

Actions speak louder . . .

Fact Sheet no.10: Roof structures without using timber

Description and analysis

In many areas of the tropics there are no indigenous trees which are suitable for sawn timber. Dwellings and large buildings such as schools require roof cover, and the majority of structural members used are wood, which has to be brought into the locality from farther afield. This needs to be straight and stable i.e. correctly seasoned so as to maintain its straightness.

People felling trees for firewood and construction are the cause of growing desertification, erosion and the increased flashiness of floods hydrographs where less seasonal rain penetrates the ground leading to a faster and larger runoff. Both for economic reasons and to encourage regeneration of woodlands. Measures should be found to reduce the need to cut down trees by devising other forms of roofing structure.

Design Response

Lightweight fabricated metal structures are becoming popular, particularly for the spanning roofs for classrooms and industrial buildings. Carefully calculated design work can result in structures of adequate strength with reduced requirement for materials such as mild steel sections. They are heavy and therefore costly to transport over long distances. Research is in progress in the use of low cost recycled plastic composites such as

glass filled nylon to produce modular elements which can be assembled into substitute timber rafters and battens.

Parry associates technical input possibilities

Parry Associates is working with Glendenning Plastic Moulding to study the feasibility of using special recycled plastic; glass filled nylon (GFN); as a timber substitute. The GFN components are easily assembled, lightweight and therefore easy to transport. Normally supplied in metre long sections.

Local Resources Required

Builders with capacity to adopt to new technologies.

Potential Local Business Response

Availability of recycled PVC modular roofing elements in palletised kits could spur the development of local business specialising in the assembly of these into complete roofing structures, ready for the installation of the tiles. The activity could sit alongside or become part of the supply of lightweight concrete roofing elements manufactured in the same locality.

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