steel is one of the world's most recycled materials. Over 90% of steel is recycled
- Steel is easy to use, modify and salvage from construction
- The flexibility of steel allows demounted structures to be rebuilt in whatever form is required

AN ESSENTIAL ELEMENT. FIND OUT WHY AT [WWW.SUSTAINABLE-GALVANIZING.COM/ZINC](http://WWW.SUSTAINABLE-GALVANIZING.COM/ZINC)

LEARN MORE ABOUT THIS VERSATILE METAL AT [WWW.SUSTAINABLE-GALVANIZING.COM/STEEL](http://WWW.SUSTAINABLE-GALVANIZING.COM/STEEL)

# WHAT ON EARTH IS SUSTAINABLE CONSTRUCTION?

This planet may not be perfect, but let's not forget it's the only one we've got. That's why it's now more important than ever to choose building materials and products that are as sustainable as possible. However, with everyone talking about sustainable construction, how do you distinguish between genuine change for the better and 'greenwashing'?

The Brundtland definition of sustainability (above right), if interpreted correctly, provides a very good benchmark from which to judge most human activities. In terms of building construction it implies that we should be extremely careful about using resources which are scarce and cannot be renewed. Whatever we do should be able to last a long time or be recycled and used again. In addition fossil fuel energy should be minimized and pollution controlled.

## Excerpt from Brundtland Report -

*"Humanity has the ability to make development sustainable - to ensure that it meets the needs of the present without compromising the ability of future generations to meet their needs."* (WCED 1987).



# SO WHY IS GALVANIZING SUSTAINABLE?

Simply put, galvanizing protects steel from corrosion, lengthening its lifespan and eliminating the need for replacement steel at a cost to the environment. But that is really only half the story:

### Low Life Cycle Energy

Galvanizing is energy efficient throughout its production and whole life cycle.

### Resource Efficient

The galvanizing process uses natural resources considerably to ensure a relatively low environmental burden.

### Recyclable

Whether it's re-galvanizing, removal or reuse, galvanized steel is easily recycled. What's more, it can also be recycled with steel scrap.

### Long-life

Galvanizing protects against corrosion and prolongs the life of steel, greatly lowering both the environmental and economic cost.

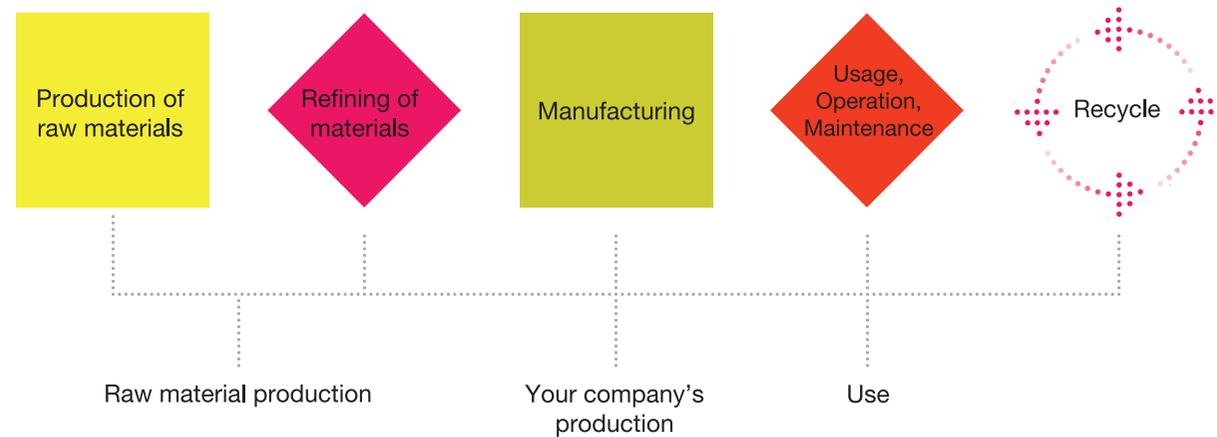
### Cost Efficient

The initial investment of using galvanized steel for long-term protection in construction can provide cost benefits for decades.

FIND OUT WHY GALVANIZING IS SUSTAINABLE AT [WWW.SUSTAINABLE-GALVANIZING.COM/WHY](http://WWW.SUSTAINABLE-GALVANIZING.COM/WHY)



# LIFE CYCLE ANALYSIS



FIND OUT MORE ON SUSTAINABLE CONSTRUCTION AT [WWW.SUSTAINABLE-GALVANIZING.COM/LCA](http://WWW.SUSTAINABLE-GALVANIZING.COM/LCA)



# ACKNOWLEDGEMENTS

BOOTH KING PARTNERSHIP

ABK

P JOHNSON & CO

ARCHITECKTURBURO SCHULTZ AND PARTNER

BURO HAPPOLD

DAVID CHIPPERFIELD ARCHITECTS

STUBBS RICH

TONKIN LIU

HAVERSTOCK ASSOCIATES

PRINGLE RICHARDS SHARRATT

SMC ALSOP

WALTER MENTETH ARCHITECTS

ABACUS LIGHTING

WEDGE GROUP GALVANIZING

BOLIDEN AB

TECHNIKER

MICHAEL BARHAM

DENNIS GILBERT

SHONA JOHNSON

ARCHITECKTURBURO SCHULTZ AND PARTNER

BURO HAPPOLD/ROBERT GRESHOFF

RICHARD BRYANT

STUBBS RICH/DIEM PHOTOGRAPHS

GAYLE KNIGHT

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EDMUND SUMNER

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