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Emerging Green Technologies

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Review Article

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ABSTRACT

In an era of drought, climate change and food shortages, environmental explorers have joined forces to handle some of the world's most typical issues through technological advancement. Some of the expanding technologies that have the capability to revolutionize our planet of commercialising. Some are currently in development and remaining are trying to get a greater hold in society, but all are auspicious solutions to some very real threats the world is facing. The word "Green Technology" is almost new which has been adopted over the last couple of decades, Green is the way to go today for healthy life.

INTRODUCTION

Green technology which is also known as clean technology refers to the use of technology that makes products and processes more eco-friendly, for example, by reducing CO_2 emissions or by making products more biodegradable [1-7]. Overall, green technology aims at contributing to renewable sustainability. Green technology is eco- friendly which is developed and used in such a way so that it doesn't disturb our environment and conserves natural resources [9-16].

"Green technology" encompasses a rapid emerging materials and methods, from different techniques for achieving energy to non-toxic cleaning products [17-26]. The current expectation is that this will bring modernization and changes in daily life of similar to the "information technology" outbreak over the past two decades. In these primary stages, it is difficult to predict what "green technology" may finally encompass [27-35].

METHODOLOGY

Developments in Emerging Green Technologies Includes

a) Sustainability which can be clarified as addressing the requirements of society in ways that can continue indefinitely into the future without without harming or draining regular assets. In short, meeting present needs without compromising the ability of future generations to meet their own needs [36-42].

b) Source reduction by reducing waste and pollution [43-48].

c) By latest inventions like developing alternatives to technologies which may be either fossil fuels or chemicals in agriculture which will damage health and the environment [49-52].

d) Viability by creating economic activity around technologies and products that benefit the environment, speeding their implementation and creating new careers that truly protect the planet [54-60].

Green Technology is entirely materials science based, depends on the availability of alternative sources of energy. The purpose of this technology is to reduce global warming as well as the green house effect. The main objective is to create new technologies which will not damage the natural resources and should be less harm to the living beings [61-66]. Our environment needs immediate recoup from pollution hazards. With the help of green technology, one can reduce pollution and improve the cleanliness as well. Currently all countries are turning to green technology to secure the environment from negative impacts [67-71]. This technology gives us an idea about the messing up of the environment due to human intrusion and the important need to slow down and habituate healthier ways of life. By adopting green technology, the earth can be protected against environmental pollution.
The main goals of green technology are many. To meet the needs of society without affecting the natural resources on earth and is the main objective of green technology. The idea is to meet present and future needs without compromises. Focus is being done on making products that can be f recycled or re-used. By changing the production and consumption, many steps are being taken to reduce waste and pollution, and is one of the important goals of green technology [72-80]. It is essential to develop alternative technologies to prevent any further damage health and the environment. By implementation rapidly we can benefit our environment and can protect the planet. Explore the goals of green technology, introducing sustainable living, develop renewable energy and reduce waste [81-84].

Even though there are number of advantages of renewable energy, lot of its development and distribution till date has occurred mostly in developed countries instead of in developing countries where these innovations are most needed [85-91]. The factors responsible for this is so expensive of expanding renewable energy coupled with the usual low investment funds in developing countries for renewable energy financing, development and application. Absence of policy and governing framework for the encouragement of expenditure in renewable energy, poor capacity for the development and distribution of renewable energy as well as low awareness of the utilization and convenience by possible consumers, suppliers and investors are other reasons for the low level of application of renewable energy technologies in developing countries. Others are the patent structure in the energy sector for few developing countries which discourages competition, high subsidies on fossil fuel based energy sources, etc. These limits must be addressed if the operation of renewable energy in developing countries is quick extent [92-94].

List of Major Societies for Green Technologies

There are many associations for green technologies. Some of the important associations for green technologies are Green Building Council, US Green Technology for solar power, wind power, hydro power and United States Environmental Protection Agency(EPA) which represents largest green power users within the Green Power Partnership, Renewable Energy Society, The Solar Energy Society (UK-ISES), European Renewable Energy Council (EREC), Colorado Renewable Energy Society (CRES), etc which are doing great for the development of green technology.

Many journals in the world is trying to educate regarding the emerging green technologies through their articles like Trends in Green Chemistry, Journal of Ecosystem & Ecography, International Journal of Waste Resources, Journal of Pollution Effects & Control, Journal of Fundamentals of Renewable Energy and Applications, Advances in Recycling & Waste Management, etc and the
Green Energy-2017 would serve as an informative source for integrative area that guides renewable Energy sources and systems, industrial applications, energy storage and network, Environmental impact, energy protection, law, better energy efficiency in latest trends and technologies for utilization of natural resources along with nanotechnology applications and energy solutions. Many great personalities like Hector M Guevara and many other great people are the organising committee members for this prestigious conference. In the 2nd International Conference on Green Energy and Expo (Green Energy-2016) excellent keynote speech by Dr. Yulin Deng on the Low temperature and high efficiency biomass fuel cell and bio-hydrogen production was so impressive. Michael Garvin gave his keynote on Transition to a global energy abundance and sustainability plan 2050.

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OMICS organises many conferences every year and it organised and keep on organising many conferences on every subject all around the world. Some of the important conferences organised by OMICS relevant to green energy are 4th International Conference on Past and Present Research Systems of Green Chemistry with the Theme- Advances in Continuous Green Chemistry: Back to the Future, International Conference on Renewable Energy and Resources, etc.

Due to energy depletion and global warming, we need to pay closer attention for clean technologies by using green technology in industry. With potential profits of green technology development, in the past few years global green markets have been booming.

Many countries around world are in the process of encouraging green technologies. Lot of investment is done in new wind projects, and biomass plant. Public and private sectors are encouraged to develop the green technology industry [95-97].

Solar industry which is growing at a great speed, aims to achieve enough solar capacity and use green technology in industry. For example green computing which focus on shifting to designing, manufacturing, using, and disposing of computers and related devices in a manner with no impact on the environment.

The main goal of the green technology in industry is to minimize the use of dangerous materials, while increasing energy efficiency during the product's lifetime. More attention is being given to the recyclable and biodegradable materials. Governmental agencies are promoting regulations that encourage green technology in industry.

Using green technology in industry is on the upperhand. Consumers around the world as well as many automobile manufacturers are actively involved in the developing green technology that can be applied to their products. Green vehicles are going to be the compulsion for the future [98-104].

CONCLUSION

Green technology will be considered to be the most predictable in the future. From energy saving light bulb and electric car, we can conclude that a complete set is important to magnify the effect of a green technology in developing the environment. For example, the electricity for electric cars is generated from an electric power plant using renewable energy; the amount of carbon dioxide emitted would be further reduced. In the case of energy saving light bulb, a comprehensive recycling system should be set up. This helps to reduce the release of toxic substances like mercury.

REFERENCES

1. Thompson RM, et al. Moving beyond methods:the need for a diverse programme in climate change research. Ecol Lett. 2013;17:125-e2.
2. Garg A, et al. Energy infrastructure in India:Profile and risks under climate change. Energ Policy. 2015;81:226-238.
3. Bedard R, et al. An Overview of Ocean Renewable Energy Technologies. Oceanogr. 2010;23:22-31.
4. Lin X, et al. Cocoa flavonoid supplements and cardiometabolic disease prevention:a promising preventive nutraceutical. Curr Trends Nutraceuticals. 2015;1:1.2.
5. Leong PK and Ko KM. Induction of the glutathione antioxidant and the response/glutathione redox cycling by nutraceuticals:mechanism of protection against oxidant-induced cell death. Curr Trends Nutraceuticals. 2016;1:23.
6. Brett R and Martin DC, The effects of curcuma domestica, zingiber officinale and magnesium for migraine prophylaxis. Curr Trends Nutraceuticals. 2016;1:3.4.
7. Waseem Raja Dar, et al. Moving beyond conventional heart failure treatmentdoes micronutrientsupplementation have a role?. Curr Trends Nutraceuticals. 2016;1:4.
8. Daniel Villarreal-García, et al. Glucosinolates from broccoli:nutraceutical properties and their purification. Curr Trends Nutraceuticals. 2016;1:5.
9. Christopher Ian Wright. Awareness of 'does finiflu (containing garlic, onion and chili) provide symptomatic relief from cold and flu?. Curr Trends Nutraceuticals. 2016;1:6.
10. Serafim MGC, et al. Overweight and liver disease:a new paradigm. Curr Trends Nutraceuticals. 2016;1:7.
11. Kalaiselvan V, et al. Monitoring the safety of nutraceuticals through pharmacovigilance programme of india. Curr Trends Nutraceuticals. 2016;1:8.

12. Carruthers J. Nutritional Practices, Interventions and recommendations for junior rugby league players. Sports Nutr Ther. 2016;1:110.
13. Bisen PS. Nutritional therapy as a potent alternate to chemotherapy against cancer. J Cancer Sci Ther. 2016;8:e135.
14. Todokoro D, et al. Postoperative endophthalmitis caused by the nutritionally variant streptococcus granulicatella adiacens. J Clin Exp Ophthalmol. 2016;7:557.
15. Ortiz Cuevas MF and Jimenez-Saiz SL. Nutritional intervention for rugby injuries. Sports Nutr Ther. 2016;1:e103.
16. Al Surmi NY, et al. Chemical and nutritional aspects of some safflower seed varieties. J Food Process KTechnol. 2016;7:585.
17. Garcia JS, et al. Nutritional potential of four seaweed species collected in the barbate estuary (Gulf of Cadiz, Spain). J Nutr Food Sci. 2016;6:505.
18. Roba KT, et al. Nutritional status and its associated factors among school adolescent girls in Adama city, Central Ethiopia. J Nutr Food Sci 2016;6:493.
19. Imai E, et al. Improved prevalence of anemia and nutritional status among japanese elderly participants in the National Health and Nutritional Survey of Japan, 2003-2009. J Nutr Food Sci. 2016;6:495.
20. Hambridge K, et al. Nursing students' knowledge, self-efficacy and skill in measuring radial pulse in the clinical skills simulation environment:a pilot study. International Journal of Clinical Skills. 2014;8:4.
21. Kumar SI, et al. Anti-nutritional factors in finger millet. J Nutr Food Sci. 2016;6:491.
22. Obert J and Mafongoya P. Tepary Bean:A climate smart crop for food and nutritional security. J Nutr Food Sci. 2016;6:490.
23. Osman AH. Protein energy malnutrition and susceptibility to viral infections as zika and influenza viruses. J Nutr Food Sci. 2016;6:489.
24. Kenmogne-Domguia BH, et al. Protein-energy intakes and nutritional status of in-school adolescents in baham, cameroon. J Nutr Disorders Ther. 2016;6:186.
25. Peixoto RRA, et al. Nutritional evaluation of the mineral composition of chocolate bars:total contents vs. bioaccessible fractions. J Food Process Technol. 2016;7:572.
26. Sevastianos VA and Dourakis SP. Malnutrition and sarcopenia in advanced liver disease. J Nutr Food Sci. 2016;6:487.
27. Jahanzeb M et al. Exploring the nutritional quality improvement in cereal bars incorporated with pulp of guava cultivars. J Food Process Technol. 2016;7:567.
28. Bonfanti N and Jimenez-Saiz SL. Nutritional recommendations for sport team athletes. Sports Nutr Ther. 2016;1:e102.
29. Butscher HA, et al. Efficacy of nutrition education within a cardiac rehabilitation program on eliciting heart healthy diet changes. J Nutr Food Sci. 2016 6:474.
30. Bjørklund G and Chartrand M. Nutritional and environmental influences on autism spectrum disorder. J Nutr Disorders. 2016;6:e123.
31. Damasceno DC, et al. Impact of maternal over-nutrition during pregnancy on maternal oxidative stress and fetal skeletal/visceral anomalies of the rats. J Nutr Disorders Ther. 2016;6:185.
32. Naser I. Role of protein-based food (pbf) in combating undernutrition;milk and eggs as an example. J Nutr Disorders Ther. 2016;6:184.
33. Todokoro D, et al. PostOperative endophthalmitis caused by the nutritionally variant streptococcus granulicatella adiacens. J Clin Exp Ophthalmol. 2016;7:557.
34. Ijeh II, et al. Myco-nourishment from the wild:chemical analyses of the nutritional and amino acid profile of termitomyces robustus harvested from uzuakoli, nigeria. Nat Prod Chem Res. 2016;4:225.
35. Ortiz Cuevas MF and Jimenez-Saiz SL. Nutritional intervention for rugby injuries. Sports Nutr Ther. 2016;1: e103.
36. Wills D. A brief evaluation and image formation of pediatrics nutritional forum in opinion sector. Matern Pediatr Nutr. 2016;2:113.
37. Ferone A, et al. Sera of overweight patients alter adipogenesis and osteogenesis of bone marrow mesenchymal stromal cells, a phenomenon that also persists in weight loss individuals. J Stem Cell Res Ther. 2016;6:347.
38. Goizueta-San-Martín G, et al. Nerve compresion secondary to weight loss. Int J Neurorehabilitation. 2016; 3:213.

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p-ISSN: 2322-0104

39. De Luis DA, et al. Effects of polymorphism rs3123554 in the cannabinoid receptor gene type 2 (cnr2) on body weight and insulin resistance after weight loss with a hypocaloric mediterranean diet. J Metabolic Synd. 2016;5:199.
40. Lauschke JL and Major G. Acute paraspinal compartment syndrome related to use of proprietary weight loss product, by a patient with sodium channelopathy. J Spine. 2016;S7:001.
41. Anton K, et al. Weight loss following left gastric artery embolization in a human population without malignancy:a retrospective review. J Obes Weight Loss Ther. 2015;5:285.
42. Goni I. A short communication on strategy for weight loss based on healthy dietary habits and control of emotional response to food. J Obes Weight Loss Ther. 2015;5:281.
43. Grant WD, et al. Increased interaction with weight loss app increases likelihood of sustained weight loss. Endocrinol Metab Syndr. 2015;4:210.
44. Nicholson WK, et al. Feasibility and lessons learned from the first wind (weight loss interventions after delivery) intervention for urban-based, postpartum african american women. J Preg Child Health. 2015;2:208.
45. Samadi M, et al. Green coffee bean extract as a weight loss supplement. J Nutr Disorders Ther. 2015;5:180.
46. Carter SJ. Into “thinner” air:a novel strategy to improve clinical outcomes and support weight loss?. J Obes Weight Loss Ther. 2015;5:e118.
47. Sharma RK, et al. Strain elastosonography of thyroid nodules:A new tool for malignancy prediction? overview of literature. Endocrinol Metab Syndr. 2016;5:238.33.
48. Yonemura Y, et al. Risk factors for recurrence after complete cytoreductive surgery and perioperative chemotherapy in peritoneal metastases from gastric cancer. J Integr Oncol. 2016;5:167.
49. Biogas:A manual or repair and maintenance. Vivekananda Kendra, NARDEP, Kanyakumari 1993.
50. Planning and management of Non-Conventional Energy development, CIRE1995.
51. Biogas as vehicalfuel,Atrend setter report.
52. Hashimoto AG. Microbial hydrolysis of thermochemically treated and untreated manure-straw mixture, Agricultural wastes, 1982;4:345-364.
53. KaliaVC, et al. Biomethanation of plant materials, Biosource technology, 1992;41:209-212.
54. Kapadi SS, et al. Biogas upgradation and utilization as vehicle fuel, Proceedings of the joint international conference on Sustainable Energy and Environment HuaHin, Thailand:JGSEE 2004;206-209.
55. Khandelwal KC and Mahdi SS. Biogas Technology-A Practical hand book, Tata McGraw Hill Publishing Company Ltd., New Delhi 1986.
56. Kumar S and Jain MC. Dry anaerobic fermentation of cow dung water hyacinth mixture in multiple batch fed digesters 1988.
57. Mittal KM. Biogas systems, Principles and applications, New age international (P) Ltd, New Delhi,1996.
58. MNES Report “Renewable Energy in India and business opportunities”. MNES, Govt. of India, New Delhi 2001.
59. NirmalaB and GaurAC. Effects of carbon and nitrogen ratio on rice straw biomethanation, Journal of rural Energy 1997;11:1-16.
60. Singh JB and Anil Dhussa. Manual on Deen bandhu Biogas plant. TataMcgraw hill Publishing Company Ltd, New Delhi 1988.
61. Srivastava P K, et al. Technology and Application as of Biogas, Jain Brothers, New Delhi 1994.
62. Hooi Ling Ho. Xylanase Production by Bacillus subtilis Using Carbon Source of Inexpensive Agricultural Wastes in Two Different Approaches of Submerged Fermentation (SmF) and Solid State Fermentation (SsF). J Food Process Technol 2015;6:437
63. Diop MB et al. Use of Nisin-Producing Starter Cultures of Lactococcuslactis subsp. lactis on Cereal Based-Matrix to Optimize Preservative Factors over Fish Fermentation at 30°C Typical to Senegal. J Food Process Technol 2015;6:432
64. Thakur SA, et al. Solid State Fermentation of Overheated Soybean Meal (Waste) For Production of Protease Using Aspergillus Oryzae. 2015;IJIRSET
65. Faithpraise FO, et al. Pesticide Free Control of Mosquitoes via Toxorhynchites predators and Fermentation Traps. 2014;IJIRSET
66. Peddapalli SR and Meena V, Studies on Optimization of Process Parameters for Nattokinase Production by Bacillus subtilis NCIM 2724 and Purification by Liquid-Liquid Extraction 2013;IJIRSET.

 e-ISSN: 2319-9865
p-ISSN: 2322-0104

67. Hooi LH and Jee HP. Bioprocessing of Agro-Residual Wastes for Optimisation of Xylanase Production by Aspergillus brasiliensis in Shake Flask Culture and Its Scaling up Elucidation in Stirred Tank Bioreactor. J BiodiversBioprosDev 2015;2:148
68. Jahir AK and Sumit KS. Production of Cellulase using Cheap Substrates ny Solid State Fermentation. 2011;IJPAES.
69. Kesavapillai B, et al. Screening of Microbial Isolates for the Fermentative Production of L-Asparaginase in Submerged Fermentation. Journal of Pharmacy and Pharmaceutical Sciences, 2013.
70. Chandrakant B, et al. Isolation, Identification and Characterization of Unknown Impurity in Fermentation Based Active Pharmaceutical Ingredient Lovastatin. 2014;Pharmaceutical Analysis
71. Esra A, et al. Genetic Modifications of Saccharomyces cerevisiae for Ethanol Production from Starch Fermentation:A Review. J Bioprocess Biotech 2014;4:180.
72. Hooi LH, Effects of Medium Formulation and Culture Conditions on Microbial Xylanase Production Using Agricultural Extracts in Submerged Fermentation (SmF) and Solid State Fermentation (SsF):A Review. J Biodivers Biopros Dev 2014;1:130.
73. Tania P and Maria A. Purposeful Model Parameters Genesis in Multi-population Genetic Algorithm.2012;Glob J Tech Opt.
74. Gunjan G, et al. A Cost Effective Strategy for Production of Bio-surfactant from Locally Isolated Penicilliumchrysogenum SNP5 and Its Applications. J Bioprocess Biotech 2014;4:177
75. Jiang W, et al. Effect of Different Sweet Sorghum Storage Conditions on Ethanol Production. BiochemPhysiol 2014;3:142
76. Navpreet K. et al. Optimization of Fermentation Parameters for Bioconversion of Corn to Ethanol Using Response Surface Methodology. J Pet Environ Biotechnol 201;5:178.
77. Maria P. Characterization of Fungal Morphology using Digital Image Analysis Techniques. J MicrobBiochemTechnol 2014;6:189- 194
78. Marek N and Malgorzata L. Fermentation Tube Test Statistics for Indirect Water Sampling. Hydrol Current Res 2014;5:165.
79. Mervat MA and Ahmed MA. Optimization of Solid State Fermentation and Leaching Process Parameters for Improvement Xylanase Production by Endophytic Streptomyces sp. ESRAA-301097. J MicrobBiochemTechnol2014;6:154-166.
80. Mervat MA, et al. Optimization of Solid State Fermentation and Leaching Process Parameters for Improvement Xylanase Production by Endophytic Streptomyces sp. ESRAA-301097. J MicrobBiochemTechnol. 2014;6:154-166.
81. Eric LH and Mark GL. Fermentation Monitoring of a Co-Culture Process with Saccharomyces cerevisiae and Scheffersomycesstipitis Using Shotgun Proteomics. J Bioprocess Biotech. 2014;4:144.
82. Sumaryati S, et al. Antimicrobial Properties and Lactase Activities from Selected Probiotic Lactobacillus brevis Associated With Green Cacao Fermentation in West Sumatra, Indonesia. J Prob Health. 2013;1:113.
83. Yadi P and Yana S. The influence of Palm Kernel Cake and Rice Bran Fermentation Product Mixture to the Broiler Carcass Quality. International. Journal of Waste Resources. 2012;1:2.
84. Pradipta T, et al. Process and Strain Development for Reduction of Broth Viscosity with Improved Yield in Coenzyme Q10 Fermentation by Agrobacterium tumefaciens ATCC 4452. Ferment Technol. 2013;2:110
85. Saghir A and Baher A. Sensory Quality of Fermented Sausages as Influenced by Different Combined Cultures of Lactic Acid Bacteria Fermentation during Refrigerated Storage. J Food Process Technol. 2012;4:202.
86. Jacob VB, et. al. Lactic acid Production by a Mixed Culture of Lactic Bacteria Based on Low Value Dates Syrup and Their Metabolic Uses. J Metabolic Synd. 2012;1:116.
87. Shieh PP, et al. Effect of Isoflavone Aglycone Content and Antioxidation Activity in Natto by Various Cultures of Bacillus Subtilis During the Fermentation Period. J Nutr Food Sci. 2012;2:153.
88. Shen YS. Study of arsenic removal from drinking water. J Am Water Work Assoc. 1973;65:543 – 548.
89. Hosetti BB and Rodgi SS. Influence of depth on the efficiency of oxidation ponds for wastewater treatment. Environ Ecol. 1985;3:324-326.
90. Mahajan CS, et al. Wastewater treatment at winery industry, Asian J Environ. Sci. 2010;4:258-265.
91. Sarner E. Oxidation ponds as polishing process of the wastewater treatment plant in Lund, Vatten. 1985;41:186-192.
92. Abeliovich A. Biological treatment of chemical industry effluents by stabilization ponds. Water Res.1985;19:1497-1503.

e-ISSN: 2319-9865
p-ISSN: 2322-0104

93. Sperling VM and Lemos DC. Biological wastewater treatment in warm climate regions, IWA Publishing, London. 2005.
94. Mara DD and Pearson H. Artificial freshwater environment:Waste stabilization ponds. Biotechnology. 1986;8:177-206.
95. Caldwell DH. Sewage oxidation ponds-performance, operation and design. Sew Works J. 1946;3:433-458.
96. Hosetti BB, Patil HS. Influence of Lemna minor on the performance of sewage stabilization pond. Geobios. 1986;13:244-247.
97. Ghrabi A, Ferchichi M, Drakides C. Treatment of wastewater by stabilization ponds-Application to Tunisian conditions. Wat Sci Tech. 1993;28:193-199.
98. Marais GVR. Fecal bacterial kinetics in stabilization ponds. J Environ Eng. 1974;100:119.
99. Ahmed K. Role of fungi in oxidation ponds. Biol Abstra. 1980;70:7104.
100. Kawai H, et al. Study of the treatability of pollutants in high rate photosynthetic ponds and the utilization of the proteic potential of algae which proliferate in the ponds. Environ Tech Lett. 1984;5:505-516.
101. Henry JG, Prasad D. Microbial aspects of the inuvik sewage lagoon. Wat Sci Tech. 1986;18:177.
102. Rivera F, et al. Zooflagellates in an anaerobic waste stabilization pond system in Mexico. Wat Air Soil Poll. 1986;27:199.
103. Nair G. Role of organisms in sewage treatment I:Types of organisms. Proc Acad Environ Biol. 1997;6:19-26.
104. Tharavathy NC and Hosetti BB. Biodiversity of algae and protozoa in a natural waste stabilization pond:A field study. J Environ Biol. 2003;24:193-199.