## Wood fly ash as cement replacement in concrete

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The research was made in the laboratories of The School of Engineering in Bilbao.

• Looknig at all the results provided by this papers we can conclude that wood fly ash can successfully replace percentages of cement in concrete without modifying the properties in a significant way. The addition of wood fly ash would also reduce the costs and provide a sustainable way of managing construction field.

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## **6.** References

[1] Kraus, R.N., Naik, T.R. & Chun, Y., 2006.Use of industrial by-products in sustainable construction practices. *Concrete*.

[2]http://www.skogsstyrelsen.se/en/AUTHORITY/Statistics/Subject-Areas/International-Forest-Statistics/International-Forest-Statistics/

[3]http://www.cirad.fr/en/publications-resources/science-for-all/the-issues/all-about tropical-forests/what-you-need-to-know/wood-a-renewable-eco-material

[4] http://www.greenfacts.org/en/forests/l-3/3-climate-change.htm#0p0

[5] Barrows, B., 2011. Management of Wood Ash Generated from Biomass Combustion Facilities. , pp.1–2.

[6] Suhendro, B., 2014. Toward Green Concrete for Better Sustainable Environment. *Procedia Engineering*, 95(Scescm), pp.305–320.

[7] Wangchuk, K., Tsheten, K. & Yezer, K., 2013. Greeen Concrete for Sustainable Construction, pp.142–146.

[8] European Parliament and Council, 2008. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain directives (Waste framework. *LexUriServ. do*, pp.3–30.

[9] Siddique, R., 2012. Utilization of wood ash in concrete manufacturing. *Resources, Conservation and Recycling*, 67, pp.27–33.

[10] Abdullahi, M., 2006. Characteristics of wood ash/OPC concrete. *Leonardo Electron J Pract Technol*, 8(8), pp.9–16.