Producing Sustainable Musical Instruments

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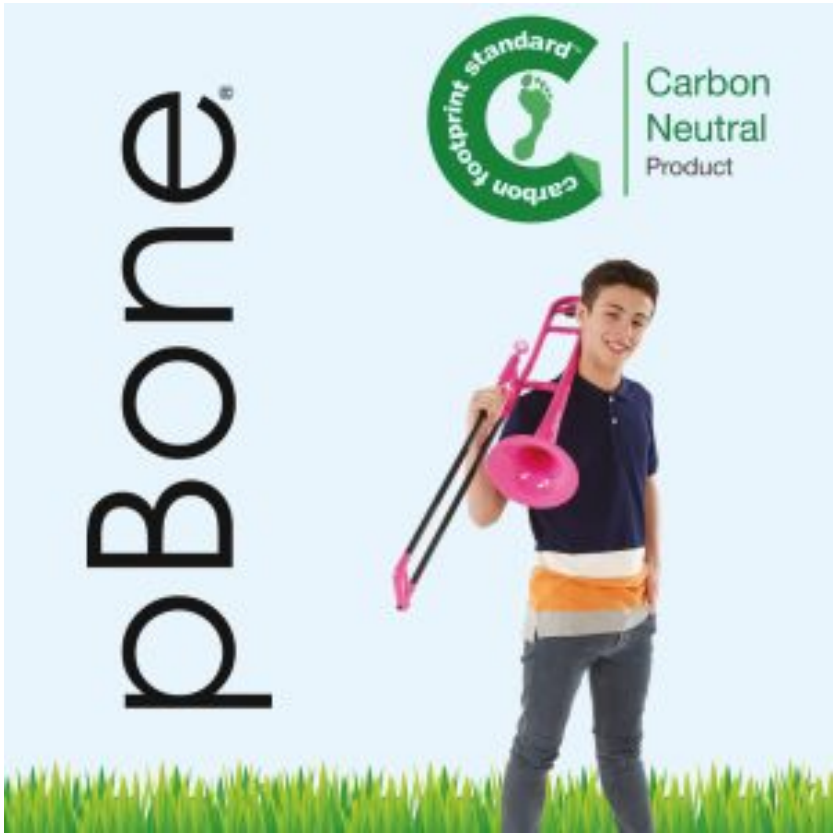
Every minute, the area of 48 football pitches of forest is lost. Forty six per cent of the world's forests have already been destroyed.[1]



Facing climate change due to man and its growing impact on ourselves and other species' lives, we have to transform our use of resources in all areas. Musical instruments play a specific role in this context. As traditions of making musical instruments have grown over centuries, it is impossible to change this in an instant. Their ways of working depend on so many aspects – just as eco systems are finetuned through a variety of conditions and interdependent species. In other words, we must respect nature, art and artisanry! However, how does making musical instruments affect the earth and its climate? What options and alternatives are there? Let us look at what changes can be made to move towards sustainability.

Deforestation leads to a decline in biodiversity and climate change. Extreme weathers, storms, draughts and floods are already becoming a threat to life on earth. Protection and regrowth help to slow down the ever-accelerating change, which

helps the planet to recover at least partially. Unfortunately, precious wood from old forests traditionally used in making musical instruments is becoming scarce. What’s more, whole forests are cut down to obtain rare tropical wood.

Efforts to stop extinction have been made. CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) was set up to regulate the market, prohibiting the felling and trading of precious and endangered wood. The EU timber regulation prohibits the trade of illegal logging. Yet, tropical forests are being cleared, precious wood like rosewood is being traded every day, due to virtually no controls, complex supply chains and alarmingly low fines.[2] Fortunately, some certificates help consumers find sustainable choices. NAMM[3] (National Association of Music Merchants) is working to share and expand sustainable practices worldwide.[4] FSC (Forest Stewardship Council)[5] has established high ecological and social standards for the wood trade, including the making of musical instruments. The Sound and Fair campaign guarantees complete transparency of supply chains and supplies FSC certified African blackwood, or ebony, wood which is typically used for making woodwind instruments and is now nearly extinct.[6] Taylor Guitars promote reforestation in their Ebony Project[7], Martin Guitar is committed to using alternative wood and recycling.[8] Equipment-wise, Edgware[9] by BBICO[10] provides products for woodwind and brass instruments. They produce non-synthetic products free of toxins and petroleums in biodegradable and recyclable packaging. Vandoren, global player in woodwind reeds, reduces CO2 emission in production while reusing cane waste.[11]

Looking to the future, we are facing multiple challenges. Reforestation cannot compete with the current rate of deforestation. However, how can we protect endangered wood while maintaining artistic standards and sound quality? For a musical instrument, material properties like the density of wood, its inner 3D structure and resulting stability and flexibility are key to all aspects of sound production and transmission. Those properties depend on the soil a tree has grown on, as well as the altitude and overall climate of the area. For example, the Sitka spruce grows slowly and under perfect conditions in the cool climates of Alaska and Canada. The density of the wood is ideal for making guitars. Its dwindling supply has led guitar manufacturers to engage in tree conservation. Wood from new and fast grown trees from other areas usually cannot compete, as it is not as robust and not as resonant.

Therefore, local newly grown wood does not seem to be a solution. However, hopes are high for thermal mechanical

modification. Since 2017, a research project at Eberswalde University for Sustainable Development has developed a game changing technology: Heating wood like copper beech constantly and without oxygen dries them, making the material denser up to the point it is needed. In collaboration with Reinhardt Best Acoustics GmbH, they presented guitars made from thermally modified native tonewood at the Musikmesse Frankfurt trade fair.[12]

In the network project SubMat4Music, Professor Alexander Pfriem and his team from Eberswalde work together with tonewood manufacturers, dealers and instrument makers: “Our mission is to reproduce and improve acoustic properties of tonewood and to create long-lasting products with a high level of customer satisfaction.” Biological treatment has also been investigated. In future, reducing wood density with the help of fungi may help refine dynamic range and the variety of tonal colours in violins for soloists.[13]

Composites are another method of making sustainable musical instruments. Ekoa, a mélange based on flax linen and bio resin, has some notable characteristics. Flax is grown easily within 100 days. Its strong fibres are light-weight and easily shaped, yet Ekoa looks and sounds like wood. Warwick Music Group creates robust brass instruments designed for beginners made from recyclable ABS plastic.[14] Légère’s synthetic bassoon reeds are appreciated for their reliability and durability.[15]

Searching for sustainable alternatives in making musical instruments can result in new acoustic worlds like the Vegetable Orchestra.[16] The ensemble performs on instruments made of fresh vegetables and they then make a soup from the vegetable waste after concerts. Imagination has no limits, who knows what our sustainable musical future will sound like…

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Edited by Christina Cordaroy, UK

[1] https://onetreeplanted.org/pages/tree-facts

[2] https://www.sueddeutsche.de/wissen/zerstoerung-des-regenwalds-holzschmuggel-1.2865747

[3] *National Association of Music Merchants:* https://www.namm.org/about

[4] https://www.namm.org/issues-and-advocacy/regulatory-compliance/sustainability

[5] https://fsc.org/en

[6] https://www.soundandfair.com See also http://www.swisswoodsolutions.ch/de/sonowood https://www.eben-holz.org

[7] https://www.taylorguitars.com/ebonyproject/

[8] https://www.martinguitar.com/sustainability.html, see also https://www.leonardo-guitar-research.com

[9] https://bbico.com/introducing-edgware-by-bbico/

[10] British Band Instrument Company: https://bbico.com

[11] https://vandoren.fr/en/faq-tips/

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[16] https://www.vegetableorchestra.org