Realising tropical timber's marine use potential

Tropical hardwood's long-held status as the prime material for European fresh and seawater marine applications has been increasingly challenged by alternatives; steel, concrete, recycled plastics, wood-plastic composites, temperate timber species and increasingly, for sea defences, rock armour. Some feel that sustainability concerns - the perceived linkage of marine-use tropical species with deforestation - and also the EU Timber Regulation have also increased trade, end-user and specifier risk aversion and helped incentivise use of substitutes.

Despite this, according to comments from the EU trade, tropical timber is still holding its own in the market. It remains a material of choice for sea defences where aesthetics and use of the coast as a public amenity is a priority. Many specifiers still acknowledge its unique technical performance benefits and its environmental profile is also being improved, albeit slowly, by growing understanding and market recognition of its carbon and life cycle credentials.

However, it is also accepted that the trade cannot be complacent. This is a product area that is already highly lucrative and potentially set to grow more significant if, as some predict, climate change affects water levels and creates more extreme weather patterns, but the consensus is that it is also likely to become ever more demanding in terms of specification requirements and increasingly competitive.

There are signs that the industry is responding to market developments and challenges. In particular in the Netherlands, arguably Europe's leading exponent of the use of wood in marine and broader civil engineering applications, an action plan has been launched to drive timber uptake.

There has also been growing activity to raise awareness in the marine market of the potential of lesser-used or lesser-known tropical timber species (LKTS). The aim is to both relieve pressure on the most popular species, notably ekki/azobe and greenheart, and also to increase the palette of materials available to specifiers and potentially increase timber's range of marine applications.

At the same time, say researchers, this area urgently requires significantly increased funding from the timber sector, both importers and suppliers, to generate the performance data needed if these lesser known varieties are to make progress and help combat the advance of rival materials in the timescale required.

Trade feedback is that the European marine products market this year has actually been steady to slowly growing, reflecting wider economic growth and increased government spending on infrastructure projects generally.

It's reported too that there has been a trend towards the private sector becoming the key marine timber buyer, although one Dutch importer/distributor said this

'goes in phases'. "Currently a lot of public sector work is also tendered as a project, and as such marine timber is bought by the contractor," they said.

A UK buyer also said some of the country's public agencies have migrated away from tropical timber generally. "For instance, the Canal and Waterways Trust now specifies only oak for lock gates," they said. They also commented that the UK Environment Agency (EA), which has a large measure of control in public marine project materials specification, has a hierarchy of timber use, favouring recycled timber over virgin. "The EA applies this policy to its own purchases and encourages partner projects to do the same," they said.

They added that the EA also insists its personnel make an "exhaustive business case" for using tropical timber. However another importer maintained that the agency still regards it as one of the foremost materials for marine application, pointing to its guidelines for use of lesser known species to highlight the overall pragmatism of its approach. "Ultimately," it states, "the decision about [timber] use will depend on a mixture of technical, environmental and commercial considerations."

The preference for European public projects, said suppliers, is overwhelmingly for third party certified timber, which in the marine market means FSC-certified due to the lack of appropriate PEFC varieties. But this is also currently tempered with practicality. Other forms of proof of sustainability and legality are accepted where certified is not available in the quantity or time required. And interestingly, one importer/producer noted a change in this area since the introduction of the EUTR.

"We've actually seen a marginal decrease in certification requirements, with more contractors and local authorities accepting solely EUTR compliant, legally verified timber," they said.

At the same time, another importer said FSC-certification could still act as a 'passport' into the European market, as demonstrated by increased interest in Guyanese greenheart since the Iwokrama Forest was certified last year. "[Guyanan supply] has not been entirely smooth, but there has been interest in its certified offering, especially in the UK public sector where lack of certification had impacted demand," said a Dutch importer.

On other effects of the EUTR, one importer said it had made marine-use tropical timber a more difficult sell by 'generally raising concern about its legality'. Others did not wholly agree, but several commented that it had narrowed the supply base. "No single country has dropped out of the market due to EUTR, but individual suppliers in several countries have been unable or unwilling to meet European importers' due diligence requirements," one company said.

Whether related to the EUTR or not is unclear, but another importer also said there had been a decline in the number mills in Europe cutting tropical marine hardwoods. "You can now count them on one hand," they said.

As for prices, the trend is reported to be strongly upwards. This, said importers, is in line with wood prices generally and largely the result of increasing global demand. Also implicated, however, are increased freight rates, logistical difficulties, including wood backlogs at the Cameroon port of Douala, and, said one company, "the burden of paperwork required [of suppliers] under both the EUTR and third party certification".

It's against this background that a group of leading hardwood companies in the Netherlands, all members of the VVNH timber trade association and in association with timber market development and research organisation Centrum Hout, decided last year to launch their promotion and educational campaign – their core aim, to increase uptake of tropical timber in marine/hydraulic and wider civil engineering applications.

The inspiration for 'Wood in GWW' (Grond Weg in Waterbouw) initiative was partly the result of earlier environmental impact and LCA evaluation of tropical species. The research was led by VVNH and backed by the European Sustainable Tropical Timber Coalition, which is dedicated to increasing sustainably sourced material's market share. LCA work was done by Ernst & Young Climate Change and Sustainability Services and independently verified by Stichting Houtresearch.

The project compared sustainability ratings of waterway pile planking in azobe, okan and angelim. It also measured their environmental impacts relative to planking in steel and plastic. The results came out strongly in favour of wood and the report recommended 'more extensive third-party verified LCA to endorse timber pile planking's environmental benefits'. Hence the 12 Dutch businesses decided to take this work forward and develop a wider promotional and marketing initiative.

Among Wood in GWW activities to date have been presentations to leading civil engineering and contractor businesses. These are reported to have generated positive responses and increased consultation with the timber trade on materials specification for projects such as plank piling and bridge construction.

"The campaign has also increased interest in use of wood for civil works at the Dutch Ministry of Infrastructure & Water Management," said Centrum Hout's Eric de Munck. "One of its responsibilities is implementation of a circular economic model in the Netherlands, with a very ambitious agenda to develop the bio-economy and cut emissions. This now includes several projects to see how wood (and other bio-based products) can help reduce CO2 emissions in government infrastructure projects and to find ways to give them privileged status in open public procurement and tenders."

As part of this, he added, the ministry has commissioned further LCA studies for a range of infrastructural projects, including in tropical timber.

Wood in the GWW has its own website (www.houtindegww.nl) and has published a range of literature. It has developed a carbon calculator too,

predominantly for tropical species, which has now been launched in English, German and French versions (www.opslagCO2inhout.nl/en).

Having assessed the campaign's impact to date, its members have now decided to take it forward for another two years, "Wood in the GWW 2.0". Plans include increased targeting of local and central government specifiers, 'development of circular [economy] business models' and further LCAs on timber pile planking. The latter are particularly focused on helping combat the growing threat from the subsidised recycled plastic manufacturing sector.

"Sheet piling is an easy, low-knowledge product which can absorb large volumes of waste, and plastic producers are targeting 7% increase in market share in coming years," said Mr de Munck.

In summary, he concluded, Wood in the GWW supporters had decided that "it is necessary to increase communication of the climate, environmental and technical benefits of wood, especially sustainably sourced tropical hardwood, as the competition increases".

Meanwhile efforts to increase uptake of lesser-known species have come not just from the industry, but also from NGOs and the FSC, notably FSC Denmark and Netherlands.

One importer acknowledged that ekki and greenheart's all round durability and technical characteristics, notably their resistance to abrasion and marine borers and promise of service life up to 60 years in salt and fresh water, made them difficult to beat. However, said an importer, often these species are specified through tradition or for convenience in associated works alongside ekki and greenheart projects where their properties are not needed.

"Specifying timber more in 'fit-for-purpose' terms, with mixed species allowed, would lead to development of a more diverse timber trade, in turn supporting sustainable forestry, improving prices and fully utilising sawmills' capacity in producer countries," said a company spokesperson.

Among species importers said they were highlighting for marine construction included basralocus, opepe, okan, eveuss and massaranduba.

Since launching its STTC-backed lesser-known timber species website in 2016, FSC Denmark also reports increasing visitor traffic (www.lesserknowntimberspecies). And prominent on the site are case studies of marine applications of such varieties as bilinga, massaranduba and basralocus. In the UK there is also a 25-year public/private partnership project, the Pevensey Bay Sea Defence scheme, to evaluate a range of tropical species, including purpleheart and eveuss, alongside plastic composite.

Specialist in the field, Dr John Williams, principal consultant (materials and structures) at international environmental consultancy RSK, believes there is

considerably more scope for developing the range of tropical hardwoods used in marine applications, to the benefit of the timber industry and the forest.
"As the STTC concluded in its report on Suriname and the potential of its lesser used species, if we can use more of this material, responsibly sourced, it adds to the value of the forest and incentivises sustainable management," he said.

What is needed to achieve this, however, is more testing and performance data, especially strength testing of timber for sea defences. Dr Williams has worked with Portsmouth University on accelerated trials for marine timber abrasion and shipworm resistance. He is also involved in research in developing alternative proofs, to the European standard D class system for timber structural strength, with a paper set for industry consultation once complete.

Research requires funding, however, and Dr Williams suggested that more should come from the timber industry. He also maintained that now is the time to act, particularly, due to growing concerns about marine plastic pollution, with one competitor potentially disadvantaged.

"The industry has to provide the data to make it straightforward for specifiers, such as local government, to choose timber for this work. If it isn't and given the level of competition in the market, there may come a point where they lose patience with wood and, for instance, order Norwegian granite for rock armour instead," he said. "Timber has a huge opportunity here, but it needs a joined up, collective effort to be realised."