

REFERENCES

- [1] UNDP. United Nations Department of Economic and Social Affairs. New York. 2015; Available at: <http://www.un.org/en/development/desa/news/population/2015-report.html> (Accessed 10.07.2016)
- [2] IMF. International Monetary Fund. World Economic Outlook. India vs China GDP. 2015; Available at: <http://statisticstimes.com/economy/china-vs-india-gdp.php> (Accessed 07.10.2015).
- [3] WEO. World Energy Outlook. 2015; Available at: http://www.worldenergyoutlook.org/media/weowebsite/2015/WEO2015_Chapter01.pdf (Accessed 20.10.2016)
- [4] Yazan DM, Mandras G, Garau G. Environmental and economic sustainability of integrated production in bio-refineries: The thistle case in Sardinia. Renewable Energy. 2017;102, Part B:349-60.
- [5] WEO. Energy and Climate Change. International Energy Agency. 2015. Available at: <https://www.iea.org/publications/freepublications/publication/WEO2015SpecialReportonEnergyandClimateChange.pdf> (Accessed on 10.11.2016).
- [6] IEA. CO₂ emissions from fossil fuel combustion. International Energy Agency. 2015; Available at: <https://www.iea.org/publications/freepublications/publication/CO2EmissionsFromFuelCombustionHighlights2015.pdf> (Accessed 07.01.2016).
- [7] IEA. Crude Oil Production. Energy Statistics of OECD Countries. 2015; Available at: http://www.oecd-ilibrary.org/energy/energy-statistics-of-oecd-countries_19962827-en (Accessed 01.07.2016).
- [8] IEA. Oil Market Report. World Oil Demand. 2015; International Energy Agency. Available at: <https://www.iea.org/OILMARKETREPORT/OMRPUBLIC/>. (Accessed 19.04.2016).
- [9] Carbon Budget Global Carbon Budget. 2016; Available at: <http://www.globalcarbonproject.org/carbonbudget/> (Accessed 10.11.2016).
- [10] IPCC. Climate Change 2014. Intergovernmental Panel on Climate Change. 2014; Available at: https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf (Accessed on:10.10.2014).
- [11] IEA. Transport Energy and CO₂. International Energy Agency. 2009; Available at: <https://www.iea.org/publications/freepublications/publication/transport2009.pdf> (Accessed, 04.10.2015).
- [12] Oliver JG. Trends in Global CO₂ emissions. European Commission Joint Research Centre. 2016; Netherlands.
- [13] EIA. International Energy Outlook. Energy Information Administration. 2016; Available at: <https://www.google.co.in/search?q=5U.S.+Energy+Information+Administration+%7C+International+Energy+Outlook+2016&oq=5U.S.+Energy+Information+Administration+%7C+International+Energy+Outlook+2016&aqs=chrome..69i57.436j0j7&sourceid=chrome&ie=UTF-8#q=U.S.+Energy+Information+Administration+%7C+International+Energy+Outlook+2016> (Accessed 11.07.2016).

- [14] IEA. Renewable Energy. Interantional Energy Agency. 2016; Available at: <https://www.iea.org/topics/renewables/subtopics/bioenergy/>(Accessed 01.08.2016).
- [15] WEC. World Energy Resources. World Energy Council. 2016; Available at: <https://www.worldenergy.org/wp-content/uploads/2016/10/World-Energy-Resources-FullReport-2016.pdf>(Accessed 07.07.2016).
- [16] REN21. Renewables 2016. Gloabl Status Report. Renewable Energy Policy Network for the 21st century. 2016; Available at: http://www.ren21.net/wp-content/uploads/2016/10/REN21_GSR2016_FullReport_en_11.pdf (Accessed 05.11.2016).
- [17] EPA. Energy Independence and Security Act. United States Environmental Protection Agency. 2007; Available at: <https://www.epa.gov/laws-regulations/summary-energy-independence-and-security-act> (Accessed 10.05.2016).
- [18] RFS. Renewable Fuel Standard (RFS): Overview and Issues. United States Environmental Protection Agency. 2013; Available at: <https://www.ifdaonline.org/IFDA/media/IFDA/GR/CRS-RFS-Overview-Issues.pdf> (Accessed 02.02.2016).
- [19] EPA. Program Overview for Renewable Fuel Standard Program. United States Environmental Protection Agency. 2007; Available at: <https://www.epa.gov/renewable-fuel-standard-program/program-overview-renewable-fuel-standard-program> (Accessed 07.08.2016).
- [20] RED. EU Renewable Energy Directive 2009/28/EC. Renewable Energy Directive-European Commission. 2009; Available at: <https://ec.europa.eu/energy/en/topics/renewable-energy/renewable-energy-directive> (Accessed: 11.02.2016).
- [21] Lautala PT, Hilliard MR, Webb E, Busch I, Richard Hess J, Roni MS, et al. Opportunities and Challenges in the Design and Analysis of Biomass Supply Chains. Environmental Management. 2015; 56(6):1397-415.
- [22] IPCC. Climate Change 2007: Working Group I-The Physical Science Basis. Intergovernmental Panel on Climate Change. 2007; Available at: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/tssts-3-1-1.html (Accessed 09.10.2016).
- [23] EPA. Global Greenhouse Gas Emissions Data. United States Environmental Protection Agency. 2015; Available at: <https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data>(Accessed 10.09.2016).
- [24] Biofuels. History of Biofuels. Biofuels: The fuel of the future. 2010; Available at: <http://biofuel.org.uk/history-of-biofuels.html>(Accessed 08.10.2016).
- [25] Biofuels. A brief history of biofuels. Biofuel Net. 2013; Avialble at: <http://www.biofuelnet.ca/2013/07/31/a-brief-history-of-biofuels-from-ancient-history-to-today/> (Accessed 19.10.2016).
- [26] MacLean HL, Lave LB, Griffin WM. Alternative transport fuels for the future. International Journal of Vehicle Design. 2004;35(1):27-49.
- [27] Biofuels. Shell Gloabl Report. Shell. 2014; Avaialable at: <http://www.shell.com/energy-and-innovation/the-energy-future/future-transport/biofuels.html>(Accessed: 21.07.2016).

- [28] RFA. Fuelling a High Octane Future. Renewable Fuels Association. 2016; Available at: <http://www.ethanolrfa.org/wp-content/uploads/2016/02/Ethanol-Industry-Outlook-2016.pdf> (Accessed 10.05.2016).
- [29] USDA. Brazil Biofuels Annual. United States Department of Agriculture Foreign Agricultural Services. 2015; Available at: https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Biofuels%20Annual_Sao%20Paulo%20ATO_Brazil_8-4-2015.pdf(Accessed 02.06.2016).
- [30] Kazamia E, Smith AG. Assessing the environmental sustainability of biofuels. Trends in Plant Science. 2014; 19(10):615-8.
- [31] Biofuels Markets and Technologies. Clean Technia. 2016; Available at:<https://cleantechnica.com/2012/02/20/report-global-biofuels-market-could-double-to-185-3-billion-by-2021/> (Accessed 05.04.2016).
- [32] IEA. India Energy Outlook. World Energy Outlook Special Report. International Energy. 2015; Available at: (https://www.iea.org/publications/freepublications/publication/IndiaEnergyOutlook_WEO2015.pdf):Accessed 22.08.16.
- [33] GoI. Indian Petroleum and Natural Gas Statistics. Ministry of Petroleum and Natural Gas Statistics, Government of India. 2015; Available at: www.petroleum.nic.in/docs/pngstat.pdf(Accessed: 19.08.16).
- [34] USDA. India Biofuels Annual. United States Department of Agriculture. 2016; Available at: https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Biofuels%20Annual_New%20Delhi_India_6-24-2016.pdf(Accessed 19.08.216).
- [35] UNEP. Biofuel Roadmap of India. Promoting Low Carbon Transport in India. United Nations Environmental Programme. 2001; Available at:http://www.unep.org/transport/lowcarbon/PDFs/Biofuel_Roadmap_for_India.pdf: (Accessed 07.12.2013).
- [36] GoI. National Policy on Biofuels. Government of India Ministry of New & Renewable Energy. 2009; Available at: http://mnre.gov.in/file-manager/UserFiles/biofuel_policy.pdf (Accessed 17.09.2016).
- [37] Das BK, Kalita P, Chakraborty M. Chapter 21 - Integrated Biorefinery for Food, Feed, and Platform Chemicals A2 - Brar, Satinder Kaur. In: Sarma SJ, Pakshirajan K, editors. Platform Chemical Biorefinery. Amsterdam: Elsevier; 2016. p. 393-416.
- [38] Moncada J, Tamayo JA, Cardona CA. Integrating first, second, and third generation biorefineries: Incorporating microalgae into the sugarcane biorefinery. Chemical Engineering Science. 2014;118:126-40.
- [39] Costa CBB, Potrich E, Cruz AJG. Multiobjective optimization of a sugarcane biorefinery involving process and environmental aspects. Renewable Energy. 2016;96, Part B:1142-52.
- [40] Sindhu R, Gnansounou E, Binod P, Pandey A. Bioconversion of sugarcane crop residue for value added products – An overview. Renewable Energy. 2016;98:203-15.
- [41] Sarma SJ, Ayadi M, Brar SK. Chapter 2 - Biorefinery: General Overview. Platform Chemical Biorefinery. Amsterdam: Elsevier; 2016. p. 21-32.
- [42] Silalertruksa T, Gheewala SH, Pongpat P. Sustainability assessment of sugarcane biorefinery and molasses ethanol production in Thailand using eco-efficiency indicator. Applied Energy. 2015;160:603-9.

- [43] Cherubini F. The biorefinery concept: Using biomass instead of oil for producing energy and chemicals. *Energy Conversion and Management*. 2010; 51(7):1412-21.
- [44] Cherubini F, Jungmeier G, Wellisch M, Willke T, Skiadas I, Van Ree R, et al. Toward a common classification approach for biorefinery systems. *Biofuels Bioproducts and Biorefining*. 2009; 3(5):534–46.
- [45] García A, González Alriols M, Labidi J. Evaluation of different lignocellulosic raw materials as potential alternative feedstocks in biorefinery processes. *Industrial Crops and Products*. 2014; 53:102-10.
- [46] Mohr A, Raman S. Lessons from first generation biofuels and implications for the sustainability appraisal of second generation biofuels. *Energy Policy*. 2013; 63(114–122).
- [47] RFS. Lifecycle Analysis of Greenhouse Gas Emissions under the Renewable Fuel Standard. Renewable Fuel Standard Program. United States Environmental Protection Agency. 2007; Available at: <https://www.epa.gov/renewable-fuel-standard-program/lifecycle-analysis-greenhouse-gas-emissions-under-renewable-fuel> (Accessed: 09.5.2016).
- [48] LCFS. Low Carbon Fuel Standard. California Environmental Protection Agency. 2013; Available at: <https://www.arb.ca.gov/fuels/lcfs/lcfs.htm> (Accessed 09.07.2016).
- [49] Smeets E, Junginger M, Faaij A, Walter A, Dolzan P, Turkenburg W. The sustainability of Brazilian ethanol—An assessment of the possibilities of certified production. *Biomass and Bioenergy*. 2008;32(8):781-813.
- [50] Seabra JEA, Macedo IC, Chum HL, Faroni CE, Sarto CA. Life cycle assessment of Brazilian sugarcane products: GHG emissions and energy use. *Biofuels Bioproducts & Biorefining*. 2011; 5(5):519-32.
- [51] Luo L, van der Voet E, Huppes G. Life cycle assessment and life cycle costing of bioethanol from sugarcane in Brazil. *Renewable and Sustainable Energy Reviews*. 2009; 13(6–7):1613-9.
- [52] Macedo IC, Seabra JEA, Silva JEAR. Green house gases emissions in the production and use of ethanol from sugarcane in Brazil: The 2005/2006 averages and a prediction for 2020. *Biomass and Bioenergy*. 2008; 32(7):582-95.
- [53] Khatiwada D, Seabra J, Silveira S, Walter A. Accounting greenhouse gas emissions in the lifecycle of Brazilian sugarcane bioethanol: Methodological references in European and American regulations. *Energy Policy*. 2012; 47:384-97.
- [54] Goldemberg J, Coelho ST, Guardabassi P. The sustainability of ethanol production from sugarcane. *Energy Policy*. 2008; 36(6):2086-97.
- [55] Nguyen TLT, Gheewala SH. Fuel ethanol from cane molasses in Thailand: Environmental and cost performance. *Energy Policy*. 2008; 36(5):1589-99.
- [56] Nguyen TLT, Gheewala SH, Garivait S. Full chain energy analysis of fuel ethanol from cane molasses in Thailand. *Applied Energy*. 2008;85(8):722-34.
- [57] Ometto AR, Hauschild MZ, Nelson W, Roma L. Life cycle assessment of fuel ethanol from sugarcane in Brazil. *International Journal of Life Cycle Assessment*. 2009;14:236-47.
- [58] Khatiwada D, Silveira S. Net energy balance of molasses based ethanol: The case of Nepal. *Renewable and Sustainable Energy Reviews*. 2009; 13(9):2515-24.

- [59] Gopal AR, Kammen DM. Molasses for ethanol: the economic and environmental impacts of a new pathway for the lifecycle greenhouse gas analysis of sugarcane ethanol. *Environmental Research Letters*. 2009; 4(4).
- [60] Nguyen TLT, Gheewala SH, Sagisaka M. Greenhouse gas savings potential of sugar cane bio-energy systems. *Journal of Cleaner Production*. 2010; 18(5):412-8.
- [61] Khatiwada D, Silveira S. Greenhouse gas balances of molasses based ethanol in Nepal. *Journal of Cleaner Production*. 2011; 19(13):1471-85.
- [62] Silalertruksa T, Gheewala SH. The environmental and socio-economic impacts of bio-ethanol production in Thailand. *Energy Procedia*. 2011; 9:35-43.
- [63] García CA, Fuentes A, Hennecke A, Riegelhaupt E, Manzini F, Masera O. Life-cycle greenhouse gas emissions and energy balances of sugarcane ethanol production in Mexico. *Applied Energy*. 2011; 88(6):2088-97.
- [64] Nguyen TLT, Hermansen JE. System expansion for handling co-products in LCA of sugar cane bio-energy systems: GHG consequences of using molasses for ethanol production. *Applied Energy*. 2012;89(1):254-61.
- [65] Amores MJ, Mele FD, Jiménez L, Castells F. Life cycle assessment of fuel ethanol from sugarcane in Argentina. *The International Journal of Life Cycle Assessment*. 2013;18(7):1344-57.
- [66] Chum HL, Warner E, Seabra JEA, Macedo IC. A comparison of commercial ethanol production systems from Brazilian sugarcane and US corn. *Biofuels Bioproducts & Biorefining*. 2013; 8(2):205–23.
- [67] Cavalett O, Chagas MF, Seabra JEA, Bonomi A. Comparative LCA of ethanol versus gasoline in Brazil using different LCIA methods. *The International Journal of Life Cycle Assessment*. 2013; 18(3):647-58.
- [68] Tsiropoulos I, Faaij APC, Seabra JEA, Lundquist L, Schenker U, Briois J-F, et al. Life cycle assessment of sugarcane ethanol production in India in comparison to Brazil. *The International Journal of Life Cycle Assessment*. 2014; 19(5):1049-67.
- [69] Mayer FD, Brondani M, Aita BC, Hoffmann R, Lora EES. Environmental and Energy Assessment of Small Scale Ethanol Fuel Production. *Energy & Fuels*. 2015; 29(10):6704-16.
- [70] Filoso S, Carmo JBd, Mardegan SF, Lins SRM, Gomes TF, Martinelli LA. Reassessing the environmental impacts of sugarcane ethanol production in Brazil to help meet sustainability goals. *Renewable and Sustainable Energy Reviews*. 2015; 52:1847-56.
- [71] Soam S, Kumar R, Gupta RP, Sharma PK, Tuli DK, Das B. Life cycle assessment of fuel ethanol from sugarcane molasses in northern and western India and its impact on Indian biofuel programme. *Energy*. 2015; 83:307-15.
- [72] Khatiwada D, Venkata BK, Silveira S, Johnson FX. Energy and GHG balances of ethanol production from cane molasses in Indonesia. *Applied Energy*. 2016; 164:756-68.
- [73] Silalertruksa T, Pongpat P, Gheewala SH. Life cycle assessment for enhancing environmental sustainability of sugarcane biorefinery in Thailand. *Journal of Cleaner Production*. 2017; 140, Part 2:906-13.
- [74] Niven RK. Ethanol in gasoline: environmental impacts and sustainability review article. *Renewable and Sustainable Energy Reviews*. 2005; 9(6):535-55.

- [75] von Blottnitz H, Curran MA. A review of assessments conducted on bio-ethanol as a transportation fuel from a net energy, greenhouse gas, and environmental life cycle perspective. *Journal of Cleaner Production*. 2007; 15(7):607-19.
- [76] Balat M, Balat H, Öz C. Progress in bioethanol processing. *Progress in Energy and Combustion Science*. 2008; 34(5):551-73.
- [77] Spatari S, Bagley DM, MacLean HL. Life cycle evaluation of emerging lignocellulosic ethanol conversion technologies. *Bioresource Technology*. 2010; 101(2):654-67.
- [78] Morales M, Quintero J, Conejeros R, Aroca G. Life cycle assessment of lignocellulosic bioethanol: Environmental impacts and energy balance. *Renewable and Sustainable Energy Reviews*. 2015; 42:1349-61.
- [79] Borrión AL, McManus MC, Hammond GP. Environmental life cycle assessment of lignocellulosic conversion to ethanol: A review. *Renewable and Sustainable Energy Reviews*. 2012; 16(7):4638-50.
- [80] Gupta A, Verma JP. Sustainable bio-ethanol production from agro-residues: A review. *Renewable and Sustainable Energy Reviews*. 2015; 41:550-67.
- [81] Whittaker C, McManus MC, Hammond GP. Greenhouse gas reporting for biofuels: A comparison between the RED, RTFO and PAS2050 methodologies. *Energy Policy*. 2011 ;39(10):5950-60.
- [82] Gnansounou E, Dauriat A, Villegas J, Panichelli L. Life cycle assessment of biofuels: Energy and greenhouse gas balances. *Bioresource Technology*. 2009; 100(21):4919-30.
- [83] Cherubini F, Strømman AH. Life cycle assessment of bioenergy systems: State of the art and future challenges. *Bioresource Technology*. 2011; 102(2):437-51.
- [84] Champagne P. Feasibility of producing bio-ethanol from waste residues: A Canadian perspective: Feasibility of producing bio-ethanol from waste residues in Canada. *Resources, Conservation and Recycling*. 2007; 50(3):211-30.
- [85] Iye E, Bilsborrow P. Cellulosic ethanol production from agricultural residues in Nigeria. *Energy Policy*. 2013; 63:207-14.
- [86] Karlsson H, Börjesson P, Hansson P-A, Ahlgren S. Ethanol production in biorefineries using lignocellulosic feedstock – GHG performance, energy balance and implications of life cycle calculation methodology. *Journal of Cleaner Production*. 2014; 83:420-7.
- [87] Daystar J, Reeb C, Gonzalez R, Venditti R, Kelley SS. Environmental life cycle impacts of cellulosic ethanol in the Southern U.S. produced from loblolly pine, eucalyptus, unmanaged hardwoods, forest residues, and switchgrass using a thermochemical conversion pathway. *Fuel Processing Technology*. 2015; 138:164-74.
- [88] Cherubini F, Ulgiati S. Crop residues as raw materials for biorefinery systems – A LCA case study. *Applied Energy*. 2010; 87(1):47-57.
- [89] Kumar S, Kothari U, Kong L, Lee YY, Gupta RB. Hydrothermal pretreatment of switchgrass and corn stover for production of ethanol and carbon microspheres. *Biomass and Bioenergy*. 2011; 35(2):956-68.
- [90] Luo L, van der Voet E, Huppel G. An energy analysis of ethanol from cellulosic feedstock–Corn stover. *Renewable and Sustainable Energy Reviews*. 2009; 13(8):2003-11.

- [91] Wang L, Hanna MA, Weller CL, Jones DD. Technical and economical analyses of combined heat and power generation from distillers grains and corn stover in ethanol plants. *Energy Conversion and Management*. 2009; 50(7):1704-13.
- [92] Xu J, Zhang X, Cheng JJ. Pretreatment of corn stover for sugar production with switchgrass-derived black liquor. *Bioresource Technology*. 2012; 111:255-60.
- [93] Zhao J, Xia L. Ethanol production from corn stover hemicellulosic hydrolysate using immobilized recombinant yeast cells. *Biochemical Engineering Journal*. 2010; 49(1):28-32.
- [94] Kaliyan N, Morey RV, Tiffany DG. Reducing life cycle greenhouse gas emissions of corn ethanol by integrating biomass to produce heat and power at ethanol plants. *Biomass and Bioenergy*. 2011; 35(3):1103-13.
- [95] Kauffman N, Hayes D, Brown R. A life cycle assessment of advanced biofuel production from a hectare of corn. *Fuel*. 2011; 90(11):3306-14.
- [96] Lavigne A, Powers SE. Evaluating fuel ethanol feedstocks from energy policy perspectives: A comparative energy assessment of corn and corn stover. *Energy Policy*. 2007; 35(11):5918-30.
- [97] Liu B, Wang F, Yunze W, Jun B, Maoliang B, Gao J. Life cycle implication of the potential commercialization of stover-based E85 in China. *Energy Policy*. 2012; 43:371-80.
- [98] Murphy CW, Kendall A. Life cycle inventory development for corn and stover production systems under different allocation methods. *Biomass and Bioenergy*. 2013; 58:67-75.
- [99] Pieragostini C, Aguirre P, Mussati MC. Life cycle assessment of corn-based ethanol production in Argentina. *Science of The Total Environment*. 2014;472:212-25.
- [100] Kim S, Dale BE. Environmental aspects of ethanol derived from no-tilled corn grain: nonrenewable energy consumption and greenhouse gas emissions. *Biomass and Bioenergy*. 2005; 28(5):475-89.
- [101] Whitman T, Yanni S, Whalen J. Life cycle assessment of corn stover production for cellulosic ethanol in Quebec. *Canadian Journal of Soil Science*. 2011; 91(6):997-1012.
- [102] Tsiropoulos I, Cok B, Patel MK. Energy and greenhouse gas assessment of European glucose production from corn – a multiple allocation approach for a key ingredient of the bio-based economy. *Journal of Cleaner Production*. 2013; 43:182-90.
- [103] Kim S, Dale BE. Allocation procedure in ethanol production system from corn grain i. system expansion. *The International Journal of Life Cycle Assessment*. 2002;7(4):237.
- [104] Luo L, van der Voet E, Huppes G, Udo de Haes HA. Allocation issues in LCA methodology: a case study of corn stover-based fuel ethanol. *The International Journal of Life Cycle Assessment*. 2009; 14(6):529-39.
- [105] González-García S, Gasol CM, Gabarrell X, Rieradevall J, Moreira MT, Feijoo G. Environmental aspects of ethanol-based fuels from *Brassica carinata*: A case study of second generation ethanol. *Renewable and Sustainable Energy Reviews*. 2009; 13(9):2613-20.
- [106] Stichnothe H, Azapagic A. Bioethanol from waste: Life cycle estimation of the greenhouse gas saving potential. *Resources, Conservation and Recycling*. 2009; 53(11):624-30.

- [107] Slade R, Bauen A, Shah N. The greenhouse gas emissions performance of cellulosic ethanol supply chains in Europe. *Biotechnology for Biofuels*. 2009; 2(15):doi:10.1186/754-6834-2-15.
- [108] Capecchi L, Galbe M, Barbanti L, Wallberg O. Combined ethanol and methane production using steam pretreated sugarcane bagasse. *Industrial Crops and Products*. 2015; 74:255-62.
- [109] Kumar S, Dheeran P, Singh SP, Mishra IM, Adhikari DK. Continuous ethanol production from sugarcane bagasse hydrolysate at high temperature with cell recycle and in-situ recovery of ethanol. *Chemical Engineering Science*. 2015; 138:524-30.
- [110] Neves PV, Pitarelo AP, Ramos LP. Production of cellulosic ethanol from sugarcane bagasse by steam explosion: Effect of extractives content, acid catalysis and different fermentation technologies. *Bioresource Technology*. 2016; 208:184-94.
- [111] Sun X-Z, Fujimoto S, Minowa T. A comparison of power generation and ethanol production using sugarcane bagasse from the perspective of mitigating GHG emissions. *Energy Policy*. 2013; 57:624-9.
- [112] Ali Mandegari M, Farzad S, Görgens JF. Economic and environmental assessment of cellulosic ethanol production scenarios annexed to a typical sugar mill. *Bioresource Technology*. 2017; 224:314-26.
- [113] Botha T, von Blottnitz H. A comparison of the environmental benefits of bagasse-derived electricity and fuel ethanol on a life-cycle basis. *Energy Policy*. 2006; 34(17):2654-61.
- [114] Kadam KL. Environmental benefits on a life cycle basis of using bagasse-derived ethanol as a gasoline oxygenate in India. *Energy Policy*. 2002;30(5):371-84.
- [115] Saga K, Imou K, Yokoyama S, Minowa T. Net energy analysis of bioethanol production system from high-yield rice plant in Japan. *Applied Energy*. 2010;87(7):2164-8.
- [116] Kumar D, Murthy GS. Impact of pretreatment and downstream processing technologies on economics and energy in cellulosic ethanol production. *Biotechnology for Biofuels*. 2011; 4(1):27.
- [117] Wang MQ, Han J, Haq Z, Tyner WE, Wu M, Elgowainy A. Energy and greenhouse gas emission effects of corn and cellulosic ethanol with technology improvements and land use changes. *Biomass and Bioenergy*. 2011; 35(5):1885-96.
- [118] Scown CD, Nazaroff WW, Mishra U, Strogon B, Lobscheid AB, Masanet E, et al. Lifecycle greenhouse gas implications of US national scenarios for cellulosic ethanol production. *Environmental Research Letters*. 2012; 7.
- [119] Kami Delivand M, Barz M, Gheewala SH, Sajjakulnukit B. Environmental and socio-economic feasibility assessment of rice straw conversion to power and ethanol in Thailand. *Journal of Cleaner Production*. 2012; 37:29-41.
- [120] Borrion AL, McManus MC, Hammond GP. Environmental life cycle assessment of bioethanol production from wheat straw. *Biomass and Bioenergy*. 2012; 47:9-19.
- [121] Roy P, Orikasa T, Tokuyasu K, Nakamura N, Shiina T. Evaluation of the life cycle of bioethanol produced from rice straws. *Bioresource Technology*. 2012;110:239-44.

- [122] Pourhashem G, Adler RP, McAloon JA, Spatari S. Cost and greenhouse gas emission tradeoffs of alternative uses of lignin for second generation ethanol. *Environmental Research Letters*. 2013; 8(2).
- [123] Yan H, Abdul-Sattar N, Mohammad Pour B, Bradley A S. Impact of cellulase production on environmental and financial metrics for lignocellulosic ethanol. *Biofuels Bioproducts and Biorefining*. 2013; 7(3):303-13.
- [124] Wang L, Littlewood J, Murphy RJ. Environmental sustainability of bioethanol production from wheat straw in the UK. *Renewable and Sustainable Energy Reviews*. 2013; 28:715-25.
- [125] Kumar D, Murthy GS. Life cycle assessment of energy and GHG emissions during ethanol production from grass straws using various pretreatment processes. *The International Journal of Life Cycle Assessment*. 2012; 17(4):388-401.
- [126] Prasad A, Sotenko M, Blenkinsopp T, Coles SR. Life cycle assessment of lignocellulosic biomass pretreatment methods in biofuel production. *The International Journal of Life Cycle Assessment*. 2016; 21(1):44-50.
- [127] Kunimitsu Y, Ueda T. Economic and environmental effects of rice-straw bioethanol production in Vietnam. *Paddy and Water Environment*. 2013; 11(1):411-21.
- [128] Luk JM, Pourbafrani M, Saville BA, MacLean HL. Ethanol or Bioelectricity? Life Cycle Assessment of Lignocellulosic Bioenergy Use in Light-Duty Vehicles. *Environmental Science & Technology*. 2013; 47(18):10676-84.
- [129] Muñoz I, Flury K, Jungbluth N, Rigarlsford G, Milà L. Life cycle assessment of bio-based ethanol produced from different agricultural feedstocks. *International Journal of Life Cycle Assessment*. 2013; 10.1007/s11367-013-0613-1.
- [130] Murphy CW, Kendall A. Life cycle analysis of biochemical cellulosic ethanol under multiple scenarios. *Global Change Bioenergy*. 2014; 7(5):1019–33.
- [131] Janssen M, Tillman A-M, Cannella D, Jørgensen H. Influence of high gravity process conditions on the environmental impact of ethanol production from wheat straw. *Bioresource Technology*. 2014; 173:148-58.
- [132] Olukoya IA, Ramachandriya KD, Wilkins MR, Aichele CP. Life cycle assessment of the production of ethanol from eastern redcedar. *Bioresource Technology*. 2014; 173:239-44.
- [133] Pourbafrani M, McKechnie J, Shen T, Saville BA, MacLean HL. Impacts of pre-treatment technologies and co-products on greenhouse gas emissions and energy use of lignocellulosic ethanol production. *Journal of Cleaner Production*. 2014; 78:104-11.
- [134] Mandade P, Bakshi BR, Yadav GD. Ethanol from Indian agro-industrial lignocellulosic biomass—a life cycle evaluation of energy, greenhouse gases, land and water. *The International Journal of Life Cycle Assessment*. 2015; 20(12):1649-58.
- [135] Lever M. Modelling the energy performance of a farm-scale cellulose to ethanol process with on-site cellulase production and anaerobic digestion. *Renewable Energy*. 2015; 74:893-902.
- [136] Gerbrandt K, Chu PL, Simmonds A, Mullins KA, MacLean HL, Griffin WM, et al. Life cycle assessment of lignocellulosic ethanol: a review of key factors and methods affecting calculated GHG emissions and energy use. *Current Opinion in Biotechnology*. 2016;38:63-70.

- [137] Cherubini F, Bird ND, Cowie A, Jungmeier G, Schlamadinger B, Woess-Gallasch S. Energy- and greenhouse gas-based LCA of biofuel and bioenergy systems: Key issues, ranges and recommendations. *Resources, Conservation and Recycling*. 2009; 53(8):434-47.
- [138] Yu S, Tao J. Economic, energy and environmental evaluations of biomass-based fuel ethanol projects based on life cycle assessment and simulation. *Applied Energy*. 2009; 86:178-S88.
- [139] Orikiassa T, Roy P, Tokuyasu K, Park J-y, Ike M, Kondo M, et al. Evaluation of the life cycle of bioethanol produced from soft carbohydrate-rich and common rice straw in Japan with land-use change. *Engineering in Agriculture, Environment and Food*. 2015;8(3):161-8.
- [140] Palma-Rojas S, Caldeira-Pires A, Nogueira JM. Environmental and economic hybrid life cycle assessment of bagasse-derived ethanol produced in Brazil. *The International Journal of Life Cycle Assessment*. 2015:1-11.
- [141] Petersen AM, Melamu R, Knoetze JH, Görgens JF. Comparison of second-generation processes for the conversion of sugarcane bagasse to liquid biofuels in terms of energy efficiency, pinch point analysis and Life Cycle Analysis. *Energy Conversion and Management*. 2015; 91:292-301.
- [142] Agostinho F, Bertaglia ABB, Almeida CMVB, Giannetti BF. Influence of cellulase enzyme production on the energetic–environmental performance of lignocellulosic ethanol. *Ecological Modelling*. 2015; 315:46-56.
- [143] Sebastião D, Gonçalves MS, Marques S, Fonseca C, Gírio F, Oliveira AC, et al. Life cycle assessment of advanced bioethanol production from pulp and paper sludge. *Bioresource Technology*. 2016; 208:100-9.
- [144] Gilpin GS, Andrae ASG. Comparative attributional life cycle assessment of European cellulase enzyme production for use in second-generation lignocellulosic bioethanol production. *The International Journal of Life Cycle Assessment*. 2016:1-20.
- [145] Zech KM, Meisel K, Brosowski A, Toft LV, Müller-Langer F. Environmental and economic assessment of the Inbicon lignocellulosic ethanol technology. *Applied Energy*. 2016; 171:347-56.
- [146] Buck M, Senn T. Energy self-sufficient production of bioethanol from a mixture of hemp straw and triticale seeds: Life-cycle analysis. *Biomass and Bioenergy*. 2016; 95:99-108.
- [147] Singh R, Srivastava M, Shukla A. Environmental sustainability of bioethanol production from rice straw in India: A review. *Renewable and Sustainable Energy Reviews*. 2016; 54:202-16.
- [148] Sukumaran RK, Surender VJ, Sindhu R, Binod P, Janu KU, Sajna KV, et al. Lignocellulosic ethanol in India: Prospects, challenges and feedstock availability. *Bioresource Technology*. 2010; 101(13):4826-33.
- [149] Soam S, Kapoor M, Kumar R, Borjesson P, Gupta RP, Tuli DK. Global warming potential and energy analysis of second generation ethanol production from rice straw in India. *Applied Energy*. 2016; 184:353-64.
- [150] Chang F-C, Lin L-D, Ko C-H, Hsieh H-C, Yang B-Y, Chen W-H, et al. Life cycle assessment of bioethanol production from three feedstocks and two fermentation waste reutilization schemes. *Journal of Cleaner Production*. 2017; 143:973-9.

- [151] Gadde B, Bonnet S, Menke C, Garivait S. Air pollutant emissions from rice straw open field burning in India, Thailand and the Philippines. *Environmental Pollution*. 2009; 157(5):1554-8.
- [152] Sanchis E, Ferrer M, Calvet S, Coscollà C, Yusà V, Cambra-López M. Gaseous and particulate emission profiles during controlled rice straw burning. *Atmospheric Environment*. 2014; 98:25-31.
- [153] Shafie SM, Masjuki HH, Mahlia TMI. Life cycle assessment of rice straw-based power generation in Malaysia. *Energy*. 2014; 70:401-10.
- [154] Nygaard I, Dembelé F, Daou I, Mariko A, Kamissoko F, Coulibaly N, et al. Lignocellulosic residues for production of electricity, biogas or second generation biofuel: A case study of technical and sustainable potential of rice straw in Mali. *Renewable and Sustainable Energy Reviews*. 2016; 61:202-12.
- [155] Hiloidhari M, Baruah DC. Rice straw residue biomass potential for decentralized electricity generation: A GIS based study in Lakhimpur district of Assam, India. *Energy for Sustainable Development*. 2011; 15(3):214-22.
- [156] Abraham A, Mathew AK, Sindhu R, Pandey A, Binod P. Potential of rice straw for bio-refining: An overview. *Bioresource Technology*. 2016; 215:29-36.
- [157] Nguyen VH, Topno S, Balingbing C, Nguyen VCN, Röder M, Quilty J, et al. Generating a positive energy balance from using rice straw for anaerobic digestion. *Energy Reports*. 2016; 2:117-22.
- [158] Amnuaycheewa P, Hengaroonprasan R, Rattanaporn K, Kirdponpattara S, Cheenkachorn K, Sriariyanun M. Enhancing enzymatic hydrolysis and biogas production from rice straw by pretreatment with organic acids. *Industrial Crops and Products*. 2016; 87:247-54.
- [159] Kaur K, Phutela UG. Enhancement of paddy straw digestibility and biogas production by sodium hydroxide-microwave pretreatment. *Renewable Energy*. 2016; 92:178-84.
- [160] Liu E, Liu S. Process optimization and study of biogas fermentation with a mixture of duck manure and straw. *Renewable and Sustainable Energy Reviews*. 2017; 72:439-44.
- [161] Senghor A, Dioh RMN, Müller C, Youm I. Cereal crops for biogas production: A review of possible impact of elevated CO₂. *Renewable and Sustainable Energy Reviews*. 2017; 71: 548-554.
- [162] Teghammar A, Karimi K, Sárvári Horváth I, Taherzadeh MJ. Enhanced biogas production from rice straw, triticale straw and softwood spruce by NMMO pretreatment. *Biomass and Bioenergy*. 2012; 36:116-20.
- [163] Wang D, Ai P, Yu L, Tan Z, Zhang Y. Comparing the hydrolysis and biogas production performance of alkali and acid pretreatments of rice straw using two-stage anaerobic fermentation. *Biosystems Engineering*. 2015; 132:47-55.
- [164] Silalertruksa T, Gheewala SH, Sagisaka M, Yamaguchi K. Life cycle GHG analysis of rice straw bio-DME production and application in Thailand. *Applied Energy*. 2013;112:560-7.
- [165] Adviento-Borbe MAA, Linquist B. Assessing fertilizer N placement on CH₄ and N₂O emissions in irrigated rice systems. *Geoderma*. 2016;266:40-5.
- [166] Alberto MCR, Wassmann R, Gummert M, Buresh RJ, Quilty JR, Correa Jr TQ, et al. Straw incorporated after mechanized harvesting of irrigated rice affects net emissions of CH₄ and CO₂ based on eddy covariance measurements. *Field Crops Research*. 2015; 184:162-75.

- [167] Hu N, Wang B, Gu Z, Tao B, Zhang Z, Hu S, et al. Effects of different straw returning modes on greenhouse gas emissions and crop yields in a rice–wheat rotation system. *Agriculture, Ecosystems & Environment*. 2016; 223:115-22.
- [168] Liu G, Yu H, Ma J, Xu H, Wu Q, Yang J, et al. Effects of straw incorporation along with microbial inoculant on methane and nitrous oxide emissions from rice fields. *Science of The Total Environment*. 2015; 518–519:209-16.
- [169] Mi W, Wu L, Brookes PC, Liu Y, Zhang X, Yang X. Changes in soil organic carbon fractions under integrated management systems in a low-productivity paddy soil given different organic amendments and chemical fertilizers. *Soil and Tillage Research*. 2016; 163:64-70.
- [170] Gadde B, Menke C, Wassmann R. Rice straw as a renewable energy source in India, Thailand, and the Philippines: Overall potential and limitations for energy contribution and greenhouse gas mitigation. *Biomass and Bioenergy*. 2009; 33(11):1532-46.
- [171] Silalertruksa T, Gheewala SH. A comparative LCA of rice straw utilization for fuels and fertilizer in Thailand. *Bioresource Technology*. 2013; 150:412-9.
- [172] Gao J, Chaopu T, Chen N. Environmental comparison of straw applications based on a life cycle assessment model and emergy evaluation. *Bioresources*. 2015; 10(1):548-65.
- [173] Lecksiwilai N, Gheewala SH, Sagisaka M, Yamaguchi K. Net Energy Ratio and Life cycle greenhouse gases (GHG) assessment of bio-dimethyl ether (DME) produced from various agricultural residues in Thailand. *Journal of Cleaner Production*. 2016; 134, Part B:523-31.
- [174] Anna E. *Environmental Assessment of Emerging Bio-based Production - Possibilities in a Future Bio-economy*. Lund, Sweden: Lund University 2012.
- [175] de Lardere JA. Environmental life cycle assessment and its applications. *Journal of Cleaner Production*. 1993; 1(3–4):130.
- [176] Eriksson E, Blinge M, Lövgren G. Life cycle assessment of the road transport sector. *Science of The Total Environment*. 1996; 189–190:69-76.
- [177] Finch EF. The uncertain role of life cycle costing in the renewable energy debate. *Renewable Energy*. 1994; 5(5–8):1436-43.
- [178] Klöpffer W, Rippen G. Life cycle analysis and ecological balance: Methodical approaches to assessment of environmental aspects of products. *Environment International*. 1992; 18(1):55-61.
- [179] Lee JJ, O'Callaghan P, Allen D. Critical review of life cycle analysis and assessment techniques and their application to commercial activities. *Resources, Conservation and Recycling*. 1995; 13(1):37-56.
- [180] Miettinen P, Hämäläinen RP. How to benefit from decision analysis in environmental life cycle assessment (LCA). *European Journal of Operational Research*. 1997; 102(2):279-94.
- [181] Vigon BW, Jensen AA. Life cycle assessment: data quality and databases practitioner survey. *Journal of Cleaner Production*. 1995; 3(3):135-41.
- [182] ISO. *Environmental management -Life cycle assessment - Principles and framework*. International Organization for Standardization 14040. 2006; Available at: http://www.iso.org/iso/catalogue_detail?csnumber=37456(Accessed at 01.11.2014).
- [183] EPA. Carbon Footprint Calculator. Available at: <https://www3epagov/carbon-footprint-calculator/>. 2007; Accessed 10.09.2016.

- [184] Carly W. Life cycle assessment of biofuels in the European Renewable Energy Directive: a combination of approaches? *Greenhouse Gas Measurement And Management*. 2014; 4(2-4):124-38
- [185] Kaltschmitt M, Reinhardt GA, Stelzer T. Life cycle analysis of biofuels under different environmental aspects. *Biomass and Bioenergy*. 1997; 12(2):121-34.
- [186] Serina A, Anna B, Anna E, Hanna K, Johanna B, Pål B, et al. Review of methodological choices in LCA of biorefinery systems - key issues and recommendations. *Biofuels Bioproducts and Biorefining*. 2015; 9(5):606–19.
- [187] Sørensen B. Life-cycle analysis of renewable energy systems. *Renewable Energy*. 1994; 5(5–8):1270-7.
- [188] Shah A, Baral NR, Manandhar A. Chapter Four - Technoeconomic Analysis and Life Cycle Assessment of Bioenergy Systems. In: Yebo L, Xumeng G, editors. *Advances in Bioenergy*: Elsevier; 2016. p. 189-247.
- [189] SAIC. Life Cycle Assessment: Principles and Practice. Scientific Applications International Corporation (SAIC). 2006; Available at: <https://nepis.epa.gov/Exe/tiff2png.cgi/P1000L86.PNG?-r+75+-g+7+D%3A%5CZYFILES%5CINDEX%20DATA%5C06THRU10%5CTIFF%5C00000134%5CP1000L86.TIF> (Accessed 25.11.2013).
- [190] Rebitzer G, Ekvall T, Frischknecht R, Hunkeler D, Norris G, Rydberg T, et al. Life cycle assessment: Part 1: Framework, goal and scope definition, inventory analysis, and applications. *Environment International*. 2004; 30(5):701-20.
- [191] Richard JP, Mark A D, Felix C. Using Attributional Life Cycle Assessment to Estimate Climate-Change Mitigation Benefits Misleads Policy Makers. *Journal of Industrial Ecology*. 2013; 3(5): 234-241.
- [192] McManus MC, Taylor CM. The changing nature of life cycle assessment. *Biomass and Bioenergy*. 2015; 82:13-26.
- [193] Thornley P, Tucker G, Donnison I. The practical challenges of sustainable bioenergy deployment. *Biomass and Bioenergy*. 2015;82:1-2.
- [194] NCB. Biofuels: Ethical issues. Nuffield Council on Bioethics 2011; Available at: http://nuffieldbioethics.org/wp-content/uploads/2014/07/Biofuels_ethical_issues_FULL-REPORT_0.pdf (Accessed 25.01.2015).
- [195] Martin EW, Chester MV, Vergara SE. Attributional and Consequential Life-cycle Assessment in Biofuels: a Review of Recent Literature in the Context of System Boundaries. *Current Sustainable/Renewable Energy Reports*. 2015; 2(3):82-9.
- [196] Rehl T, Lansche J, Müller J. Life cycle assessment of energy generation from biogas—Attributional vs. consequential approach. *Renewable and Sustainable Energy Reviews*. 2012; 16(6):3766-75.
- [197] Carly W. The Importance of Life Cycle Assessment Methodology in the Regulation of Biofuels. United Kingdom (UK): University of Bath, 2014.
- [198] EPA. Life Cycle Assessment: Principles and Practice. United States Environmental Protection Agency. 2006.
- [199] Czymek-Delêtre MM, Smyth BM, Murphy JD. Beyond carbon and energy: The challenge in setting guidelines for life cycle assessment of biofuel systems. *Renewable Energy*. 2017; 105:436-48.
- [200] Singh A, Pant D, Korres NE, Nizami A-S, Prasad S, Murphy JD. Key issues in life cycle assessment of ethanol production from lignocellulosic biomass:

- Challenges and perspectives. *Bioresource Technology*. 2010; 101(13):5003-12.
- [201] Heijungs R, Frischknecht R. A special view on the nature of the allocation problem. *The International Journal of Life Cycle Assessment*. 1998; 3(6):321-32.
- [202] Manda BMK, Bosch H, Karanam S, Beers H, Bosman H, Rietveld E, et al. Value creation with life cycle assessment: an approach to contextualize the application of life cycle assessment in chemical companies to create sustainable value. *Journal of Cleaner Production*. 2016; 126:337-51.
- [203] Guinée JB, Heijungs R, Huppes G. Economic allocation: Examples and derived decision tree. *The International Journal of Life Cycle Assessment*. 2004; 9(1):23.
- [204] Mackenzie SG, Leinonen I, Kyriazakis I. The need for co-product allocation in the life cycle assessment of agricultural systems—is “biophysical” allocation progress? *The International Journal of Life Cycle Assessment*. 2017; 22(2):128-37.
- [205] Bare JC, Gloria TP. Environmental impact assessment taxonomy providing comprehensive coverage of midpoints, endpoints, damages, and areas of protection. *Journal of Cleaner Production*. 2008; 16(10):1021-35.
- [206] Sugarcane Cultivation in India. Directorate of Sugarcane Development. Ministry of Agriculture, New Delhi, India. 2013; Available at: http://shodhganga.inflibnet.ac.in/bitstream/10603/8664/11/11_chapter%204.pdf (Accessed on: 26.11.2014).
- [207] GOI. Status Paper on Sugarcane. India: Directorate of Sugarcane Development, Government of India. 2013
- [208] Map of India. Available at: https://www.googlecoin/search?q=top+10+sugarcane+producing+states+in+india+2016&espv=2&biw=1366&bih=662&source=lnms&tbm=isch&sa=X&ved=0ahUKEwjhvq-HsqDSAhUGtI8KHWsbDpIQ_AUIBygC#imgrc=oBiv9zY9mfyhLM:. 2013.
- [209] Gopinathan M, Sudhakaran R. Biofuels: opportunities and challenges in India. *In Vitro Cell Development Biology Plant*. 2009;45(3):350-71.
- [210] UNCTD. An assessment of the biofuel industry in India. Geneva: United Nations Conference on Trade and Development; 2006.
- [211] GOI. National policy on biofuels. New Delhi: Government of India, Ministry of New & Renewable Energy. 2009; Available at: http://mnre.gov.in/file-manager/UserFiles/biofuel_policy.pdf; 2009 (Accessed 04.01.2013).
- [212] Luo L, van der Voet E, Huppes G. Life cycle assessment and life cycle costing of bioethanol from sugarcane in Brazil. *Renewable Sustainable Energy Reviews*. 2009;13(6-7):1613-9.
- [213] Ma F, Hanna MA. Biodiesel production: a review. *Bioresource Technology*. 1999; 70(1):1-15.
- [214] Renouf M, Pagan R, Wegener M. Life cycle assessment of Australian sugarcane products with a focus on cane processing. *International Journal of Life Cycle Assessment*. 2011; 16(2):125-37.
- [215] Nguyen TLT, Gheewala SH, Garivait S. Full chain energy analysis of fuel ethanol from cane molasses in Thailand. *Applied Energy*. 2008;85(8):722-34.

- [216] Amores MJ, Mele FD, Jimenez L, Castells F. Life cycle assessment of fuel ethanol from sugarcane in Argentina. *International Journal of Life Cycle Assessment*. 2013; 18:1344-57.
- [217] USDA. India - Sugar annual. New Delhi: United States Department of Agriculture, Foreign Agricultural Service, 2013.
- [218] USDA. India Biofuels Annual. 2013; Available at: http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Biofuels%20Annual_New%20Delhi_India_8-13-2013.pdf. (Accessed 04.10.2014).
- [219] PPAC. All India Study on Sectoral Demand of Diesel & Petrol. New Delhi: Petroleum Planning and Analysis Cell, Ministry of Petroleum and Natural Gas, Government of India. 2013.
- [220] CII. Estimation of energy and Carbon balance of biofuels in India. New Delhi: Confederation of Indian Industry. 2010.
- [221] DFPD. Report of the working group on sugarcane productivity and sugar recovery in the country. New Delhi: Ministry of Consumer Affairs, Food and Public Distribution, Government of India. 2013.
- [222] EPA. Life Cycle Assessment: Principles and Guidelines. Ohio: US Environmental Protection Agency. 2006.
- [223] JAIN. Modern irrigation & fertigation methodologies for higher yields in sugarcane. Jalgaon: Jain Irrigation Systems Limited. 2002.
- [224] Shrivastava AK, Srivastava AK, Solomon S. Sustaining sugarcane productivity under depleting water resources *Current Science*. 2011;101(6748-754).
- [225] ISMA. Benefits of micro irrigation system sugar recovery and productivity New Delhi: Indian Sugar Mills Association; 2013.
- [226] Agropedia. Planting rate and spacing of sugarcane. 2009; <http://agropedia.iitk.ac.in/content/planting-rate-and-spacing-sugarcane>. (Accessed 16.11.2013)
- [227] Sharma AK, Prakash B. Causes and consequences of supply, demand gap for labor in sugarcane in India. *Agricultural Economics Research Reviews*. 2011; 24:401-7.
- [228] CPCB. Management of distillery in India - an Overview. Central Pollution Control Board. 2011.
- [229] Kulkarni D. Cane sugar manufacture in India. New Delhi: The Sugar Technologists of India. p. 36-91.
- [230] PFR. Modernization cum Expansion of Sugar Unit from 5,000 to 8,000TCD Capacity and Cogeneration Project of 19.5 MW Installed Capacity Maharashtra: Vasantdada Sugar Institute; 2012; Available at: [https://ec.maharashtra.gov.in/files/Item%207\(ecdoc%2046\)Docu3.pdf](https://ec.maharashtra.gov.in/files/Item%207(ecdoc%2046)Docu3.pdf); (accessed 31.01.2014).
- [231] Yadav RL, Solomon S. Potential of developing sugarcane by-product based industry in India. *Sugar Tech*. 2008; 8(2&3):104-11.
- [232] Austin A. Sugarcane bagasse could benefit Brazil energy matrix. *Biomass*. 2008; Available at: <http://biomassmagazine.com/articles/2299/sugarcane-bagasse-could-benefit-brazil-energy-matrix>. (Accessed 25.02.2014).
- [233] Bhattacharya A. Biofuel production and water constraint : An effective utilization of watershed projects in India. *International Journal for sustainable Innovations*. 2011; 1(1):46-54.

- [234] Feedipedia. Sugarcane filter-press mud. 2008; Available at: <http://www.feedipedia.org/node/563>.(Accessed 07.05.2014).
- [235] MoEF. Technical EIA guidance manual for distilleries. Hyderabad: Ministry of Environment and Forests, Government of India. 2009.
- [236] Whiting A, Azapagic A. Life cycle environmental impacts of generating electricity and heat from biogas produced by anaerobic digestion. *Energy*. 2014;70(0):181-93.
- [237] Ravi Prakash AH, Bhat IK. Gross carbon emissions from alternative transport fuels in India. *Energy Sustainable Development*. 2005; 9(2):10-6.
- [238] Jørgensen PJ, Planey Energy. Biogas - green energy. 2nd ed: Faculty of Agricultural Sciences, Aarhus University; 2009.
- [239] Luo L, van der Voet E, Huppel G, Udo de Haes H. Allocation issues in LCA methodology: a case study of corn stover-based fuel ethanol. *International Journal of Life Cycle Assessment*. 2009; 14(6):529-39.
- [240] Hoefnagels R, Smeets E, Faaij A. Greenhouse gas footprints of different biofuel production systems. *Renewable and Sustainable Energy Reviews*. 2010; 14(7):1661-94.
- [241] Ekvall T, Finnveden G. Allocation in ISO 14041—a critical review. *Journal of Cleaner Production*. 2001; 9(3):197-208.
- [242] Kumar S, Singh J, Nanoti SM, Garg MO. A comprehensive life cycle assessment (LCA) of Jatropha biodiesel production in India. *Bioresource Technology*. 2012; 110:723-9.
- [243] Rajaeifar MA, Akram A, Ghobadian B, Rafiee S, Heidari MD. Energy-economic life cycle assessment (LCA) and greenhouse gas emissions analysis of olive oil production in Iran. *Energy*. 2014; 66(0):139-49.
- [244] Environmental sustainability of bioethanol production from wheat straw in the UK. *Renewable and Sustainable Energy Reviews*. 2013; 28:715.
- [245] Khatriwada D, Silveira S. Net energy balance of molasses based ethanol: The case of Nepal. *Renewable Sustainable Energy Reviews*. 2009; 13(9):2515-24.
- [246] CEA. Database, version 4. New Delhi: Ministry of power, Government of India. 2008.
- [247] IPCC. IPCC Emission Factor Database. Intergovernmental panel on climate change. 2006.
- [248] Pradhan A, Shrestha DS, McAloon A, Yee W, Haas M, Duffiels JA. Energy Life cycle assessment of soybean biodiesel revisited. *American Society of Agricultural and Biological Engineers*. 2011:1031-9.
- [249] Chauhan MK, Varun, Chaudhary S, Kumar S, Samar. Life cycle assessment of sugar industry: A review. *Renewable and Sustainable Energy Reviews*. 2011;15(7):3445-53.
- [250] Turn SQ, Keffer V, Staackmann M. Analysis of Hawaii Biomass Energy Resources for Distributed Energy Applications. Hawaii: University of Hawaii, Hawaii Natural Energy Institute. 2002.
- [251] ISMA. Indian sugar daily price. New Delhi: Indian Sugar Mill Association; 2014.
- [252] Green brick eco-solutions. Renewable Natural Gas -Bio CNG. Available at: http://sblf.sustainabilityoutlook.in/file_space/SBLF%20Summit%20Presentations%202012/Green%20Brick%20Eco%20Solutions_Prasun%20Joshi.pdf; (Accessed 01.03.2014)

- [253] Jayaswal R, Jai S. The Economic Times. The Economic Times 2014. Available at: http://articles.economictimes.indiatimes.com/2013-04-09/news/38404741_1_ethanol-doped-petrol-litre-sugar-mills (Accessed 07.05.2014)
- [254] Soltani A, Rajabi MH, Zeinali E, Soltani E. Energy inputs and greenhouse gases emissions in wheat production in Gorgan, Iran. *Energy*. 2013; 50(0):54-61.
- [255] Energy Balance for Gasoline and Diesel Negative? 2005. Available at: <http://peakoil.com/forums/energy-balance-for-gasoline-and-diesel-negative-t14325.html>; (Accessed 01.06.2014).
- [256] GoI. Pocket Book on Agricultural Statistics 2015. Government of India, Ministry of Agriculture, Department of Agriculture & Cooperation, New Delhi. 2015.
- [257] Pathak H, Agrawal T, Jain N. Greenhouse gas emission from rice and wheat systems: A Life-Cycle Assessment In: Pathak H and Aggarwal PK (eds.) *Low Carbon Technologies for Agriculture: A Study on Rice and Wheat Systems in the Indo-Gangetic Plains*. Indian Agricultural Research Institute, New Delhi, pp 54-65. 2012.
- [258] GoI. Pocket Book on Agricultural Statistics. Government of India. Ministry of Agriculture, New Delhi. 2013.
- [259] Gadde B, Menke C, R W. Rice straw as a renewable energy source in India, Thailand, and the Philippines: Overall potential and limitations for energy contribution and greenhouse gas mitigation. *Biomass and Bioenergy*. 2009; 33 (11):1532-46.
- [260] GoI. National Policy on Biofuels. 2009.
- [261] Jonker JGG, Junginger HM, Versteegen JA, Lin T, Rodríguez LF, Ting KC, et al. Supply chain optimization of sugarcane first generation and eucalyptus second generation ethanol production in Brazil. *Applied Energy*. 2016; 173:494-510.
- [262] Raj T, Kapoor M, Gaur R, Christopher J, Lamba B, Tuli DK, et al. Physical and Chemical Characterization of Various Indian Agriculture Residues for Biofuels Production. *Energy Fuels*. 2015; 29(5):3111-8.
- [263] Spatari S, Bagley DM, MacLean HL. Life cycle evaluation of emerging lignocellulosic ethanol conversion technologies. *Bioresource Technology*. 2010;101.
- [264] Kumar D, Murthy GS. Impact of pretreatment and downstream processing technologies on economics and energy in cellulosic ethanol production. *Biotechnology for Biofuels*. 2011; 4(1):1-19.
- [265] EPA. Renewable Fuel Standards. US Environment Protection Agency. 2007.
- [266] Dominković DF, Bačeković I, Čosić B, Krajačić G, Pukšec T, Duić N, et al. Zero carbon energy system of South East Europe in 2050. *Applied Energy*.
- [267] Börjesson P. Good or bad bioethanol from a greenhouse gas perspective – What determines this? *Applied Energy*. 2009; 86(5):589-94.
- [268] ISO. International Organization for Standardisation 14040/14044. Environmental management Life Cycle Assessment: Framework and Principles 2006.
- [269] Ekman A, Wallberg O, Joelsson E, Börjesson P. Possibilities for sustainable biorefineries based on agricultural residues – A case study of potential straw-based ethanol production in Sweden. *Applied Energy*. 2013; 102:299-308.

- [270] Pathak H AT, Jain N. Greenhouse gas emission from rice and wheat systems: A Life-Cycle Assessment. *Low Carbon Technologies for Agriculture: A Study on Rice and Wheat Systems in the Indo-Gangetic Plains* Indian Agricultural Research Institute. 2012.
- [271] F Kabir Kazi, J Fortman, Anex R. *Techno-economic Analysis of Biochemical Scenarios for Production of Cellulosic Ethanol*. NREL. 2010.
- [272] Guinee JB. Handbook on life cycle assessment operational guide to the ISO standards. *International Journal of Life Cycle Assessment*. 2002; 7(5):311-3.
- [273] Yan Hong, Abdul-Sattar Nizami, Mohammad Pour Bafrani, Bradley A Saville, MacLean HL. Impact of cellulase production on environmental and financial metrics for lignocellulosic ethanol. *Biofuels Bioproducts and Biorefining*. 2013; 7(3): 303–13.
- [274] Heather LM, Sabrina S. The contribution of enzymes and process chemicals to the life cycle of ethanol. *Environmental Research Letters*. 2009; 4(1):014001.
- [275] Olofsson J, Barta Z, Borjesson P, Wallberg O. Life cycle assessment and techno economic analysis of on -site enzyme production in 2nd generation bioethanol. Report No 2015:05, f3. 2015; The Swedish Knowledge Centre for Renewable Transportation Fuels, Sweden. Available at www.f3centre.se. .
- [276] COFALEC. Carbon Footprint of Yeast produced in the European Union. Available at <http://www.cofalec.com/sustainability/yeast-carbon-footprint/>.(Accessed 10.11.2015)
- [277] IPCC. IPCC Emission factor database. Intergovernmental panel on climate change. 2006. Available at: http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_11_Ch11_N2O&CO2.pdf; 2006 (Accessed 10.01.2016)
- [278] CEA. Central electrical authority. Ministry of Power, Government of India. 2008. New Delhi. Available at: http://cea.nic.in/reports/planning/cdm_CO2/cdm_CO2.htm; 2008 (Accessed 16.02.2016).
- [279] Wang M, Han J, Dunn JB, Cai H , Amgad E. Well-to-wheels energy use and greenhouse gas emissions of ethanol from corn, sugarcane and cellulosic biomass for US use. *Environmental Research Letters*. 2012;7(4):045905.
- [280] Juneja A, Kumar D, Murthy GS. Economic feasibility and environmental life cycle assessment of ethanol production from lignocellulosic feedstock in Pacific Northwest U.S. *Journal of renewable and sustainable energy*. 2013;5
- [281] Cai H, Dunn JB,Wang Z, Han J, Wang MQ. Life-cycle energy use and greenhouse gas emissions of production of bioethanol from sorghum in the United States. *Biotechnology for Biofuels*. 2013;141(6).
- [282] McKone TE, Nazaroff WW, Berck P, Auffhammer M, Lipman T, M. Torn MS, et al. Grand Challenges for Life-Cycle Assessment of Biofuels. *Environmental Science &Technology*. 2011;45(5):1751–6.
- [283] Raphael Slade, Ausilio Bauen, Shah N. The greenhouse gas emissions performance of cellulosic ethanol supply chains in Europe. *Biotechnology for Biofuels*. 2009;2(15).
- [284] EU. Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC. *Official Journal of the European Union*; 2009. 2009.

- [285] Daylan B, Ciliz N. Life cycle assessment and environmental life cycle costing analysis of lignocellulosic bioethanol as an alternative transportation fuel. *Renewable Energy*. 2016;89:578-87.
- [286] Kapoor M, Soam S, Agrawal R, Gupta RP, Tuli DK, Kumar R. Pilot scale dilute acid pretreatment of rice straw and fermentable sugar recovery at high solid loadings. *Bioresource Technology*. 2017;224:688-93.
- [287] Romasanta RR, Sander BO, Gaihre YK, Alberto MC, Gummert M, Quilty J, et al. How does burning of rice straw affect CH₄ and N₂O emissions? A comparative experiment of different on-field straw management practices. *Agriculture, Ecosystems & Environment*. 2017;239:143-53.
- [288] Fields on fire: Burning paddy straw. *Indian Express*. 2016; Available at: <http://indianexpress.com/article/india/india-news-india/stubble-farm-fire-slash-burn-agriculturepunjab-haryana-pollution-health-hazards-3074434/> (Accessed: 25.10.2016).
- [289] C. Venkataraman, G. Habib, D. Kadamba, M. Shrivastava, J.-F. Leon, B. Crouzille, et al. Emissions from open biomass burning in India: Integrating the inventory approach with high-resolution Moderate Resolution. *Global Biogeochemical Cycles*. 2006;20(2).
- [290] Domínguez-Escribá L, Porcar M. Rice straw management: the big waste. *Biofuels Bioproducts and Biorefining*. 2010;4(2):154-9.
- [291] Bhattacharyya P, Roy KS, Neogi S, Adhya TK, Rao KS, Manna MC. Effects of rice straw and nitrogen fertilization on greenhouse gas emissions and carbon storage in tropical flooded soil planted with rice. *Soil and Tillage Research*. 2012;124:119-30.
- [292] Suramaythangkoor T, Gheewala SH. Implementability of Rice Straw Utilization and Greenhouse Gas Emission Reductions for Heat and Power in Thailand. *Waste and Biomass Valorization*. 2011;2(2):133-47.
- [293] Jana K, De S. Environmental impact of an agro-waste based polygeneration without and with CO₂ storage: Life cycle assessment approach. *Bioresource Technology*. 2016;216:931-40.
- [294] Börjesson P, Berglund M. Environmental systems analysis of biogas systems—Part II: The environmental impact of replacing various reference systems. *Biomass and Bioenergy*. 2007;31(5):326-44.
- [295] Singh P, Gundimeda H, Stucki M. Environmental footprint of cooking fuels: a life cycle assessment of ten fuel sources used in Indian households. *The International Journal of Life Cycle Assessment*. 2014;19(5):1036-48.
- [296] Pandey D, Agrawal M, Bohra JS. Greenhouse gas emissions from rice crop with different tillage permutations in rice–wheat system. *Agriculture, Ecosystems & Environment*. 2012;159:133-44.
- [297] Delivand MK, Barz M, Garivait S. Overall Analyses of Using Rice Straw Residues for Power Generation in Thailand- Project Feasibility and Environmental GHG Impacts Assessment *Journal of Sustainable Energy & Environment*. 2011:39-46.
- [298] Launio CC, Asis CA, Manalili RG, Javier EF. Cost-effectiveness analysis of farmers' rice straw management practices considering CH₄ and N₂O emissions. *Journal of Environmental Management*. 2016; 183, Part 1:245-52.
- [299] USDA. *India Grain and Feed Annual*. United States Department of Agriculture, Foreign Agricultural Service, New Delhi. 2014.

- [300] Heijungs R, Guinée JB. Environmental life cycle assessment of products: guide and backgrounds. Centre of Environmental Science (CML), Leiden, The Netherlands. 1992.
- [301] Sood J. Not a waste until wasted. Down to earth. 2013; Available at: 2013; <http://www.downtoearth.org.in/content/not-waste-until-wasted>. (Accessed 10.1.2015).
- [302] Raj T, Kapoor M, Gaur R, Christopher J, Lamba B, Tuli DK, et al. Physical and Chemical Characterization of Various Indian Agriculture Residues for Biofuels Production. *Energy & Fuels*. 2015; 29(5):3111-8.
- [303] Binod P, Sindhu R, Singhania RR, Vikram S, Devi L, Nagalakshmi S, et al. Bioethanol production from rice straw: An overview. *Bioresource Technology*. 2010; 101(13):4767-74.
- [304] Binod P, Sindhu R, Singhania RR, Vikram S, Devi L, Nagalakshmi S, et al. Bioethanol production from rice straw: An overview. *Bioresource Technology*. 2010; 101(13):4767-74.
- [305] CEA. CEA Database version 4. Central Electrical Authority, Ministry of Power, Government of India. 2008.
- [306] Börjesson P, Tufvesson LM. Agricultural crop-based biofuels – resource efficiency and environmental performance including direct land use changes. *Journal of Cleaner Production*. 2011; 19(2–3):108-20.
- [307] Zou J, Huang Y, Jiang J. A 3-year field measurement of methane and nitrous oxide emissions from rice paddies in China: Effects of water regime, crop residue, and fertilizer application. *Global Biogeochemical Cycles* 19, GB2021, doi:101029/2004GB002401. 2005.
- [308] Zhiqiang L, Aixiang X, Long B. Energy from combustion of rice straw: Status and challenges to China. *Energy Power Engineering*. 2011; 3(3):325-31.