



PALM POTENTIAL

Ancient technology could pave the way for sustainable future - especially in areas of the Middle East where cheap material currently going to waste could be used for building

A pioneering project is looking to recreate the desert design technology of past millennia by using palm tree leaves as building materials. Phoenix

dactylifera, or the date palm, is now best known for its sweet fruit. But as growers across the Middle East have known for thousands of years it can also be used in construction.

London-based architect Sandra Piesik is spearheading the scheme backed by engineering consultants Buro Happold and the Institut National de la Recherche

Agronomique (National Institute for Agricultural Research) in the North African state of Morocco.

The project is currently at the stage of examining the potential of the leaves as a low-carbon, renewable material for building.

First secretary at the UAE's London Embassy, HH Sheikh Mohammed bin Maktoum Al



Maktoum – known for his interest in eco-technology – recently paid the UK science team a visit and saw how the palm leaf structures stand up to pressure, using tests usually reserved for steel constructions.

It was working in Dubai which first sparked the idea of resurrecting the use of the naturally-available material in Piesik's mind.

She said: "I came to Dubai in 2006 and worked on a few commercial projects including towers.

"As a European, I was simply curious to find out how indigenous people lived in a desert climate before and how they responded to such extreme weather conditions in terms of their habitation."

Piesik said she then explored the potential of the palm in detail.

"Any case study to explore a new use of palm leaves in the Middle East – and other countries where date palm tree grow such as North Africa - is related to its availability," she said.

"Date industry forms part of an important agricultural sector in the Arab world with the UAE and Morocco being among the world's largest producers.

"Each tree has 10 dry palm leaves

Ancient Liwa Oasis is now the site of pioneering scheme

Architect Sandra Piesik is behind scheme

that need to be cut annually for the next year harvest – so ‘arish’ is in essence an agricultural waste that is being produced in over 40 countries. It is a compelling statistic for its future use.

“It is cheaper than any other building material used for construction of buildings. The leaf may cost from AED1 to AED2 (\$0.27-0.54). This is for collection and transportation of the dry palm leaves for their usage.

“I see huge potential in usage of dry palm fronds in a what is a new, modern way.”

Piesik said she was looking into how the historic method of building can now be integrated into the needs and demands of the people living in the 21st century.

She said: “The UAE’s society has been through tremendous social changes over the past 40 years and a new image of palm leaf buildings must be aligned with a very different society from that of four decades ago. There is an anthropological question of social changes - and providing a robust solution for that connects to the climate, land and above all the peoples’ indigenous culture.”

French expertise has also been involved in the project following the country’s acquisition of some leaves from Al Ain, Abu Dhabi, thanks to the sponsorship of the Abu Dhabi Tourism and Culture Authority.

From September 1 a workshop further examining the plan’s potential will take place at an institute called Domine de Boisbuchet, in south west France.



AED1-2
IS THE COST
OF A LEAF



This facility is run by Alexander von Vegesack, founder of the world famous Vitra Design Museum –the home of one of Europe’s most impressive collections of style designs and modern architecture.

Piesik will be heading the newly-

formed study group.

She explained: “I think that re-contextualisation of traditional technologies with such a high profile cultural organisation will help in revival of the subject.

“We are still inviting contributors, so people are welcome to join us on: www.boisbuchet.com.”

Piesik feels the project would be of great benefit to people struggling for housing and shelter especially in poorer regions of the Arabian Peninsula, North Africa or India.



The re-contextualisation of traditional technologies with such a high profile cultural organisation will help in revival of the subject - Sandra Piesik architect

Work started in the UK before the project was tested in the UAE

She said: "I think that we could look at this subject from micro-economic level and demonstrate that introduction of palm leaf technologies can stimulate employment and growth in struggling communities."

Piesik also highlighted its environmental advantages, both as a material and because trees absorb carbon-emission gases.

She said: "I learnt from construction of a palm leaf house in Liwa Oasis (in the UAE) that interiors of a house achieve around 23°C cooling in June without air conditioning. Dry date palm leaves perform around 26°C better than sand and probably 40°C better than concrete and glass because they reflect sun.

"It is a renewable material that has been used in the region for building construction for over 7,000 years and is applicable to the desert climate in particular.

"I passionately believe that re-introduction of date palm leaf technologies and other local materials that are indigenous to a region would help local communities in low-end and high-end applications.

"We could construct low-cost housing, clinics and schools, but we could also use this material for eco-tourism and in the cityscape context. I do not think that this should be understood or pioneered instead of other building materials, but in addition to.

"I think that we all understand that whatever is happening now does not work for the planet and for future generations.

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Sandra Piesik architect

23
DEGREES IN JUNE
MAKES A COOL
BUILDING



"We have dramatic socio-economic problems that are related to shortages of resources globally. The use of date palm leaves - or other local materials - makes a compelling case for using what we have on

Earth in a better way.

"There are lessons to be learnt from the past and the diversity of traditional palm leaf buildings created by emirati people in the extremes of a desert climate shows brilliant, yet simple, technological innovations of their time - that could be adapted today.

"It would be nice to deliver a contemporary date palm leaf building in the UAE and I hope that we would be able to do it in the near future." 🌱