URBAN LIVEABILITY FORUM

SUSTAINABLE HABITAT

# URBAN LIVEABILITY FORUM

PRESENTS

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A knowledge series from the experts on effective management of resources to enhance urban Liveability during and post pandemic.

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# THE CHALLENGE OF LOWERING CO2 EMISSIONS FROM TOURIST FACILITIES

**by Hans Friederich, Registrar of Climate Friendly Travel Registry at The SUNx Program**

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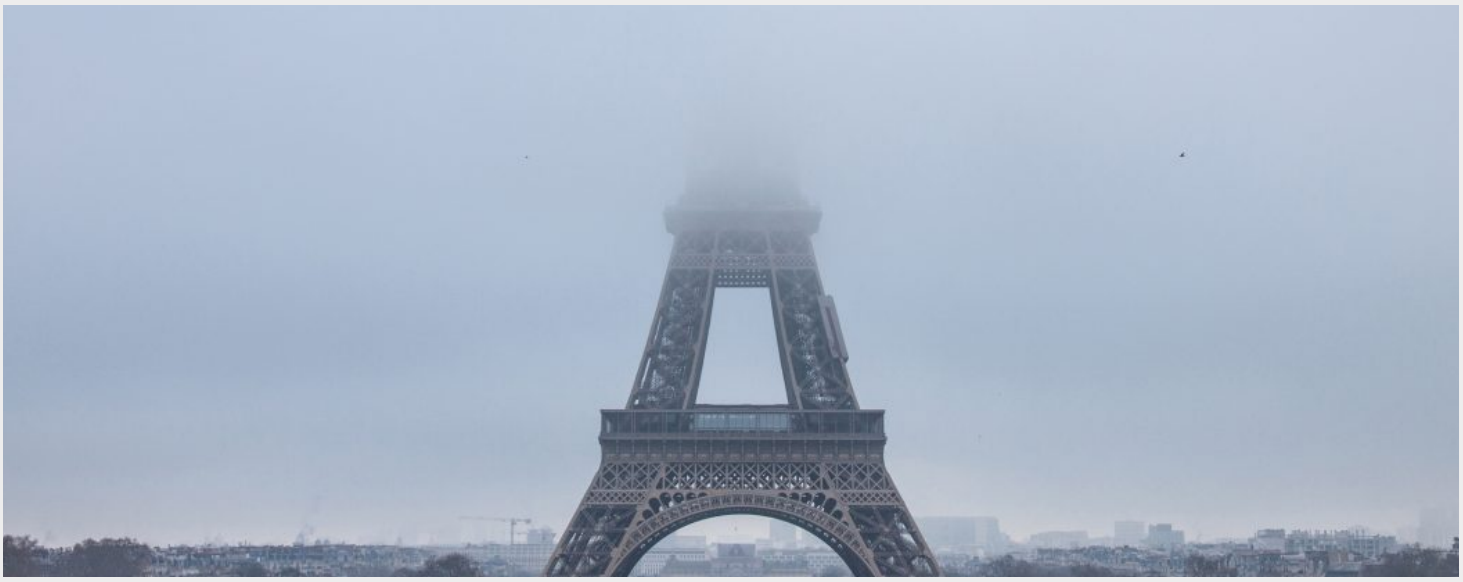

Rep. Pic. 1

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## The challenge of lowering CO2 emissions from tourist facilities-

*by Hans Friederich, Registrar of Climate Friendly Travel Registry at The SUNx Program*

As the Registrar of the global climate friendly travel registry, I am advocating that the hospitality industry makes plans to become carbon neutral by 2050, in line with all Nationally Determined Contributions to the Paris Agreement. Climate friendly travel is tourism that is low-carbon, linked to the Sustainable Development Goals and aiming for a maximum of 1.5 degree global warming. (https://climatefriendly.travel/)

### THE NEED FOR LOW CARBON BUILT ENVIRONMENT IN TOURISM INDUSTRY

One critical area of carbon pollution in the tourism community is the construction and renovation of buildings, be they hotels, restaurants, conference centres or museums. After all, buildings represent 39% of carbon dioxide emissions according to the World Green Building Council, and nearly half of this is from non-residential properties. I have been asked how to reduce the carbon footprint of a hotel or a conference centre, and while the Sustainable Hospitality Alliance has some excellent reports, let me use this opportunity to share my thoughts.

One of the key issues in construction is the use of concrete as a cheap and easy building material. Concrete is a mixture of cement, sand and gravel. Cement is made from limestone (calcium carbonate), which is generally quarried in open mines. In very simple terms, cement is made by burning the calcium carbonate to produce calcium oxide, which is called lime.

**Rep. Pic. 2**

The side effect of this chemical reaction is the production of carbon dioxide **(CaCO3 → CaO + CO2)**. World production of cement is about four billion tonnes per year, and if the cement industry were a country, it would be the third largest carbon dioxide emitter in the world with up to 2.8 billion tonnes CO2 per annum. This is surpassed only by China and the United States of America.

Green construction promotes the use of alternative construction materials, or the recycling of concrete from demolished sites. Alternative building materials could include stone, as we do here in Malta, or bricks made from clay, as is more common in the Netherlands where I was born. More recently, the use of wood as a building material has regained interest, which was emphasized by the EU President, Ursula von der Leyen. She made a speech in October 2020 where she called for a “construction industry that uses natural materials such as wood or bamboo”.

Interior design and finishing is an area where low carbon materials are particularly well suited. For example, window frames and doors should be manufactured from wood or bamboo, instead of PVC. Bamboo flooring can be installed instead of carpets or tiles. Recent life-cycle analyses show how engineered bamboo materials can be carbon-negative over their full life-cycle, even when sources in China and used in Western Europe. This is because of the carbon captured during growth and stored in the bamboo product, and because the bamboo products can be burned as a substitute for fossil fuel-based energy in their end-of-life phase.

Using paints and stains with lower volatile organic compounds is another aspect that will reduce the carbon footprint of the project.

Water-based paints are less harmful than oil-based paint as they contain less Volatile Organic Compounds (VOC). VOCs are solvents which readily evaporate, contributing to the formation of greenhouse gases in the atmosphere. They increase a product's environmental impact and are found in higher levels in solvent-based paints.

## DIRECT CO2 EMISSIONS FROM MANAGING A BUILDING

According to the Sustainable Hospitality Alliance, the global hotel industry will need to reduce its GHG emissions per room per year by 66% from 2010 levels by 2030, and 90% by 2050. On average, 50% of the reduction will need to be achieved internally, as hotels, restaurants, and other tourist facilities release carbon dioxide directly when they use equipment that uses fossil fuel as the source of energy.

Boilers and furnaces used for heating and cooking, pumps and sewage disposal and general electricity consumption to power lights and equipment all generate greenhouse gases, especially CO2, when powered by coal, oil or gas. Back-up power generation from diesel generators is an additional pollution source.

**Rep. Pic. 3**

One area that is often overlooked, especially in the global South, is the use of air conditioners for cooling, and this is particularly important for the hospitality sector. A 2019 study found that a total of 1.8–4.1 billion people in South and South-East Asia and sub-Saharan Africa are potentially exposed to heat stress due to lack of access to cooling.

**Rep. Pic. 4**

Covering this demand would lead to a substantial increase in energy requirements. Estimates are as high as 14% of current global residential electricity consumption, which would be another major contribution to the emissions from buildings.

Rep. Pic. 5

Yet, all this could be accomplished without major greenhouse gas emissions. For example, ground source heat pumps can replace boilers, furnaces and conventional water heaters, and wind turbines, micro-hydro and solar photovoltaic systems can be used to generate clean electricity. This can be combined with energy storage to compensate for the variability of wind and sunshine, making the overall system virtually carbon neutral.

While it may be impossible for a tourism facility to avoid the use of energy, it is much easier to conserve the energy, and to reduce energy loss. The installation of double or triple glazing keeps the heat in, and the cold out, while gardens on top of the building add to insulation of the roof.

On average, appliances are responsible for roughly 13% of the total energy use of a hotel. Although energy efficient appliances may have higher up-front purchase prices, their operating costs are often 9-25% lower than conventional models.

Rep. Pic. 6

Halogen light bulbs, compact fluorescent lights, and light-emitting diode bulbs (LEDs) use anywhere from 25-80 percent less electricity and last 3 to 25 times longer than traditional incandescent bulbs.

Timer switches and movement detectors will switch lights off and on when needed, and avoid using power when no one is around. Maximizing natural light in building saves on artificial lighting needs and energy costs.

Rep. Pic. 7

"Phantom loads," or the electricity used by electronics when they are turned off or in standby mode, are a major source of energy waste. In fact, it is estimated that 75% of the energy used to power household electronics is consumed when they are switched off, and this applies to tourist facilities as well. Making sure that equipment turns off when not in use saves energy and money.

## INDIRECT BUILDING-RELATED CO2 EMISSIONS

Not all the emissions attributed to hospitality buildings are produced on site. For example, if you have a property where all energy is produced by voltaic panels and energy-efficient heat pumps, no emissions are produced locally. However, if the electricity to power the heat pumps comes from a power station that operates on fossil fuel, the heating systems are still producing emissions indirectly.

Indirect emissions can also be attributed to transport systems that are associated with the enterprise. If taxis, buses and boats to transport guests use diesel or petrol as fuel, the carbon footprint of the hotel will reflect this. And of course, there is a significant carbon footprint from international air transport, if tourists come from overseas. Promoting travel by rail, bus or electric vehicles will reduce this indirect carbon load, provided that the electricity source is "green" as well.

Rep. Pic. 8

Similarly, the growing and supply of the food and drinks consumed on the premises will have a carbon footprint that is an indirect contribution to the CO2 emissions of the hotel or restaurant. Locally sourced fruit and vegetable have a much lower footprint produce flown in from the other side of the world, and they often taste better as well. Fresh produce needs less cooling, and reducing food waste will cut down on methane production.

## CARBON OFFSETS

The system to achieve carbon neutrality is first to try and avoid what you can by planning ahead and looking for low-carbon options, mitigating what is currently happening at your premises and reducing your footprint as far as possible. But, despite making all efforts, there may still be carbon emissions, and these can be compensated by what is called “carbon offsetting”. The offset is most likely the only way to deal with the indirect carbon emissions, until such time that the external energy source is no longer generated by fossil fuels.

Carbon offsetting is not an answer for a real low-carbon scenario, as it simply moves the carbon footprint off-site to somewhere else. But it is an interim solution in the route to zero-carbon. The concept revolves around the fact that you can pay for another entity to be responsible for the reduction of your carbon footprint. Normally the payment is linked to the planting of trees or the development of a low carbon project. But, while it allows you to calculate your carbon emissions as zero, it does not reduce the overall amount of carbon in the air.

## CLIMATE FRIENDLY TRAVEL REGISTRY

In order to show the world what carbon reduction and sustainability plans are being made by tourism companies and communities, SUNx Malta is encouraging the registration of these ambitions on the global climate friendly travel registry. Listing carbon reduction and sustainability intentions on the Registry is an effective way to show what you are doing if you have already considered the effects of climate change. If you have not yet developed a long-term plan, the registry will provide guidance and information that can help you to create one. The Registry is open-source, so potential customers and clients will be able to see that you are joining the global community that recognizes the critical importance of reducing our carbon footprint.

As we are working closely with the World Travel and Tourism Council, the SUNx Malta registry is the only registry for tourism and travel ambitions that is recognized by UNFCCC, and your contributions will therefore influence the global climate change debate. And as some countries are already preparing national legislation to enforce climate action by all segments of society, this will eventually become law throughout the world. Registering your ambitions now will put you in a stronger position to have a full plan when it becomes a legal obligation.

**Rep. Pic. 9**

## ABOUT THE WRITER

**Hans Friedrich**

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A seasoned natural resources manager with nearly 40 years working experience in Africa, Asia and Europe, he has worked for local and national government, managed projects and programs in an international organisation, and had national, regional and global briefs.

Strategic planning and long-term thinking has been part of the job for most of his career.

He was under contract with the International Union for Conservation of Nature **(IUCN)** for 24 years, in positions with increasing responsibility and authority. His last post with IUCN was Regional Director for Europe.

Until April 2019, he was the Director-General of the International Bamboo and Rattan Organisation **(INBAR)**, a global Treaty-based Inter-Governmental organisation.

The INBAR Headquarters in Beijing is a Diplomatic Mission in China.