



MULTIDISCIPLINARY NATIONAL CONFERENCE
ON
“CARBON FOOTPRINT AND CLIMATE CHANGE”
PROCEEDINGS

Organized by



VEDIC KANYA P.G. MAHAVIDYALAYA (VKM)

RAJA PARK, JAIPUR- 302004
INTERNAL QUALITY ASSURANCE CELL

In Association with



Indian Science Congress
Association Jaipur Chapter



"Education is the most powerful
weapon which you can use
to change the world"

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ABOUT THE COLLEGE

Vedic Kanya PG College is one of the premier college of Rajasthan located in the Heart of City- Rajapark, Jaipur which is founded by Educationist Late Shri Satyavrat Samvedi, Late Prof. Rajkumar Sahni and prominent Scholars of Arya Samaj. They laid the foundation seed of education in 1955, gradually the girl's education enlightened and uplifted for further higher education in July 1990 for UG and in 1995 for PG courses for introspection and holistic development of the students.

Our institution has unique feature as it is highly dedicated to inculcate moral values and Indian culture. The college has highly qualified, experienced, dedicated and competent faculties to impart theoretical as well as practical knowledge of the curriculum. The departmental laboratories have modern equipment's and a large number of varieties of specimens and museum. The college has central library along with departmental libraries with wide range of curriculum books, magazines, research journals, articles, newspapers etc. VKM has enriched its scope of learning which includes more specialized and professional courses to constantly innovate our education system to meet the needs of students in a dynamic world.



MULTIDISCIPLINARY NATIONAL CONFERENCE ON "CARBON FOOTPRINT AND CLIMATE CHANGE" PROCEEDINGS



मुख्य मंत्री
राजस्थान

संदेश

प्रसन्नता का विषय है कि वैदिक कन्या महाविद्यालय द्वारा 'कार्बन पदचिह्न एवं जलवायु परिवर्तन (Carbon Foot Print and Climate Change)' विषय पर राष्ट्रीय सम्मेलन का आयोजन किया जा रहा है।

वैश्विक कार्बन उत्सर्जन में हमारी व्यक्तिगत भूमिका को समझना और इसमें हमारे योगदान को कम करना अनिवार्य है। आज हम जो निर्णय ले रहे हैं, वे आने वाली पीढ़ियों को आकार देंगे। हमारा कार्बन पदचिह्न हमारी दैनिक आदतों से पैदा होता है। छोटे-छोटे बदलावों से दूरगामी प्रभाव हो सकता है। ऊर्जा-कुशल उपकरणों का चुनाव, पर्यावरण अनुकूल उत्पादों को प्राथमिकता और पानी का संरक्षण करना छोटे लेकिन महत्वपूर्ण कदम हैं! राजस्थान सरकार सौर ऊर्जा को बढ़ावा देने के लिए प्रतिबद्ध है। हम जल संचयन और वृक्षारोपण अभियानों को भी प्राथमिकता दे रहे हैं।

मुझे आशा है इस सम्मेलन में किए जाने वाले विचार-विमर्श से हम पर्यावरणीय प्रभाव के प्रति जागरूक बनेंगे। अपने कार्बन पदचिह्न को कम करने के लिए कदम उठाएंगे और हम सब मिलकर एक अधिक टिकाऊ और समृद्ध राजस्थान का निर्माण करेंगे।

मैं सम्मेलन की सफलता के लिए अपनी शुभकामनाएं प्रेषित करता हूँ।

(भजन लाल शर्मा)

MULTIDISCIPLINARY NATIONAL CONFERENCE ON "CARBON FOOTPRINT AND CLIMATE CHANGE" PROCEEDINGS



डॉ० सौम्या गुर्जर
महापौर
नगर विगम छेटर, जयपुर

शुभकामना संदेश

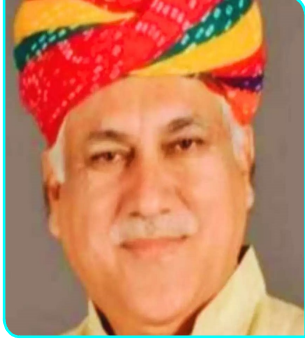
मुझे यह जानकर अत्यन्त हर्ष हो रहा है कि वैदिक कन्या स्नातकोत्तर महाविद्यालय द्वारा एक दिवसीय राष्ट्रीय कान्फ्रेंस का आयोजन किया जा रहा है।

महाविद्यालय द्वारा समय समय पर की जाने वाले इस प्रकार की गतिविधिया छात्राओं के लिए ज्ञानवर्धन करती है। एक दिवसीय राष्ट्रीय कान्फ्रेंस (Carbon Footprint & Climate Change) की सफलता के लिए एवं आपके कॉलेज की छात्राओं के उज्ज्वल भविष्य के लिए मैं मंगलकामना करती हूं।

शुभकामनाएँ !!

(डॉ० सौम्या गुर्जर)
महापौर

MULTIDISCIPLINARY NATIONAL CONFERENCE ON "CARBON FOOTPRINT AND CLIMATE CHANGE" PROCEEDINGS



Shri Ravi Nayyar

रवि नैय्यर



प्रदेश संयोजक - व्यापार प्रकोष्ठ भाजपा, राजस्थान
सदस्य - प्रदेश कार्यसमिति भाजपा, राजस्थान

क्रमांक : 226/2024/02

दिनांक : 26/02/24

शुभकामना सन्देश

"Carbon Foot Print & Climate Change" का मुद्दा पिछले कुछ वर्षों से अंतर्राष्ट्रीय समुदाय में गहन चर्चा का विषय बना हुआ है। वैश्विकतापन (Global Warming) एवं जलवायु परिवर्तन से निपटने के लिए दुनिया के सभी देश संयुक्त राष्ट्र सम्मेलनों में "ग्रीन हाउस गैस" उत्सर्जन कम करने हेतु प्रयासरत है। प्रधानमंत्री श्री नरेन्द्र मोदी जी ने वर्ष 2015 में पेरिस में आयोजित जलवायु परिवर्तन सम्मेलन (UNFCCC) में "अन्तराष्ट्रीय सोलर गठबंधन" लांच करने की पहल करके "ग्रीन हाउस गैस" उत्सर्जन कम करने की प्रतिबद्धता के साथ दर्शाया है कि भारत इस वैश्विक समस्या के समाधान में नेतृत्व की भूमिका में है।

मुझे अत्यंत प्रसन्नता की अनुभूति हो रही है कि वैदिक कन्या महाविद्यालय परिवार कई दशकों से शिक्षा के क्षेत्र में अपना महत्वपूर्ण योगदान देने के साथ-साथ वैश्विक मुद्दों पर भी संवेदनशीलता के साथ अपनी भूमिका बखूबी निभा रहा है। मुझे पूर्ण विश्वास है कि वैदिक कन्या महाविद्यालय द्वारा 28 फरवरी को आयोजित राष्ट्रीय कॉन्फ्रेंस में आमन्त्रित विषय विशेषज्ञों के विचार एवं महत्वपूर्ण सुझाव इस मुद्दे पर उपयोगी साबित होंगे। मैं अपनी ओर से वैदिक कन्या महाविद्यालय परिवार को इस एक दिवसीय राष्ट्रीय कॉन्फ्रेंस के सफलतापूर्ण आयोजन के लिए शुभकामनाएं प्रेषित करता हूँ।


रवि नैय्यर

: कार्यकारी प्रधान :

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MULTIDISCIPLINARY NATIONAL CONFERENCE ON "CARBON FOOTPRINT AND CLIMATE CHANGE" PROCEEDINGS



Smt. Mridula Samvedi
Patron
Vedic Kanya P.G. College
Rajapark, Jaipur

:: शुभकामना संदेश ::

अत्यन्त हर्ष का विषय है कि वैदिक कन्या स्नातकोत्तर महाविद्यालय, जयपुर में "Carbon Footprint & Climate Change" विषय पर एक दिवसीय राष्ट्रीय संगोष्ठी का आयोजन दिनांक 28 फरवरी, 2024 को किया जा रहा है। इसमें उपस्थित सभी विद्वान, विदुषी सहित शोधार्थी भाग लेंगे और अपने शोध पत्रों के माध्यम से विचार करेंगे। इन विचारों और उनके उत्कृष्ट शोधों से समाज में सजृनात्मक उन्नति और स्वीकृति की दिशाओं में एक नई ऊर्जा का विकास होगा। ऐसा मेरा दृढ़ विश्वास है।

इसी शुभकामना के साथ।

Smt. Mridula samvedi

MULTIDISCIPLINARY NATIONAL CONFERENCE ON "CARBON FOOTPRINT AND CLIMATE CHANGE" PROCEEDINGS



Shri A.T. Shrinivasan
President
Vedic Kanya P.G. College
Rajapark, Jaipur

I wish to commend Vedic Kanya P.G. Mahavidyalaya, Raja Park, for this National Conference, which addresses a very critical subject that is essential for humanity as a whole. Climate change and the role of Carbon in causing Climate change is perhaps the biggest threat that human existence has faced for centuries. Floods and draughts which are dramatically different in intensity are threatening our food and disrupting supply chains. Running out of food or water is not an outcome we can accept. Scientists have warned that global warming needs to be below 1.5 to 2% C and anything above that would cause massive destruction on a scale not seen before. Educating everyone on what each one of us can do to positively impact the environment and slow down Climate Change is the need of the hour. That is what this seminar would do. Each one of us must contribute whilst we keep faith in human ingenuity to fight and come up with solutions to Climate problems. Let us resolve that we will definitely do our share and keep learning what we can do better. For all of us the motto has to be that we will contribute everything we can to India & has resolve to achieve the Net Zero goal we have committed to the country. I wish good luck to the organizers to accomplish the goal of the conference.

A.T. Shrinivasan

MULTIDISCIPLINARY NATIONAL CONFERENCE ON "CARBON FOOTPRINT AND CLIMATE CHANGE" PROCEEDINGS



Dr. Anirudh Sahni
Secretary
Vedic Kanya P.G. College
Rajapark, Jaipur

It is a great honor for the Vedic Kanya P.G. mahavidyalaya, Jaipur to organize multi-disciplinary National conference on "Carbon footprint and climate change" on February, 28, 2024.

Human interact with the environment continuously. This interaction effect the quality of life and health disparities. Climate change and the deterioration of environment are linked with the increasing global disease burden. Natural disaster and climate change create multiple stresses on the growth and development. The theme of the conference is quite relevant in the present scenario. It has been high on the health and development agenda at the regional, national, and global level for a long time as the environment has direct impact on health of aquatic and terrestrial life.

It is a high time to create research activities, as human activities are deteriorating environment. I am confident that the conference would provide an excellent opportunity for the fruitful interaction and exchange ideas among eminent scientists and young researchers to discuss the latest advances made in the environment friendly practices for the welfare of the society.

I wish to congratulate the organisers and wish a great success for the conference.

Dr. Anirudh Sahni

MULTIDISCIPLINARY NATIONAL CONFERENCE ON "CARBON FOOTPRINT AND CLIMATE CHANGE" PROCEEDINGS



Dr. Latika Jha
Principal
Vedic Kanya PG Mahavidyalaya,
Jaipur

While placing, proceedings of the National conference before you, I extend a very warm welcome to all the distinguished guests, invited speakers, chair persons and delegates of the momentous occasion of this national conference on National science day, on a very relevant topic: Carbon footprint and Climate Change. This has been possible because of the continuous encouragement, inspiration and scientific aptitude of our Secretary Dr Aniruddh Sahni and my esteemed colleagues, Dr Archana Pareek, Head, Department of Botany and my hard working faculty members Lt Seema Sharma, Department of Economics and Dr Neha Khatri, Department of EAFM.

I also express my gratitude to Prof Vineet Soni, Department of Botany, MLSU, Prof Vidhya Patni, President, Indian Science Congress Association, Jaipur chapter Dr Sanjay Palnitkar, an environmental Scientist and MD, Blue Nature Bio Pvt Ltd, For their continuous support for the conference.

I am sure, that this conference would go a long way in bringing together all the research groups, from various disciplines. I whole-heartedly extend my support and warm wishes to the organizers of the conference, for their tireless and meticulous efforts and hope that the recommendations of the conference would be beneficial to all the stakeholders and our society as a whole and indeed provide guidance for future research and teaching.

To mark this event, we have humbly brought out the proceedings within our limitations of time, space and material resources. I am thankful to Raja Rammohan Roy National Agency for allotment of ISBN for this publication.

On behalf of the institution, I wish the Conference, a big success.



Dr. Latika Jha

MULTIDISCIPLINARY NATIONAL CONFERENCE ON “CARBON FOOTPRINT AND CLIMATE CHANGE” PROCEEDINGS



Dr. Archana Pareek
Convener
Vedic Kanya PG Mahavidyalaya,
Jaipur

It brings great prestige to the Vedic Kanya P.G. Mahavidyalaya, Raja Park, Jaipur to host a National Conference on “ Carbon Foot Print & Climate Change” on 28th February,2024 and that a large number of delegates from different organization will be participating in it. I am sure the distinguished delegates attending the conference will have an opportunity to share their knowledge and experience in wider perspective.

On behalf of the institution welcome all the chairpersons key note speakers and participants to this conference in making the event a remarkable success.

Dr. Archana Pareek

MULTIDISCIPLINARY NATIONAL CONFERENCE ON "CARBON FOOTPRINT AND CLIMATE CHANGE" PROCEEDINGS



Dr. Neha Khatri
Co-Convener
Vedic Kanya PG Mahavidyalaya,
Jaipur

I feel delighted on behalf of Vedic Kanya P.G. College, Rajapark, Jaipur, to host the Multidisciplinary National Conference on "Carbon Footprint and Climate Change" on February 28 th, 2024. The objective of the conference is to provide a common platform to think collectively on the significant issue. Our collective commitment to understand and address the environmental challenges is crucial. I am enthusiastic to welcome all dignitaries and delegates.

May this conference be successful and achieve its aim.

Dr. Neha Khatri

MULTIDISCIPLINARY NATIONAL CONFERENCE ON "CARBON FOOTPRINT AND CLIMATE CHANGE" PROCEEDINGS

ABOUT THE CONFERENCE

The new National Education Policy-2020 envisages bringing about significant reforms in higher education to cater to the changing landscape of knowledge and create global standards of education.

Conferences are considered to be dynamic concept wherein people from different expertise meet and discuss things for various purposes. Internal Quality Assurance Cell (IQAC) Department of Vedic Kanya P.G. Mahavidyalaya is organising Multi disciplinary Conference on "Carbon Footprints and Climate Change".

This Conference aims at providing a common platform to all the stakeholders like Department of Education, DST, Pollution Control Board, Department of Environment, Industries, and Researchers and so on. It aims to bring about a welcoming change in the society, a step towards innovation.

Carbon footprints emitted by an individual, organization, or any natural event have become a critical focal point for the unwanted changes in the climate. These human activities alter the composition of world's atmosphere. Fortunately, each and every one of us can work together in the fight against Climate Change, if we promote reducing our Carbon Footprint. This Conference is a great opportunity to think collectively on a significant topic.

NATIONAL ADVISORY COMMITTEE

Prof. Alpana Kateja, Vice Chancellor, University of Rajasthan.
Prof. Praveen Trivedi, Former Vice Chancellor, Gorakhpur University, UP.
Prof. S.L. Kothari, Eminent Scientist, Amity University.
Prof. Vineet Soni, Head, Department of Botany, MLSU, Udaipur.
Prof. H.S. Sharma, Former Head, Department of Geography, UOR.
Prof. S.L. Sharma, Dean, Faculty of Arts, University of Rajasthan.
Dr. Kavita Sahni, Associate Professor, Department of Zoology, Government College, Chomu.
Dr. Sanjay Palnitkar, Managing Director, Blue Nature Bio Pvt. Ltd.
Dr. K.B. Sharma, Principal, S.S. Jain Subodh Autonomous College.
Prof. Nimali Singh, Principal Maharani College, Jaipur.
Mr. Vikas Brijkaushli, Industrial Engineer, M.D. Defence Supply Centre, Aligarh (U. P.).
Prof. Mamta Jain, Vice Principal, University Commerce College.

INTERNAL ADVISORY COMMITTEE

Dr. Aditi Kothari Chhajed, Department of Botany, SVC, South Campus, University of Delhi.
Dr. Mudit Gupta, Principal, L.B.S. College.
Dr. Saraswati Singh, Head, Department of Zoology, VKM.
Dr. Rajesh Yadav, Dean Science Faculty, S.S. Jain Subodh Autonomous College.
Dr. Taruna Bhatt, Head, Department of Chemistry, VKM.
Dr. Laxmi Mathur, Department of Botany, VKM.
Dr. Manisha Sharma, (RUSA) Commissionerate and higher education.
Dr. Poonam Chopra, Head, Department of Drawing and Painting, VKM.

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MULTIDISCIPLINARY NATIONAL CONFERENCE ON "CARBON FOOTPRINT AND CLIMATE CHANGE" PROCEEDINGS

Inaugural Session

Registration	9:00 A.M. onwards
Welcome of the Dignitaries	10:00 A.M. to 10:05 A.M.
Lighting of the lamp	10:05 A.M. to 10:10 A.M.
Felicitation of the Dignitaries	10:10 A.M. to 10:20 A.M.
Welcome Speech and Overview of College Activities by Principal (Dr. Latika Jha)	10:20 A.M. to 10:30 A.M.
Conference Preview by Convenor (Dr. Archana Pareek)	10:30 A.M. to 10:40 A.M.
Address by Secretary (Dr. Anirudh Sahni)	10:40 A.M. to 10:50 A.M.
Address by Chief Guest (Dr. Somya Gurjar, Mayor Nagar Nigam Greater, Jaipur)	10:50 A.M. to 11:00 A.M.
Keynote Address (Dr. Sanjay Palnitkar, Environment Consultant, M.D., Blue Nature Bio Pvt. Ltd)	11:00 A.M. to 11:30 A.M.
High Tea	11:30 A.M. to 11:45 A.M.

MULTIDISCIPLINARY NATIONAL CONFERENCE ON "CARBON FOOTPRINT AND CLIMATE CHANGE" PROCEEDINGS

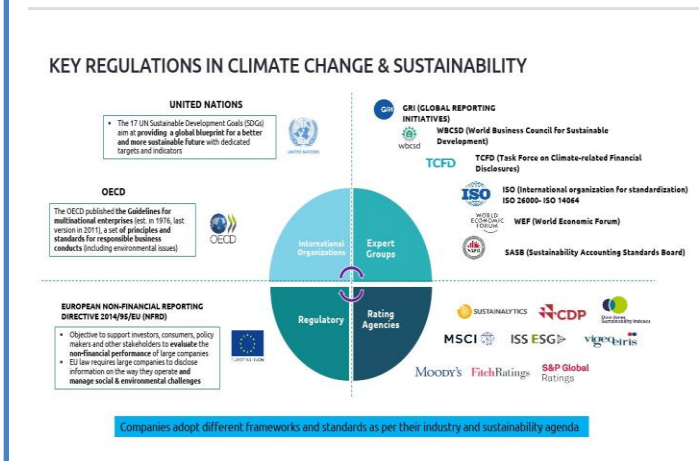
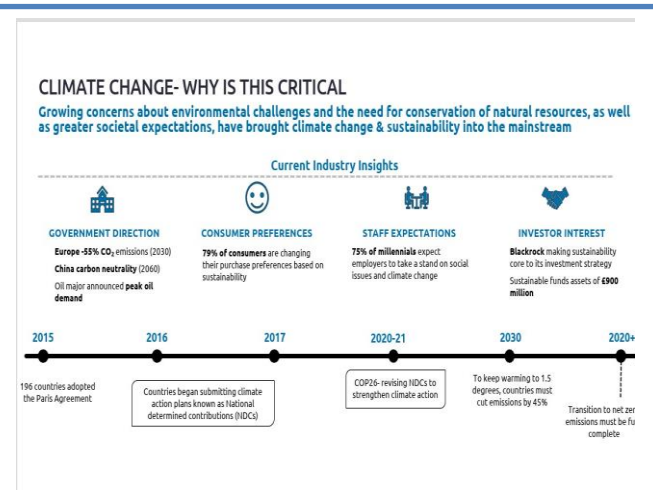
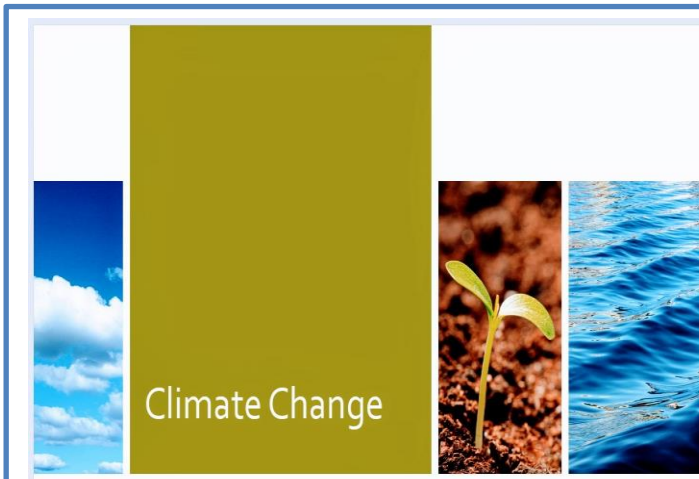
Technical Session – 1

Welcome and Felicitation of Chairperson (Prof. T.I. Khan)	11:45 A.M. to 11:50 A.M.
Welcome and Felicitation of Speakers	11:50 A.M. to 12:00 P.M.
Expert Speaker - Dr. Vikas Brijkaushli (Industrial Engineer, M.D. Defence Supply Centre, Aligarh)	12:00 P.M. to 12:30 P.M.
Expert Speaker - Dr. Garima Sharma (Carbon Expert, Eco Veda, Noida)	12:30 P.M. to 01:00 P.M.
Paper Presentation by Participants	01:00 P.M. to 01:45 P.M.
Lunch	01:45 PM. to 02:30 P.M.

Technical Session – 2

Welcome and Felicitation of Chairperson (Dr. Kavita Sahni)	02:30 P.M. to 02:50 P.M.
Paper Presentation by Participants	02:50 P.M. to 03:45 P.M.
Group Discussion	03:45 P.M. to 04:15 P.M.
Recommendations	04:15 P.M. to 04:30 P.M.
Valedictory Session	04:30 P.M. to 04:45 P.M.
Tea	04:45 P.M. to 05:00 P.M.

KEY NOTE SPEAKER
Dr. Sanjay Palnitkar,
(Environment Consultant,
M.D., Blue Nature Bio Pvt. Ltd)
Topic: Climate Change



LIFE-CYCLE ANALYSIS

ISO 14040 LCA Standards

LCA addresses the environmental aspects and potential environmental impacts (e.g. use of resources and the environmental consequences of releases) throughout a product's life cycle from raw material acquisition through production, use, and end-of-life treatment, recycling and final disposal (i.e., cradle-to-grave).

ISO 14040 series is the foundation and leading international standards on life cycle assessment (LCA). It provides the guidelines and principles for conducting life cycle assessment studies

- The definition of four phases of LCA (goal and scope, life cycle inventory and impact assessment, interpretation)
- Reporting and critical review of the LCA
- Limitations of the LCA, relationship between the LCA phases, and conditions for use of value

ISO 14040 describes the "principles and framework for LCA"

ISO 14044 "specifies requirements and provides guidelines" for LCA

WHY DON'T WE ACT MORE ON CLIMATE CHANGE?

- Disconnected optimism** of companies and institutions about their environmental progress
- Lack of reliable information** on solutions: citizens, in search of the "right information", are paralyzed by contradictory information or misinformation
- Fear of negative social impacts of climate measures:** social justice is at the heart of the climate conversation.
- Delegation of authority:** considering that climate action is the responsibility of others rather than oneself.
- Climate change despair:** people feel helpless in the face of the impact of climate change, to the point of discouraging any action.

Multidisciplinary National Conference Proceedings of Conference on “Carbon Footprint and Climate Change”

Expert Speaker

Dr. Vikas Brijkaushli

(Industrial Engineer,

M.D. Defence Supply Centre, Aligarh)

Topic: Implementation of digital feedback system in manufacturing process and operations for energy efficiency and reducing carbon foot print.

Implementation of Digital Feedback systems in Manufacturing Process and Operations for Energy efficiency and Reducing Carbon Foot print

- By Vikas Brijkaushly
- MD Defence Supply Centre, Aligarh

Implementation of Digital Feedback systems in Manufacturing Process and Operations for Energy efficiency and Reducing Carbon Foot print

- 1. What is carbon foot print ?
- 2. Carbon emissions reduction – A function of ‘INTENT’ and ‘CAPABILITY’ of organization
- 3. Impact of Manufacturing Process on carbon emissions
- 4. Impact of Operations/ Deployed systems in manufacturing on carbon emissions
- 5. ‘Ways to reduce carbon emissions’ in Manufacturing Environment
- 6. Case Study. “ Implementation of Digital feedback system” in Glass Bangles factory in Firozabad (U.P.) for Heat recovery of hot flue gases.

What is Carbon Foot print

- According to the United Nations Framework Convention on Climate Change a carbon footprint is a change in climate attributed directly or indirectly to human activity that alters the composition of the world's atmosphere.
- Green House Gases (GHGs) have a contribution to warming of environment which we call as ‘GLOBAL WARMING POTENTIAL’
- The Global warming potential of every tonne of any GHG can be expressed as Equivalent tonne of CO₂. Eg CH₄ or N₂O have their specific GWP. It can be calculated as $GEI (t CO_2e) = GEI (t CH_4) * GWP (CH_4)$
- For further information you can visit <https://ghgprotocol.org/>
- It is an Endeavour to reduce GEI by every society on this Globe.

Carbon emissions reduction – A function of ‘INTENT’ and ‘CAPABILITY’ of organization

- Although it is every organization's effort to reduce Carbon Foot Print, the extent to which their efforts succeed is a function of Their INTENT and CAPABILITY (ea'kk v@j {kerk).
- The Intent is given by Self realization and responsibility towards Environment, sometimes enforced by Govt agencies, sometimes given incentives by Govt (Carbon credits is one such measure).
- Once the Organizational intent is present, Capability has to be acquired. Technology provides such capabilities.

Multidisciplinary National Conference

Proceedings of Conference

o n

"Carbon Footprint and Climate Change"

Impact of Manufacturing Process on carbon emissions

- The manufacturing process adapted for producing something has a substantial bearing on the Carbon footprint.
- Efficient methods, minimum movements of goods / work in progress leads to favorable results.
- Type of fuel used has meaningful impact.
- Use of renewable energy.
- Making of products with recyclable materials and methods.
- Traditionally things were manufactured with subtractive methods i.e. removing material by machining etc. to get final form. Additive methods like 3-D printing reduces wastage of material thereby reducing energy consumption.
- Such examples are numerous where different Manufacturing process for same product leads to different levels of GHG emissions.

Impact of Operations/ Deployed systems in manufacturing on carbon emissions

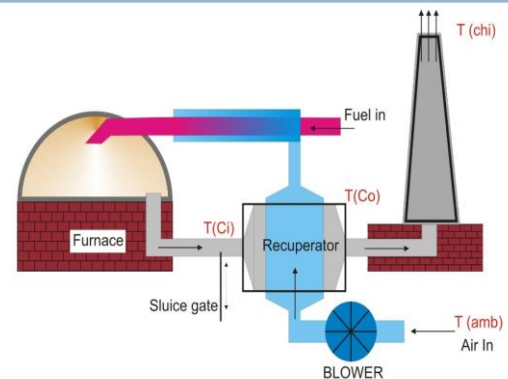
- An organization has various procedures and standard operating procedures (SOPs). These procedures have an impact on Carbon footprint of the organization. Here we are illustrating with a manufacturing unit perspective.
- The Logistics planning is a major part of manufacturing activity. How the things are transported within the manufacturing facility, How the raw material and finished goods are transported in and out of premises dictates the size of Carbon footprint.
- Certain functions of a manufacturing unit like office records / sales calls / clients interaction can now be done by virtual meetings i.e. without physically commuting.
- Going paperless using powerful ERP solutions for running of activities
- Work from home where it is technically a person's presence is not required
- Etc.

'Ways to reduce carbon emissions' in Manufacturing Environment

- Monitoring energy usage
- Reducing energy usage
- Reducing water usage
- Review the commuting of Employees, promote Green Commute
- Switching to replenishable energy like Solar and wind power etc
- Recycle material and water
- Reduce packaging

Case Study

"Implementation of Digital feedback system" in Glass Bangles factory in Firozabad (U.P.) for Heat recovery of hot flue gases



Case Study

"Implementation of Digital feedback system" in Glass Bangles factory in Firozabad (U.P.) for Heat recovery of hot flue gases

- Our Goal is to reach maximum temperature difference between $T(\text{Amb in})$ and $T(\text{Amb out})$
- The temperature of flue gas exiting the Chimney $T(\text{chi})$ has to be maintained optimum (typically around 300 deg C). If $T(\text{chi})$ falls then we will not have proper draft.
- For achieving these goals we have control on the flue gas flow rate by controlling the Sluce gate opening and blower RPM
- We get temperature sensors at various points which give feedback to our microprocessor. The microprocessor in turn controls actuating motors to move the sluce gate. Blower control is achieved by the Variable frequency drive controlling the motor RPM

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Expert Speaker

Dr. Garima Sharma
(Carbon Expert,
Eco Veda, Noida)

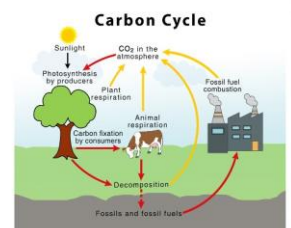
Topic: Climate change and carbon sequestration

Climate change and Carbon sequestration

By-
Dr. Garima Sharma
Carbon Expert (Ecoveda climate)

Carbon cycle

The **carbon cycle** is that part of the biogeochemical cycle by which carbon is exchanged among the biosphere, pedosphere, geosphere, hydrosphere, and atmosphere of Earth.



Climate change is Real!

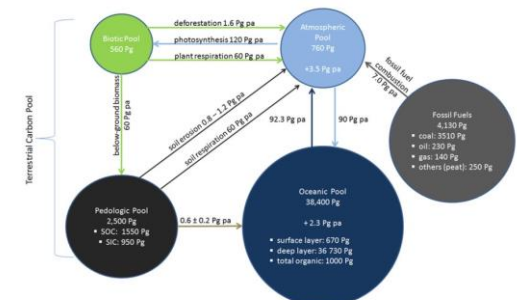
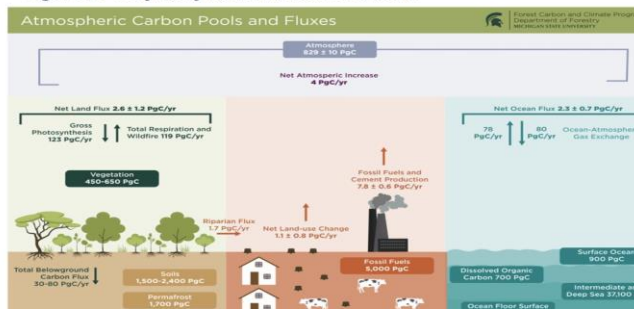
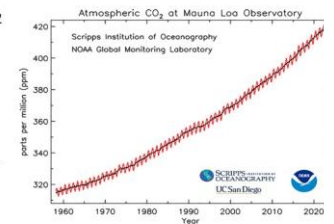


Figure 1: The flux of carbon between stocks.



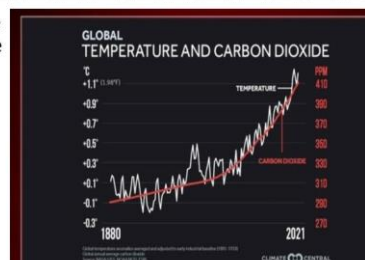
Current level of carbon dioxide

- 421 ppm of Carbon dioxide in 2022
- 425.60 ppm in Feb 2022
- Prior to the Industrial Revolution, CO₂ levels were consistently around 280 ppm for almost 6,000 years of human civilization.
- Carbon dioxide in the atmosphere had increased nearly 52% over pre-industrial levels by 2021



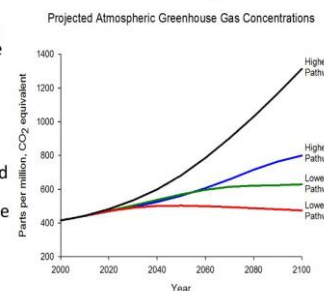
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- The average global temperature in 2022 was about 1.15°C above the 1850-1900 average.
- 2023 was the hottest year.
- Level of 1.5 degree reach upto 2030



Projection of climate change

- **Representative Concentration Pathway (RCP)** is a greenhouse gas concentration trajectory adopted by the IPCC in fifth Assessment Report (AR5) in 2014.
- The RCPs – RCP2.6, RCP4.5, RCP6, and RCP8.5 – are labelled after a possible range of radiative forcing values in the year 2100 (2.6, 4.5, 6, and 8.5 W/m², respectively).



Multidisciplinary National Conference

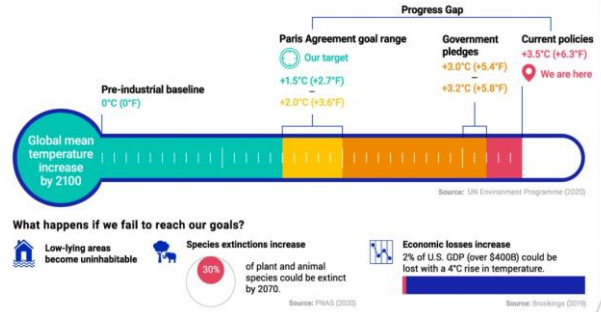
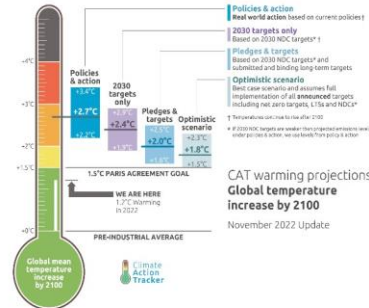
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Paris Agreement

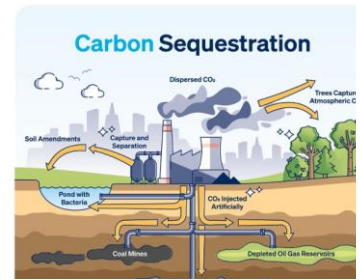
- The Paris Agreement is a legally binding international treaty on climate change under the UNFCCC.
- It was adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015. It entered into force on 4 November 2016.
- limit global temperature increase to well below 2 degrees Celsius and preferably to 1.5 degrees Celsius compared to pre-industrial levels.
- carbon emission must decline to 45% by 2030 and finally reach net zero by 2050.
- Since 2020, countries have been submitting their national climate action plans, known as nationally determined contributions (NDCs).



- Net-zero emissions, or "net zero," means offsetting the human induced carbon emissions as close to zero as possible, by removing carbon from atmosphere by oceans and terrestrial ecosystem in a process known as carbon sequestration.
- create an additional carbon sink of 2.5-3 gigatonnes of carbon dioxide equivalent (GtCO₂e) by 2030 through additional forest and tree cover.

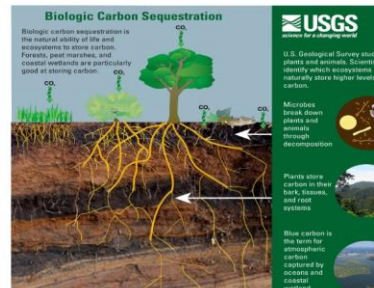
Carbon sequestration

- Carbon sequestration is the process of capturing and storing atmospheric carbon dioxide.
- enhancing naturally occurring carbon sequestration.
- CCS (artificial carbon storage technologies).

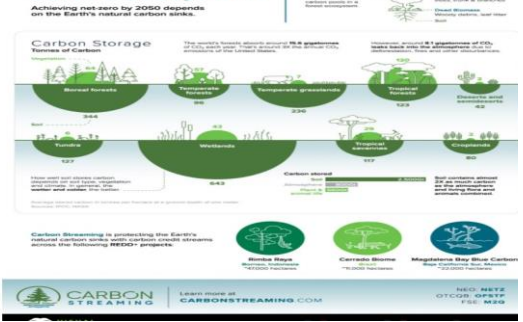


Biologic carbon sequestration

- conservation, management, and restoration of ecosystems such as forests, peat lands, wetlands, and grasslands, in addition to carbon sequestration methods in agriculture.
- Carbon credits can help finance projects that reduce or remove GHG emissions from the atmosphere.

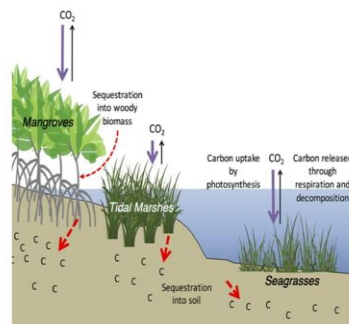


Carbon Storage in Earth's Ecosystems



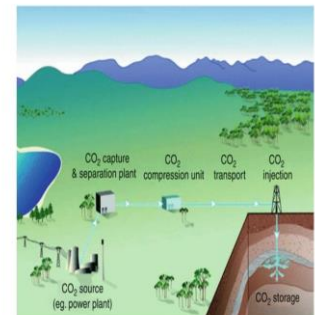
wetland

- Coastal wetlands such as mangroves, sea grasses, and salt marshes, and peat land is an important carbon reservoir;
- 20–30% of the world's soil carbon is found in wetlands, while only 5–8% of the world's land is composed of wetlands.
- wetland restoration and conservation can help preserve biodiversity, improve water quality, and aid with flood control.



Geological sequestration

- Geological sequestration refers to the storage of CO₂ underground in depleted oil and gas reservoirs, saline formations, or deep, un-minable coal beds.



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Abstract

THE IMPACT OF CONGO RED ON ANTIOXIDANT ACTIVITY AND PHOTOSYNTHETIC PERFORMANCE OF EICHHORNIA CRASSIPES

Jyotshana Sharma and Vineet Soni
Plant Bioenergetics and Biotechnology Laboratory
Department of Botany
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Plants have evolved to live in environments where they are constantly exposed to a wide range of environmental stresses. One of the biggest and most significant abiotic stresses in the modern world is synthetic dyes. Congo red is a significant direct dye that is carcinogenic and harmful to both human and animal health: its removal from the effluent is of major concern. Despite all the potentially dangerous information, little is known about the toxic effects of CR on the photosystem II and ROS-scavenging enzymes of aquatic plants. The purpose of this work was to examine the effects of CR on polyphasic chlorophyll fluorescence and antioxidant activity using *Eichhornia crassipes* as plant material. It was found that when CR concentrations increased, the activities of SOD, CAT, and GPOD steadily increased at lower concentrations and then declined at higher concentrations. In vivo chlorophyll fluorescence experiments revealed that when exposed to CR, electron transport is slowed down and overall decreases the photosynthetic performance of *E. crassipes*.

Keywords: -Antioxidant activity, Congo red, *Eichhornia crassipes*, Photosynthetic performance

SOCIO-ECONOMIC IMPACT OF INDO-NEPAL TRADE: A COMPREHENSIVE ANALYSIS

Dr. Shikha Gupta
Assistant Professor
Saint Wilfred's P.G College.

The bilateral trade relationship between India and Nepal holds significant socio-economic implications for both nations. This abstract provides a concise overview of the multifaceted impact of this trade on various socio-economic factors within both countries. The trade between India and Nepal serves as a crucial driver for economic growth and development in both nations. It facilitates the exchange of goods, services, and investments, contributing to increased productivity, employment opportunities, and overall economic prosperity. Indo-Nepal trade fosters cross-border labor mobility, with many Nepalese citizens finding employment opportunities in India's vast labor market. This migration has both positive and negative socio-economic impact, including remittance inflows, brain drain concerns, and socio-cultural integration challenges. Trade between India and Nepal necessitates robust infrastructure and connectivity networks, leading to investments in transportation, logistics, and border infrastructure. Improved connectivity enhances trade efficiency, reduces transaction costs, and promotes regional economic integration. Indo-Nepal trade facilitates socio-cultural exchange and integration between the two countries. Increased interaction among

people from diverse backgrounds fosters mutual understanding, cultural appreciation, and social cohesion, while also presenting challenges related to cultural preservation and identity. The trade relationship between India and Nepal impacts environmental sustainability and resource management. It influences patterns of resource extraction, energy consumption, and waste generation, necessitating collaborative efforts to mitigate environmental degradation and promote sustainable development. Recognizing the socio-economic complexities of Indo-Nepal trade, policymakers need to formulate inclusive and sustainable trade policies. Emphasis should be placed on addressing disparities, enhancing infrastructure, promoting innovation, and fostering partnerships to maximize the socio-economic benefits of trade while mitigating potential negative consequences. In the nut shell the socio-economic impact of Indo-Nepal trade transcends more commercial transactions, influencing various facts of society, economy, and environment in both countries. Understanding these dynamics is crucial for fostering inclusive and sustainable trade relations between India and Nepal in the years to come.

Key words: socio-economic implications, brain drain, environment sustainability, resource management

CARON FOOTPRINT AND ECONOMIC GROWTH

Lt Seema Sharma
Vedic Kanya P.G College
Rajapark Jaipur
Department of Economics and NCC

A carbon foot print is an environmental indicator that represent the amount of greenhouse gases (GHGs), expressed as CO₂ equivalents, that are emitted directly or indirectly as a result of a specific activity. Climate change and environmental degradation influence the status of the sustainable economy, being affected both financial and non-financial institutions. The potential negative implication of climate change on economic activity is revealed by the climate risk which leads to adverse impact on human livelihoods and well-being. Managing climate risks and facing up to losses and damages, implies societal decisions, proactive management, and the capacity to predict climate dynamics related to the future greenhouses gas emission and of course, to the entire pattern of socio-economic development and equality. The industrial revolution brought a new period of fast economic expansion among countries, giving rise to today's well-known phenomena: global warming and climate change. Compared to industrialized countries, CO₂ emission from energy use has grown dramatically in newly industrialized economies since the 1990s. The decline of environmental quality has reached worrisome levels, rising global warming and climate change concerns. As a result, understanding the cause of environmental deterioration and its relationship to economic growth has become increasingly important in recent years.

UNDERSTANDING THE ECONOMIC IMPACTS OF CLIMATE CHANGE: A COMPREHENSIVE REVIEW

Dr.Nikky Khandelwal
Assistant Professor
St.Wilfreds P.G.College
Jaipur.

Climate change is a global concern with far-reaching economic implications across various sectors such as agriculture, tourism, energy, and insurance. This paper aims to provide a comprehensive

review of the economic impacts of climate change, focusing on its effects on key sectors and exploring potential adaptation strategies. Utilizing a descriptive approach, the study offers insights into how climate change is influencing economies worldwide, drawing on both quantitative data and qualitative analysis of real-world examples. Key findings underscore the urgent need to address climate change and implement strategies to mitigate its economic consequences. The interconnectedness of environmental, social, and economic systems highlights the necessity for coordinated action at local, national, and global levels. This review serves as a valuable resource for policymakers, researchers, and stakeholders seeking to understand and address the economic challenges posed by climate change.

Keywords: climate change, economics impacts agriculture, tourism, energy, and insurance, global concern.

DISRUPTING THE NATURE- SOCIO-ECONOMIC IMPACT ON CLIMATE CHANGE

Pooja Sharma

Student

Indra Gandhi National Open University

Global trends of inequality and climate change are closely related to each other. The most vulnerable and impoverished individuals are most affected by climate change, yet they also make the least contribution to the problem. Millions of vulnerable people are facing disproportionate difficulties as a result of the growing effects of climate change, including extreme weather events, health effects, food, water, forced migration and displacement, loss of cultural identity, and other associated dangers. Some social groups are more susceptible to crises than others. These include households headed by women, children, people with disabilities, migrant workers, Indigenous Peoples and ethnic minorities, landless tenants, displaced people, people of colour in terms of sexual orientation and gender identity, the elderly, and other marginalized groups in society. Their geographic locations, as well as their financial, socioeconomic, cultural, and other circumstances, are the main factors that contribute to their vulnerability. The changes include economic-inequalities, economic-stability, social challenges: energy shortages, damaged infrastructure, scarcity of food and water, global climate changes. This paper intends to study the impacts of climate change, with major emphasis on agriculture and economy.

Keywords: Social changes, indigenous people, ethnic minorities, economic stability, global climate changes

पर्यावरण चेतना

डॉ. अपर्णा शर्मा

सहायक आचार्य (हिन्दी विभाग)

सुबोध पी.जी.महिला महाविद्यालय, रामबाग(जयपुर)

मानव जीवन एवं पर्यावरण एक दूसरे के पर्याय है, जहाँ मानव का अस्तित्व पर्यावरण से है वही मानव द्वारा निरंतर किए जा रहे पर्यावरण के विनाश से हमें भविष्य की चिंता सताने लगी है। वेदों में भी पर्यावरण के महत्व को दर्शाया है। पर्यावरण न केवल हमारे लिए बल्कि आगे आने वाली पीढ़ियों के लिए भी जरूरी है। पर्यावरण की रक्षा और संरक्षण के लिए पर्यावरण चेतना आवश्यक है। पर्यावरण चेतना हमारे आस-पास के पर्यावरण में हो रही समस्याओं की जागरूकता और उनके समाधान की दिशा में होने वाले प्रयासों की एक प्रक्रिया है। यह हमें सिखाता है कि हमारी क्रियाएँ और निर्णय हमारे पर्यावरण को कैसे प्रभावित करने हैं और हम कैसे उन्हें श्रेष्ठ बना सकते हैं। पर्यावरण चेतना के अन्तर्गत हमें अपने पर्यावरण को संरक्षित रखने के उपायों की जानकारी होती है।

हमें उसकी सफाई और सुरक्षा की दिशा में कदम उठाने की प्रेरणा मिलती है। प्राकृतिक संसाधनों का सही उपयोग, पर्यावरण चेतना के माध्यम से सिखाया जाता है।

पर्यावरण चेतना के माध्यम से ही हमें विभिन्न प्रकार के प्रदूषण की जानकारी मिलती है जैसे वायु प्रदूषण, जल प्रदूषण और ध्वनि प्रदूषण आदि। पर्यावरण की कठोरता मानव को किस प्रकार प्रभावित करती है यह एक ज्वलंत प्रश्न है क्योंकि पर्यावरण ही वह आवृत है जिससे समूचा जीवन घिरा हुआ है प्रकृति के जहाँ ग्रह, नक्षत्र एवं संपूर्ण भौतिक एवं जैविक घटकों की आवृत्ति माना जाता है वही पर्यावरण को पृथ्वी के आवृत का ही प्रतिनिधि माना जाता है। आज आवश्यकता है कि हम पर्यावरण के प्रति सचेत हो जाए और प्रकृति और मानव के अन्तरू सम्बन्धों को स्वीकार करें तभी आनेवाली पीढ़ियाँ सुरक्षित रह सकेगी।

CLIMATE CHANGE AND BIODIVERSITY: UNRAVELLING THE ECOLOGICAL THREADS

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Climate change poses a formidable threat to global biodiversity, reshaping ecosystems and challenging the adaptability of various species. This research paper critically examines the multifaceted impacts of climate change on biodiversity, encompassing shifts in distribution patterns, altered phenology, and increased vulnerability to extinction. Through an extensive review of scientific literature and case studies, we elucidate the interconnected mechanisms driving these changes, including temperature fluctuations, habitat loss, and disruptions in ecological interactions. The paper delves into the specific consequences for various taxa, ranging from plants to animals, emphasizing the cascading effects on intricate food webs and ecosystem services. Additionally, it explores the role of climate-induced extreme events in exacerbating biodiversity loss, with a focus on the increasing frequency of wildfires, floods, and droughts.

In discussing the challenges posed by climate change, the research paper scrutinizes the potential for adaptation and resilience within ecosystems. We evaluate on going conservation strategies, highlighting the importance of protected areas, habitat restoration, and the incorporation of climate-smart practices. Furthermore, the paper underscores the necessity of global cooperation and policy interventions to address the root causes of climate change and mitigate its impacts on biodiversity. Through this comprehensive analysis, the research paper aims to contribute to the scientific discourse on climate change and biodiversity, providing insights that inform conservation practices, policy development, and sustainable management of ecosystems in the face of an evolving climate.

THE CHALLENGES IN REDUCING EMISSION OF CARBON DIOXIDE

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The Earth is experiencing a round of climate change characterised by global warming, which drives a set of changes to the Earth's climate and weather systems. These rapid changes are happening as humans continue to emit heat-trapping greenhouse gases (GHG) to the atmosphere. Among these emissions, carbon dioxide (CO₂) is the critical anthropogenic greenhouse gas due to its abundance and its ability to remain in the atmosphere for thousands of years. Dramatic climate change stimuli countries to take urgent action. The carbon footprint describes the total greenhouse gas emissions caused by an activity, product or population. It is also a measure of the impact of climate change, greenhouse gas and carbon management, and is usually measured in kilograms of CO₂ equivalent

produced. Urbanization is happening at a higher rate in this era than in any other generation. It was stated that the building sector plays a critical role in the emission of carbon dioxide (CO₂) into the atmosphere. Construction of buildings, operation, and utilization of the built environment has led to emissions of a large number of CO₂ into the ambient air. Various issues and challenges arise from the building sector in reducing CO₂ emissions. Two barriers have prevented substantial reductions of GHG emissions in general and in transport in particular: incomplete international agreements and the high cost of (transport) clean technologies. Electricity production from oil, gas, and coal sources increases the greenhouse gases and carbon emissions; however, the intensity to increase emissions is far less than the intensity to increase emissions through fossil fuel. Policies that reduce emissions of greenhouse gases can simultaneously alter emissions of conventional pollutants that have deleterious effects on human health and the environment.

Keywords: Atmosphere, CO₂, Environment, Greenhouse gases, Urbanization, Emission.

CLIMATE CHANGE AND ITS ADVERSE EFFECTS ON THE WORLD

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Presently one of the biggest challenges to the world is climate change. Climate change can be defined as significant changes in the average values of precipitation and temperature. Enhanced human activities have altered the composition of the global atmosphere which is known as climate change. Greenhouse gas (GHG) emissions, particularly CO₂ from the combustion of fossil fuels and other gases such as nitrous oxide, methane, and CFCs lead to global warming. CO₂ constitutes a major proportion of greenhouse gases in the atmosphere and its increased level causes increase in the fertilization of crops along with decreased energy requirements due to warming. This positive impact of climate change was observed in 20th century, but water resources are negatively impacted due to climate change and now it has become a severe problem for both rich and developing countries. Major adverse effects of global warming are minimum temperature, maximum temperature, and precipitation. The increased intensity and frequency of precipitation causes soil erosion and has detrimental effects on agriculture, mainly in developing nations. Because of climatic factors, plants have to face several abiotic stresses such as salinity, drought, heat stress, cold stress, etc. Shortage of water availability, soil fertility loss, and pest infections in crops are the significant undesirable impacts of climate change. Thus climate-resilient technologies which are technically sound and economically viable must be framed using an interdisciplinary approach to mitigate climate change.

Keywords: Climate change, global warming, precipitation, soil erosion.

E-WASTE MANAGEMENT

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E-waste is a popular informal name for electronic product coming to the end of their "useful life". 'Utpathi, stithi and laya' (i.e. birth, growth and death) are three steps of any living body. 'Birth, growth and death is a natural life cycle of any living body on the globe. Any living entity produces waste but it is converted naturally into soil, water, gas and energy. But man made waste has been generating tremendously which has become the most dangerous entity that needs to be

managed. Uncertainly events occurring daily on the globe and imbalance are created due to the waste produced by various sectors, which does not get converted into natural resources and we are facing the problems like global warming. Pollution has now become unavailable or top priority to be considered. Waste can be considered as those items that people no longer make use of it that means any item discarded by a person after use, which is not naturally converted into natural resources is a waste. E-waste including prevention, minimization, re-use, recycling. Energy recovery and disposal and land filling. In the 21st century 'e-waste' is a popular, informal name for electronic products nearing the end of their 'useful life'. E-waste are considered dangerous as certain components. This paper highlights on the environment and their issues and management of e-waste and how this e-waste can be recycled so that we can generated energy.

Keywords: - waste, e-waste, reuse, recycling, disposal, e-waste products, toxics, hazardous.

MORPHOLOGICAL AND BIOCHEMICAL CHARACTERIZATION OF ROOT NODULE BACTERIA ISOLATED FROM PONGAMIA PINNATA (L.) PIERRE GROWING IN DIFFERENT SITES OF RAJASTHAN

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Pongamia pinnata has the added of N₂ fixing capacity and tolerance to adverse conditions over other bio-diesel crops. Nitrogen is a necessary macronutrient for all forms of life. Legume symbioses have as crucial role in agriculture, plants tolerate to grow on nitrogen deficient soils. This study report the isolation, phenotypic and biochemical characterization and plant growth promoting (PGP) activities of root nodule bacteria (RNB) associated with Pongamia pinnata isolated from wasteland and cultivated soils collected from eight agro ecological sites of Jaipur and Sikar. RNB were isolated using the Trap Method. A total of 42 isolates were isolated on CR-YEM (Congo Red- Yeast Extract Mannitol) agar medium. The isolates (PP1 to PP42) were circular, irregular, raised, mucilaginous or non-mucilaginous, translucent or opaque, creamy, white, yellow, transparent and pink coloured. Phenotypic characterization base upon Bromo Thymol Blue (BTB) reaction the majority of isolates were alkali producing. Maximum isolates were showed positive results (excepts indole production test) for various biochemical tests (citrate utilization, catalase test, indole production, amylase production and cellulase activity) and PGP activity (Phosphate solubilization, ammonia production and protease activity). Hence the purpose of our study help in sustainable agriculture uses by formulating appropriate rhizobial inoculum, reforestation and agroforestry.

CLIMATE CHANGE

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Climate change is actually defined as long-term shifts in temperatures and weather patterns. Climate change includes rising sea levels, shrinking mountain glaciers, accelerating ice melt in Greenland, Antarctica and the Arctic and shifts in flower blooming times. Main causes of climate change includes emission of greenhouse gases into the atmosphere, deforestation, over exploitation of natural resources, volcanic eruptions, level of carbon dioxide, pollution, destroying rainforests, increased level of green house gases. Effects of climate change includes hotter temperature, more severe storms, increase draught, warming, ecological imbalance, loss of bio diversity and many health problems. So it's todays demand and our moral responsibility to take care of climate. Climate

change cannot be stopped but can be slowed. We should save energy at home, walk, take public transport, not to throw food, reduce, reuse, repair and recycle, use more renewable energy and reduce wastage of water.

CLIMATIC VARIATION AND ITS IMPACT ON AGRICULTURE WITH SPECIAL REFERENCE TO RAJASTHAN

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Climate pertains to the prevalent or average weather conditions of a location, influenced by the temperature and meteorological variations observed over an extended period of years. Climatic parameters play a crucial role in determining the types of crops that can thrive in a particular region and influence the lifestyle adopted by the people living there. Indeed, agriculture is highly sensitive to weather and climate conditions. The success and productivity of agricultural practices are significantly influenced by factors such as temperature, precipitation, sunlight, and other climatic elements. In Rajasthan, fluctuations in climate, including rising temperatures, altered rainfall patterns, water scarcity, drought, and the emergence of new pests and diseases, may significantly impact crop yields and overall agricultural output. As a result, farmers and agricultural systems often need to adapt and respond to the dynamic nature of weather and climate patterns to ensure sustainable and successful farming practices. Certainly, implementing adaptation strategies is crucial for assisting farmers in coping with the challenges posed by unpredictable weather patterns and building resilience to future climate impacts. These strategies may include adopting drought-resistant crop varieties, implementing efficient water management practices, diversifying crops, adjusting planting and harvesting schedules, and integrating sustainable farming techniques. Keywords: Climate change, productivity, sustainability, resilience, drought resistant.

SCALING DOWN CARBON FOOTPRINTS BY VIRTUE OF EDUCATION

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We all have to play our part to prevent worst effect of global warming which is the process of heating our planet due to excess release of carbon in atmosphere. The key to reduce carbon footprints is to create carbon awareness from grassroot level. Education can serve as a tool in this concern. By integration of environmental education at all levels of curriculum sustainable practices for sustainable future can be insured. Further more education can encourage young people to develop environmental literacy i.e. to change the attitude, behaviour and learn to adapt climate change. This paper make an effort to bring up role of education in creating awareness of interconnection between individuals and impact of their actions on planet.

Keywords : environment, education, carbon awareness, climate change, planet.

SOCIO-ECONOMIC IMPACTS ON CLIMATE CHANGE

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Climate change is a multidimensional threat whose impacts have risked the existence of this green planet. There is an increase in temperature anomalies due to both natural and anthropogenic factors and it is projected that rise in natural disasters will worsen the scenario. Change in climate has drastic and significant impacts on environment, agriculture, economy and the society. The rise in greenhouse gases will cause huge losses to the GDP by end of the 21st century and also puts serious pressure on natural resources of the world. The visible disastrous effects of this global threat are on malnutrition, food crisis, poor health and decreased labor productivity. The policymakers need to pay attention on the aspects that are affected by climate change and develop adaptation strategies in order to build climate resilience which will save the humankind from the possible severe outcomes. This paper intends to study these impacts of climate change, with the major emphasis on agriculture and economy. Continent wise climate change risks and adaptation strategies is also discussed.

PHENOTYPIC, BIOCHEMICAL AND PLANT GROWTH PROMOTING ACTIVITIES OF ROOT NODULE BACTERIA ASSOCIATED WITH MELILOTUS INDICUS IN CENTRAL ARAVALLI REGION

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The greatest difficulty facing humanity now is ensuring food security due to population growth. Farmers apply chemical nitrogen fertilizers, which are expensive and have a deleterious effect on soil fertility, microbial diversity, and the ecosystem, in order to achieve high yields. Since soil and plants are the primary components of a healthy ecosystem and the production of food, developing sustainable methods to meet human requirements is necessary. Therefore, it is necessary to develop sustainable farming methods based on environmentally benign techniques like biofertilizers. Microorganisms (such as rhizobia) that support plant development and aid in nitrogen management through biological nitrogen fixing are a part of sustainable agriculture. One naturally occurring source of nitrogen that contributes to excellent crop yield and growth is biological nitrogen fixation. The current study examines the phenotypic, biochemical, and growth-promoting properties of root nodule bacteria that were isolated from *Melilotus indicus* plants that were grown in several Aravalli region locations. After being separated and refined, a total of 46 rhizobial strains were examined for their phenotypic, biochemical, and activities that promoted plant growth. All pure rhizobial colonies in this investigation showed notable differences in their traits and patterns of sugar consumption. Isolates exhibit strong tolerance to salt (up to 5% NaCl concentration) in the salinity tolerance test. Significant heterogeneity was also seen in the biochemical and plant growth-promoting properties of all tested isolates. Isolates that support plant growth and are tolerant to salt present an excellent chance to fix nitrogen in extremely saline and alkaline soil in order to increase output. Overall, the data showed that *Melilotus indicus* is a promiscuous host that is nodulated by a variety of rhizobial strains; however, additional molecular research is required to accurately identify these strains.
Keywords: Rhizobia, *Melilotus indicus*, Aravalli, Plant Growth Promoter, Nodules, Legumes

E-WASTE MANAGEMENT

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In the digital age, the rapid pace of technological advancement has led to the proliferation of electronic devices, enriching our lives in countless ways. However, this technological evolution comes with a significant environmental cost in the form of electronic waste (e-waste). E-waste encompasses discarded electronic devices, posing complex challenges for waste management and environmental sustainability. This essay delves into the multifaceted issue of e-waste management, exploring its environmental impacts, current management practices, and future strategies for sustainable solutions. The Environmental Impact of E-Waste: E-waste poses a formidable environmental threat due to its toxic components and improper disposal methods. Electronic devices contain hazardous substances such as lead, mercury, cadmium, and brominated flame retardants, which can leach into soil and water, contaminating ecosystems and endangering human health. Moreover, the informal recycling sector prevalent in many developing countries exposes workers to harmful substances during dismantling and recycling processes, exacerbating health risks and environmental degradation.

Current E-Waste Management Practices: Efforts to address the e-waste crisis have primarily focused on legislation, technological innovations, and public awareness campaigns. Legislative measures, such as extended producer responsibility (EPR) laws, hold manufacturers accountable for the end-of-life management of their products, incentivizing sustainable design and recycling practices. Recycling technologies, ranging from mechanical shredding to advanced methods like pyrolysis and hydrometallurgy, offer avenues for recovering valuable resources from e-waste streams. Furthermore, educational initiatives targeting consumers and businesses play a crucial role in promoting responsible disposal habits and fostering a culture of circular economy principles.

Challenges and Opportunities: Despite advancements in e-waste management, several challenges persist, including inadequate infrastructure, lack of awareness, and the global nature of electronic waste trade. Developing countries, in particular, face immense challenges in managing e-waste due to limited resources and regulatory frameworks. However, these challenges also present opportunities for innovation and collaboration. Public-private partnerships, international cooperation, and technology transfer can facilitate the adoption of sustainable e-waste management practices worldwide.

Future Directions: Looking ahead, a holistic approach to e-waste management is essential for achieving environmental sustainability and resource conservation. This entails integrating policies that prioritize waste prevention, reuse, and recycling into broader sustainable development strategies. Innovations in design for environment (DfE), material recovery techniques, and eco-labelling can incentivize the production of environmentally friendly electronic products. Additionally, raising awareness among consumers about the impacts of e-waste and promoting responsible consumption and disposal habits are pivotal for driving behavioural change.

Conclusion: E-waste management is a pressing environmental issue that demands concerted efforts from governments, industries, civil society, and individuals. By embracing sustainable practices, investing in infrastructure, and fostering innovation, societies can mitigate the environmental and health risks associated with e-waste while unlocking economic opportunities and promoting a circular economy. Ultimately, managing e-waste effectively is not only a matter of environmental stewardship but also a pathway towards a more sustainable and equitable future for generations to come.

PUBLIC AWARENESS OF CLIMATE CHANGE

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Public Environmental Awareness and Other Activities Awareness is the basic tool for protection of the environment. Climate change awareness is often considered essential to public support for mitigation and adaptation policies. Individuals who are more exposed and aware of hazards may begin to normalise risks in order to cope psychologically with them. Climate change is a serious problem, and its consequences are evident (i.e. the polar ice caps are melting, posing a threat to animals, increased risk of floods and more). Climate change has been under-estimated since many people automatically link it to a global issue and not something that can affect them or may even go as far as to believe it does not exist.

When it comes to climate change, public awareness lags behind scientific progress. This encourages denial and misinformation to spread, and while governmental planning and policies are a key component of this transition, they are not sufficient in themselves. Community awareness and information about the options available to confront the problem is essential, as is community empowerment to act. The key to a successful climate change plan is effective public engagement. It's important that we understand how the climate is changing, so that we can prepare for the future.

By increasing public awareness and knowledge about climate change, citizens can become more engaged in decision-making, which in turn can impact the community's awareness and knowledge. As a result of public awareness, education, and participation, public behaviour and actions regarding climate change can be transformed. Studying the climate helps us predict how much rain the next winter might bring, or how far sea levels will rise due to warmer sea temperatures.

ROLE OF MICRO FINANCE IN INDIAN ECONOMY

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Micro Finance In India plays a very important role in the development of our society. Microfinance is a very important source of financial services for people and micro-enterprises that do not have easy access to banking and related services. It is a delivery of financial services to such clients were Relationship Based banking for individuals entrepreneurs, Small Business, Group Based Models Many of those who promote MFI generally believe that such access will help poor people out of poverty.. For others it is a way for poor to manage their finances more effectively & take advantage of economic opportunities while managing the risks. The terms have evolved-from micro-credit to micro-finance, & now 'financial inclusion'. This paper deals with Role of Micro finance In India and its models.

CARBON FOOTPRINT AND INDUSTRIAL WASTES

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Carbon footprint is a measure of the total greenhouse gas emissions generated by a product, process, or activity. It includes both the emissions from energy use and the emissions from the process itself. Carbon footprint is often expressed in terms of carbon dioxide equivalent (CO₂) which accounts for the different global warming potentials of different greenhouse gases. Industrial waste is any waste produced by industrial activities, such as manufacturing, mining or agriculture. Industrial waste can have various environmental impacts, such as polluting water, air and soil, contributing to climate change and harming human health and wildlife. These wastes can be classified into hazardous and non-hazardous waste, depending on its potential to cause harm. Reducing the carbon footprint and industrial waste of the manufacturing sector is a key challenge for achieving the Paris agreement's goal of limiting global warming to well below 2°Celsius. Some possible solutions may include: Adopting industrial carbon capture and storage (CCS), a technology that extracts point-source carbon emissions and sequesters them underground. This can remove up to 92-99% of CO₂ emissions from an industrial facility, including both energy related and process emissions. Sharing data along the supply chain to enable the calculation and benchmarking of product carbon footprint (PCF), which can provide the basis for decarbonization initiatives and inform consumers, investors and governments. Implementing waste management practices, such as reducing, reusing, recycling and recovering waste materials to minimise the amount of toxicity of industrial waste and its environmental impact. Improving energy efficiency and switching to low-carbon or renewable energy sources, such as solar, wind or Biofuels to reduce the energy related emissions of industrial processes. Keywords: carbon footprint, industrial waste, global warming

IMPACT OF CARBON EMISSIONS ON ECONOMIC GROWTH

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Carbon emission is the greenhouse effect that degrades the environment. As per the statistics per capita carbon dioxide (CO₂) emissions in India have soared in recent decades, climbing from 0.39 metric tons in 1970 to a high of 1.91 metric tons in 2022. This was an increase of 5.5 percent in comparison to 2021 levels. Society is facing so many issues related to carbon emission that causes global warming and indirectly, environmental degradation. Inadequate emission is not good for the economy. Many time we dialog about the GDP growth rate but the economic growth is not possible without the important factor of environment. With this population India is already facing the challenge of living standard and growth but India also has to face the challenge of reducing the carbon footprint drastically. It has to prove to be a change maker. The G20 Summit declaration recognises the need to reduce global greenhouse gas emissions by 43% by 2030.

This paper discusses the level of economic growth affected by the carbon footprint in the country. The growth may produce negative impacts on the environment through many aspects, such as environmental condition, overexploitation of natural resources, degradation and loss of wildlife habitat, and climate change. Environmental impacts are thus worsened by industrialization and

development. Increment in the industries are important for the economic growth but at the same time reduction in the carbon footprint is also imperative.

Keywords: Economic growth, G20 mission, Reduction of carbon emission, Impact.

SUSTAINABLE TOURISM PRACTICES OF SELECTED HOTEL IN JAIPUR CITY

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The chapter represents the main idea of sustainable tourism practices or new initiatives taken by hotels to promote sustainability. Sustainable tourism has emerged as a critical approach for ensuring the long-term viability of the tourism industry while minimizing its negative environmental, social, and cultural impacts. Since tourism impacts and is impacted by a wide range of different activities and industries, all sectors and stakeholders (tourists, governments, host communities, tourism businesses) need to collaborate on sustainable tourism in order for it to be successful. Hotels being an integral part of tourism sector are taking a lot of steps towards the development of sustainable tourism. The major objective of the study is to explore and highlight new techniques and methods opted by hotels to develop and promote sustainability in hotels and catering industry. The study investigates the implementation and impact of sustainable tourism practices in a prominent hotel in Jaipur. The study is focused on the hotel The Fern – An ecotel hotel in Jaipur, Rajasthan. The findings underscore the importance of water conservation practices, waste management, and prohibition of plastic, use of solar energy, organic farming and community empowerment.

Ultimately, this chapter aims to highlight the sustainability efforts taken by the hotels as well as provide insights and recommendations to stakeholders, including policymakers, industry practitioners, and tourists, for promoting sustainable tourism as a catalyst for positive change. By examining the principles, challenges, and opportunities of sustainable tourism, this research journal aims to contribute to the ongoing dialogue on responsible travel and destination development. Through the implementation of sustainable practices, the tourism industry can make a significant positive impact on the environment, society, and culture, ensuring a better future for both destinations and travellers.

Keywords: Sustainability, hotel industry, Environmental practices, Jaipur, tourism.

AN ABSTRACT ON CLIMATE CHANGE AWARENESS

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As climate change is a topic that highly influences the young generation, it is important to understand the level of climate change awareness of younger people. In the period since the Industrial Revolution, human emissions of green house gases from fossil fuel, combustion, deforestation and agricultural practices have led to global warming and climate change. Observed and anticipated changes in the climate include higher temperature, changes in rainfall patterns, changes in the frequent and distribution of weather events such as drought, storm, floods and heat waves, sea level rise and consequent impacts on human and natural systems. Nutrition is an important aspect to consider in relation to climate change awareness, as nutrition is a field of action where everyone can contribute. For example-following a meat free diet.

Key Words- Deforestation, Green House Gases, Global Warming, Industrial Emissions.

ई कचरा प्रबन्धन एवं प्रभावों का समीक्षात्मक अध्ययन

डॉ नीमा बिष्ट
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दुनियाँ भर में 80% ईवेस्ट चीन-, पाकिस्तान और भारत से पैदा होता है। यह दुर्भाग्य है कि ईवेस्ट को मैनेज करने के बारे में सबसे कम जागरूकता इन्हीं-देशों में देखने को मिलती है। ICEA रिपोर्ट के अनुसार, भारत में ईअपशिष्ट प्रबंधन मुख्य रूप से अनौपचारिक है-, लगभग 90% ईअपशिष्ट संग्रह और-70% रीसाइक्लिंग का प्रबंधन प्रतिस्पर्धी अनौपचारिक क्षेत्र द्वारा किया जाता है। अनौपचारिक क्षेत्र पुराने इलेक्ट्रॉनिक उपकरणों को स्पेयर पार्ट्स को सहेजने और लाभप्रद ढंग से मरम्मत करने में उत्कृष्टता प्राप्त है। रिपोर्ट में ईअपशिष्ट प्रबंधन के दृष्टिकोण को एक सर्कुल-र इकॉनमी स्थापित करने की दिशा में बदलने की आवश्यकता पर जोर दिया गया है। भारत, विशेष रूप से, ईकचरा संकट में एक महत्वपूर्ण योगदानकर्ता के रूप में उभरा है। संयुक्त राष्ट्र के-वेस्ट मॉनिटर-ग्लोबल ई2022 के अनुसार, भारत अब चीन और अमेरिका के बाद दुनिया का तीसरा सबसे बड़ा ई कचरा जनरेटर है।-2021-2022 में, भारत ने अनुमानित 1.601 मिलियन टन ई कचरा उत्पन्न किया। जिसमें से केवल-0.52 मिलियन टन ही एकत्र और संसाधित किया गया। स्वच्छ वातावरण सुनिश्चित करने और श्रमिकों और समुदायों की भलाई की रक्षा के लिए, इलेक्ट्रॉनिक कचरे की बढ़ती चुनौती से निपटने के लिए एक ठोस वैश्विक और राष्ट्रीय प्रतिबद्धता की अनिवार्य आवश्यकता है। ई वेस्ट निश्चित तौर पर कई बीमारियों को जन्म देता है साथ ही पर्यावरण के लिए भी भयानक खतरा पैदा करता है, जिससे आने वाले समय में घातक परिणाम देखने को मिल सकते हैं। ईवेस्ट के खतरे को रोकने के लिए कई तरह की सरकारी नीतियाँ तथा-कचरे की वर्तमान स्थिति-जनजागरूकता के कार्यक्रम चलाए जा रहे हैं। प्रस्तुत अध्ययन के दौरान ई, उसके पर्यावरणीय प्रबन्धन एवं मानवीय प्रभाव के समग्र विश्लेषण किया गया है।

बीज शब्द ई वेस्ट-, रिसाईक्लिंग, पर्यावरणीय प्रबंधन, वैश्विक, राष्ट्रीय प्रतिबद्धता, जनजागरूकता आदि।

UNVEILING THE ENVIRONMENTAL IMPACTS OF CARBON EMISSIONS

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One of the biggest environmental problems is global warming. Greenhouse gases are directly affects the global warming. Carbon emissions are a leading contributor to environmental degradation. Because of carbon dioxide the earth temperature has risen by almost 1 degree Celsius over the last few decades. Human activities increase atmospheric Carbon dioxide levels mostly through the burning of fossils fuels and production of cement. This warming affects disrupts ecosystems, leading to shifts in weather patterns, rising sea levels and more frequent extreme weather events like storms, floods and droughts.

Key words: Greenhouse gas, global warming, carbon emission, ecosystem.

GREEN EVOLUTION AND ENTREPRENEURSHIP

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Green entrepreneurship involves establishing and expanding business that promote environmental sustainability and social welfare. This approach addresses critical issues such as inequality allocation of resources, resource scarcity, climate change, and pollution, while also meeting the growing demand for eco-friendly products and services. A green entrepreneur's venture focuses on protecting the environment by reducing the negative impact of current products, services, or operations, contributing to positive societal change. However, achieving this goal necessitates significant changes in energy infrastructure and the adoption of both established and innovative green practices. The development of eco-friendly, biodegradable, and renewable goods, processes, and services is essential. Transitioning from fossil fuels like oil, gas, and coal to sustainable energy sources such as solar, tidal, and geothermal power is crucial. Implementing these principles effectively is key.

Remember, it's about being green, not greedy.

UNDERSTANDING THE INTERCONNECTEDNESS: EXPLORING THE MULTI-FACETED IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH

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Climate change presents a formidable challenge to human health, exerting a pervasive influence on various facets of well-being. This comprehensive review delves into the intricate interplay between climate change and human health, examining both direct and indirect effects across diverse populations and geographical regions. Direct impacts encompass a spectrum of health hazards, including heat-related illnesses, cardiovascular and respiratory ailments exacerbated by air pollution, and the proliferation of vector-borne diseases. Indirect consequences are equally profound, encompassing food insecurity, waterborne illnesses, mental health disorders precipitated by extreme weather events, and the exacerbation of existing socio-economic disparities. Vulnerable populations, such as the elderly, children, indigenous communities, and those residing in low-income regions, are disproportionately affected, amplifying existing health inequities. Moreover, the compounding effects of climate change on existing health challenges, such as malnutrition, infectious diseases, and inadequate access to healthcare, pose formidable obstacles to achieving global health equity. The complex web of interactions between climate change and health underscores the imperative for interdisciplinary research, policy interventions, and community-based adaptation strategies. Integrated approaches that address the root causes of climate change while simultaneously strengthening healthcare systems, promoting sustainable development, and fostering resilience at individual and societal levels are essential. In this context, robust surveillance systems, early warning mechanisms, and capacity-building initiatives play pivotal roles in enhancing preparedness and response efforts. Furthermore, fostering international cooperation, technology transfer, and financial assistance mechanisms are indispensable for facilitating adaptation measures, particularly in resourceconstrained settings. Education, advocacy, and public engagement initiatives are critical for raising awareness, fostering behavioural change, and mobilizing collective action to mitigate the health impacts of climate change. While the challenges posed by climate change to human health are formidable, there are opportunities for transformative action. By embracing a holistic approach that integrates environmental stewardship, social justice, and health equity, we can forge a path towards a sustainable future where human health and well-being are safeguarded for generations to come. This review underscores the urgency of addressing climate change as a central imperative for global health, emphasising the interconnectedness of environmental sustainability and public health in shaping our collective destiny.

ECONOMIC IMPACTS OF CLIMATE CHANGE

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Every year millions of electrical and electronic devices are discarded as products break or become obsolete and are thrown away. These discarded devices are considered e-waste and can become a threat to the environment and to human health if they are not treated, disposed of, and recycled appropriately. Common items in e-waste streams include computers, mobile phones, and large household appliances, as well as medical equipment. Every year, millions of tonnes of e-waste are recycled using environmentally unsound techniques and are likely stored in homes and warehouses, dumped, exported or recycled under inferior conditions. When e-waste is treated using inferior activities, it can release as many as 1000 different chemical substances into the environment, including harmful neurotoxicants such as lead.

Electronic waste (e-waste) is the fastest growing solid waste stream in the world, increasing 3 times faster than the world's population. Less than a quarter of e-waste produced globally in 2019 was known to be formally recycled; however, e-waste streams contain valuable and finite resources that can be reused if they are recycled appropriately. E-waste has therefore become an important income stream for individuals and even communities. However, people living in low- and middle-income (LMICs), particularly children, face the most significant risks from e-waste due to lack of appropriate regulations, recycling infrastructure and training.

Prevention and management:

National and international actions are essential to protect communities from dangerous e-waste recycling activities. Actions that can be taken include:

1. Adopting and enforcing high-level international agreements;
2. Developing and implementing national e-waste management legislation that protects public health;
3. Incorporating health protection measures into national legislation;
4. Monitoring e-waste sites and surrounding communities;
5. Educating health workers across all levels on e-waste-related child health issues;

CARBON FOOTPRINTS AND GLOBAL CLIMATE CHANGE IN RELATIONSHIP TO PUBLIC HEALTH

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Carbon footprints of individuals and organization around the globe are fueling the current Climate change trend leading to enormous negative effects on human health and the economy. The carbon generated by humans and their activities are heating the earth unsustainable and the evidence is well established in the literature. The impacts of human carbon footprints induced climate change

on health and the economy are been published widely in the literature. The relationship between carbon footprints and public health was conceptualized as continuous cyclic interaction, continuously bringing woes to mankind. Carbon footprint impact on public health was presented to be in two ways, directly or indirectly. The direct impact of carbon footprints on public health was explored under 5 thematic areas, which are impact on extreme weather events (Hurricanes, storms and floods.), Impacts on temperature, Impacts to air pollution, Impacts to water and food borne diseases, and impacts to vector and rodent borne diseases. The impact of a carbon footprint on the economy was seen as an indirect impact on humans and huge change in human lives. It is recommended that carbon footprint should be calculated at every level Individual, Organization, process, product, national and continental: to drive accountability to the environment by all and for all. Individual, Organization, Process, Product, National and Continental: To drive accountability to the environment by all and for all.

CARBON FOOTPRINT AND GLOBAL REDUCTION THROUGH CARBON DIOXIDE REMOVAL

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A carbon footprint is one of the main ways in which we measure the effects of global climate change. It is the total amount of greenhouse gases including carbon dioxide (CO₂) and methane (CH₄) that our generated by our actions. It is a measure of the impact our activities have on environment and in particular climate change. Many industrial processes emit large quantities of Carbon dioxide from the chemical reactions they carry out. There are many other emissions of chemically active species that directly or indirectly force earth's climate. They include methane, halocarbons, non-methane hydrocarbons (NMHC) and nitrogen dioxide.

A variety of global measures have already been implemented to lower the carbon footprint. The world are considering enacting legislation to adopt energy efficient light bulbs to reduce carbon dioxide emissions that cause global warming. There are some companies that are also working on building automated homes and investing in such technologies which can run the electricity sources present in the house with minimum energy.

Key words – Carbon footprint, Climate change, Carbon dioxide, Methane, Global warming, Energy.

BIOMASS-DERIVED HYDROGEN AS ALTERNATIVE ENERGY RESOURCE TO REDUCE CARBON FOOT PRINTING

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Carbon footprint measures the total amount of CO₂ and other related GHG emissions including CH₄, N₂O, and halogenated gases for their significant contribution to the global warming effect. The CO₂ emission can be reduced by utilizing renewable resources such as sun, wind, water and waste. In

current scenario, Hydrogen is used as an alternative energy sources. Hydrogen density is far higher than gasoline and diesel, making it an excellent energy fuel. The most significant benefit of hydrogen is that it is a clean fuel because when only water burned is formed as a by-product without emission of any harmful gases. Hydrogen from biomass sources can significantly contribute to integrate the renewable hydrogen supply through electrolysis at large-scale production. Biomass-derived hydrogen can be produced either from thermochemical pathways (i.e., pyrolysis, liquefaction, and gasification) or from biological routes (i.e., direct or indirect-bio photolysis, biological water–gas shift reaction, photo- and dark-fermentation). This approach would preserve the existing infrastructures, and allow introducing renewable feedstock in the industry to boost the bio economy.

Keywords: Hydrogen; Carbon Foot printing; excellent energy fuel

CLIMATE CHANGE AWARENESS

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For the last many years man has done many researches to conquer the earth and has achieved scientific victory. Man took the help of industrial revolution to collect resources for his comfort and the general form of nature changed. Nature resources are decreasing due to increasing population. Due to this air, land and water are gradually polluted which is a matter of concern. Human activities are the main cause of climate change. General climate change occurs slowly but due to continuous cutting of trees and forest by humans climate change started at rapid pace. Population growth has created a problem for the protection of the environment. A planning for pollution control was started in India in 1972 but the common man will also have to come forward to control the environment. To protect future generations from the bad effect of pollution (1) we must formulate National environment policy. (2) Environment Law must be strictly followed. (3) Proper information should be given to public about the environment. (4) Both the private and public sectors should take steps to prevent the harmful consequences of climate change.

A BRIEF STUDY: CONSERVATION OF ENVIRONMENTAL ETHICS IN ANCIENT INDIAN HISTORY

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The importance of environment protection in India can be traced back to the period between 321 B.C. and 300 B.C. In Kautilya's Arthashastra, great importance has been laid on environment protection, and clear punishments have been prescribed on the basis of the importance of various parts of a particular tree. India has always had a rich ancient tradition of protecting the environment

which in turn, has made the people of India worship and embrace nature in every way possible. Trees, water, animals, land have an important mention in ancient Indian texts. Indian texts such as the Arthashastra, Sathapatha Bhramanas, Vedas, Manusmriti, Ramayana, Mahabharata etc. enable us to understand the concepts of environment conservation and maintaining forest ecology; also hymns in the four Vedas, Rigveda, Yajurveda, Samaveda, and Atharvaveda, reveal full cognizance of the undesirable effects of climate change, distortion in ecological balance, and environmental degradation; and appropriately caution against them.

Well, the matter of preservation and protection of the environment is not only confined to the contemporary India but also goes way back in history proving its significance. According to Lord Mahavira- "To kill or to hurt any living being amounts to killing or hurting oneself. The compassion of others is compassion to one's own self."

This allows us to fathom that the reflection of nature is deeply rooted in ancient Indian tradition.

In 1972, The United Nations conducted a conference on the Human Environment in Stockholm. India was also a party to this conference and in its agenda included preservation of quality of air, water and measures to lessen the pollution in the country. I hereby can infer that almost all the religions as well as ancient texts have an ingrained nature of environmental overtones which was to observe conduct towards nature and its creations.

Key words: Environment, Arthashastra, Preservation, Overtones

THE CHALLENGES IN REDUCING EMISSION OF CARBON DIOXIDE

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The Earth is experiencing a round of climate change characterised by global warming, which drives a set of changes to the Earth's climate and weather systems. These rapid changes are happening as humans continue to emit heat-trapping greenhouse gases (GHG) to the atmosphere. Among these emissions, carbon dioxide (CO₂) is the critical anthropogenic greenhouse gas due to its abundance and its ability to remain in the atmosphere for thousands of years. Dramatic climate change stimuli countries to take urgent action. The carbon footprint describes the total greenhouse gas emissions caused by an activity, product or population. It is also a measure of the impact of climate change, greenhouse gas and carbon management, and is usually measured in kilograms of CO₂ equivalent produced. Urbanization is happening at a higher rate in this era than in any other generation. It was stated that the building sector plays a critical role in the emission of carbon dioxide (CO₂) into the atmosphere. Construction of buildings, operation, and utilization of the built environment has led to emissions of a large number of CO₂ into the ambient air. Various issues and challenges arise from the building sector in reducing CO₂ emissions. Two barriers have prevented substantial reductions of GHG emissions in general and in transport in particular: incomplete international agreements and the high cost of (transport) clean technologies. Electricity production from oil, gas, and coal sources increases the greenhouse gases and carbon emissions; however, the intensity to increase emissions is far less than the intensity to increase emissions through fossil fuel. Policies that reduce emissions of greenhouse gases can simultaneously alter emissions of conventional pollutants that have deleterious effects on human health and the environment.

Keywords: Atmosphere, CO₂, Environment, Greenhouse gases, Urbanization, Emission.

DEVELOPING SUSTAINABLE FOOD SYSTEMS IN TERMS OF THE CARBON FOOTPRINT

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The idea of sustainable development and environmental footprints is gaining momentum across a wide range of systems and sectors. The agricultural activities and food systems have the greatest impact on the environment. Recently, the reduction of greenhouse gas emissions has become an urgent issue to be resolved in the food system. Significant attempts are being made by numerous governments and organizations to minimize the detrimental impacts of this phenomenon. To help determine harmful human activities, tools such as Life Cycle Assessment of products and services are used to assess environmental footprints. Quantification of carbon footprint requires the measurement of the total amount of carbon dioxide equivalents and other greenhouse gases emitted from the very beginning of the product's life cycle, including raw material acquisition, processing, packaging, preservation, transportation, consumption and disposal. Adoption of advanced technology and equipment along with improved management techniques is very crucial for every stage of a food system. Identifying farmlands rationally is essential to alleviate the impact of land use change. In addition to these, making environment-friendly packaging choices, reducing the need for refrigeration and properly handling waste are also very important for lowering the product's overall carbon footprint. However, technical solutions alone are unable to revert the trend of climate change as consumption patterns present a great deal of influence on climate change. Eating a nutritious diet based on foods derived mainly from plants results in producing significantly less carbon dioxide than meat-based food systems. Appropriate carbon footprint labels on products can incentivize more sustainable choices by consumers. Greenhouse gas emissions can be reduced by switching to renewable energy sources and abandoning the use of artificial fertilizers and plant protection products. Policymakers should be advised to shape and cultivate new codes of consumption that tend to drive technology and science toward sustainability. Therefore, achievement of Sustainable Development Goals requires a spectrum of solutions- including dietary adjustments, food waste reduction, agricultural efficiency improvements and technologies that make low-carbon footprint food options accessible and affordable. Keywords: carbon footprint, food system, sustainable development, greenhouse gases emission.

THE USE OF SPECIAL FUNCTIONS IN ANALYSING FRACTIONAL DIFFERENTIAL EQUATIONS

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Fractional calculus is a mathematical approach on derivatives and integrals that are not whole numbers. It provides an approach for solving fractional differential equations (FDEs) that arise in many scientific domains. This study examines the utilisation of specialised functions such as

MittagLeffler, Wright, and generalised hypergeometric functions to effectively address fractional differential equations (FDEs) in many scientific fields including fluid dynamics and materials science. The objective is to create strong computing methods that can solve fractional differential equations (FDEs) numerically, taking into account the distinct fractional characteristics present in each scientific field. The objective is to acquire precise analytical solutions while assessing their convergence and stability. Reliability is ensured through validation against experimental data, while the utilisation of fractional integrals facilitates parameter estimation and derivatives assist in explaining damping events, hence enhancing predictions. The use of these techniques to interdisciplinary problems showcases the efficacy of fractional calculus in addressing practical concerns. This investigation fosters interdisciplinary collaboration, facilitating the exchange of knowledge and enabling the development of innovative applications in emerging fields. The educational endeavours seek to disseminate knowledge about fractional calculus and its practical applications, thereby aiding students, researchers, and professionals across diverse scientific disciplines. This inquiry aims to connect theoretical concepts with practical applications, by utilising special functions and fractional calculus, in order to uncover valuable insights and provide answers for intricate difficulties in various interdisciplinary fields of science.

Keywords - Fractional calculus, Fractional Differential Equations (FDEs), Mittag - Leffler , Wright function and Beta function

AN OVERVIEW: CONSEQUENCES OF COVID-19 ON CLIMATE CHANGE

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Corona viruses are a family of viruses that, according to research, can cause diseases ranging from as mild as a common cold to more dangerous conditions such as mild Middle East Respiratory Syndrome (MERS) or even the deadlier severe acute respiratory syndrome (SARS). In 2019 and by early 2020, the pandemic rapidly spread to people in all world regions. The global outbreak of COVID-19 has presented serious challenges to the environment, economy, energy, and human health worldwide. Stricter controls on the COVID-19 pandemic caused a notable slowdown in economic activity, which in turn had an impact on the environment by lowering greenhouse gas (GHG) emissions and, more specifically, atmospheric CO₂ levels. The purpose of this study is to review the evidence and effects of the COVID-19 crisis on air pollution, global warming, climate change, and a transition to a low-carbon economy. By comparing the data centered on pre-pandemic, during-pandemic, and post-pandemic (predictions) scenarios, the study further outlined the variation in GHG emissions. Additionally, the evaluation of COVID-19's effects on energy, the global economy, and rising CO₂ levels has been examined.

Keywords: COVID-19, greenhouse gas (GHG), global warming

हरित गृह गैसों का जलवायु परिवर्तन में योगदान।

डॉ. अक्षित जैन

विभागाध्यक्ष, भूगोल
वैदिक कन्या पी.जी. कॉलेज, राजापार्क, जयपुर (राजस्थान)

आज पूरा वैश्विक परिवेश जलवायु परिवर्तन से प्रभावित है। 20वीं शताब्दी के मध्य से संसार के औसत तापमान में जो वृद्धि हुई है इसका मुख्य कारण मानव द्वारा निर्मित ग्रीन हाउस गैस है। औद्योगिकीकरण के बाद समय के साथ बढ़ते तापमान में मौसम का पैटर्न बदल रहा है जिस से प्रकृति का सामान्य संतुलन बाधित हो रहा है और इन सबके लिए जिम्मेदार है ग्रीन हाउस गैसों जो की जलवायु में परिवर्तन और भूमंडलीय ऊष्मीकरण के लिए उत्तरदाई होता है। ग्रीन हाउस प्रभाव या हरित गृह प्रभाव एक प्राकृतिक प्रक्रिया है यदि हरित गृह प्रभाव नहीं होता तोशायद पृथ्वी पर जीवन नहीं होता क्योंकि तब पृथ्वी का औसत तापमान -18 डिग्री सेल्सियस होता ना की वर्तमान 15 डिग्री सेल्सियस। हरित ग्रह के द्वारा किसी ग्रह या उपग्रह के वातावरण में मौजूद कुछ गैसें वातावरण के तापमान को अपेक्षाकृत अधिकगर्म बनाने में मदद करती है, जिससे पृथ्वी पर जीवन संभव होता है। पिछले 150 वर्षों के अंदर जलवायु में जो परिवर्तन दिख रहा है वह परिवर्तन अब सबके लिए चिंताका विषय है। जलवायु परिवर्तन भूगर्भिक इतिहास में भी हो ते रहे हैं लेकिन मानव पर इसका कोई प्रभाव नहीं हुआ क्योंकि मानव सभ्यता तो बाद में विकसित हुई थी। औद्योगिक क्रांति के बाद में जो परिवर्तन जलवायु में हो रहा है हमें चिंतन करने की आवश्यकता है कि यह परिवर्तन किन कारणों से हो रहा है उन कारणों को हम देखें और उन के निराकरण के लिए वैश्विक स्तर पर, राष्ट्रीय स्तर पर और प्रदेश के स्तर पर क्या कदम उठाए जा सकते हैं इस बात के लिए हमें चिंतन करना चाहिए। अगर हम औद्योगिक क्रांति के पहले मानव इतिहास के 6000 वर्षों तक की बात करें तो ग्रीन हाउस गैसों में और विशेष रूप से कार्बनडाइऑक्साइड गैस जो सबसे ज्यादा जलवायु परिवर्तन का कारक है वह 280 पीपीएम था और अब इन वर्षों के अंदर इस की मात्रा बढ़ाकर 421 पीपीएम तक पहुंच गई है, लगभग 100 गुना की बढ़ोतरी हुई है। इस गैस के उत्सर्जन का सबसे बड़ा स्रोत जीवाश्म ईंधन(कोयला ,प्राकृतिक गैस, पेट्रोलियम ईंधन), ठोस अवशिष्ट, पेड़ और अन्य जैविक सामग्री, कुछ रासायनिक अभिक्रियाएं जैसे सीमेंट का निर्माण के परिणामस्वरूप भी वातावरण में प्रवेश करती है।कार्बन डाइऑक्साइड गैस 1000 वर्षों तक, मेथेन लगभग एकदशकतक, नाइट्रोटऑक्साइड 120 वर्षों तक वातावरण में मौजूद रहती है। इस के अतिरिक्त नाइट्रोटऑक्साइड मीथेन क्लोरोफ्लोरोकार्बन ओजोन आदि हरित ग्रह से है जो पृथ्वी की उष्मा को बढ़ाने में अपना योगदान देती हैं। मीथेन का उत्सर्जन पशुपालन से होता है। क्लोरोफ्लोरोकार्बन का उपयोग भारत में अब बंद हो चुका है लेकिन इसके स्थान पर हाइड्रोफ्लोरोकार्बन कार्बन का उपयोग हो रहा है जो सबसे ज्यादा हानि कारक ग्रीन हाउस गैस है।जनसंख्या में वृद्धि, शहरीकरण और बढ़ते हुए व्हीकल उन के द्वारा उत्पन्न प्रदूषण आदि ग्रीन हाउस गैसों के बढ़ने के कारण है। पर्यावरण और पर्यावरण संरक्षण से संबंधित समस्याओं के निराकरण के लिए समय-समय पर यूएनओ की तरफ से संगोष्ठियां आयोजित हुई है जिसमें: क्योटोप्रोटोकॉल, मॉन्ट्रियलप्रोटोकॉल, स्टॉकहोम सम्मेलन, टोरंटो सम्मेलन, रियो सम्मेलन आदि। वैश्विकस्तर पर हरित गृह गैसों को कम करने के प्रयास जारी है।
बीज शब्द: ग्रीन हाउस,जलवायु, औद्योगिककरण, प्रोटोकॉल, भूगर्भिक,वैश्विक, भूमंडलीय, उष्मीकरण, प्रकृति, तापमान।

CARBON FOOTPRINT AND CLIMATE CHANGE CARBON EMISSION AND ITS IMPACT

Anita Sharma

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The biggest and most serious threat in front of entire world is climate change and the most important reason for climate change is carbon emission[Co₂] in different forms. Countries emitting maximum Co₂ in atmosphere are : US 15.32 metrication's per capita [metrication], China 7.44, India 1.89 metrication, Russia, Japan. US is the largest carbon emitter releasing 422 billion metrication Co₂ . Co₂ emitting countries with highest share are – China - 29.18%, United State - 14.02%, India – 7.09%. Highest Co₂ share of countries of world's quantity with lowest share are- Saint Pierre Miquelon, Faeroe Island, Greenland . Reasons for global carbon emission- Generating power generating electricity and heat by burning fossil fuels causes a large chunk of global carbon emission, Industries [manufacturing goods], Cutting down forests, Using transportation, Producing foods, Powering buildings.

Main source of Co₂ emission- Natural and the human sources are the main reason for Co₂ emission. Natural sources include decomposition, ocean release and respiration human sources comes from activities like cement production, deforestation as well as the burning of fossil fuels like coal, oil and natural gas. Ships exhibit maximum Co₂ so ships should use MAN emission control technologies and reduce a ship emission through technologies to improve efficiency and utilize cleaner fuels. Battery-Hybrid Solutions, Dual fuel and LNG Gas, Exhaust gas after treatment, less use of diesel vehicle, Less use of coal for production electricity, No forest cutting, afforestation.

SHIPS- Reduce emission for an improved greenhouse foot print, meeting or regulations- Technologies to use alternatives and cleaner burning fuels, [LNG], Increase fuel efficiency for reduce costs, improved engines performance and flexibility

BIOETHANOL PRODUCTION FROM VEGETABLE WASTE

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Ethanol is the most widely utilized fluid biofuel. It is liquor and is produced from sugars, starches or from cellulosic biomass by fermentation. Mostly ethanol production at commercial level is obtained from sugar cane or sugar beet, as starches and cellulosic biomass typically require costly pre-treatment. The increasing demands of an environment friendly fuel to replace conventional fossil fuels have compelled the researchers to develop bioethanol. This study focuses on the prospect of bioethanol production from lignocellulosic biomass resource using simultaneous saccharification and fermentation (SSF) process. SSF process was performed using two microbial strains i.e., *Aspergillus terreus* and *Saccharomyces cerevisiae*. The enzymatic activity produced by *Aspergillus terreus* was found to be 0.17 FPU/ml at 5th day. Using optimized conditions for bioethanol production 3.17g/l of bioethanol was produced by *Saccharomyces cerevisiae*, taking 15g/l vegetable waste as lignocellulosic biomass in Lark fermenter of 7 litre capacity.

Keywords: *A. terreus*, *S. cerevisiae*, enzymatic activity and bioethanol.

CARBON EMISSION AND ITS IMPACT

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Carbon is the chemical backbone of life on earth. Carbon compounds regulate the earth's temperature, make up the food that sustains us and provide energy that fuels our global economy. The same carbon becomes extremely harmful for us if its percentage increases to a very high level in the atmosphere. One of the major impacts of carbon dioxide emission is global warming that further leads to changes in climate such as floods, hurricanes, heat waves and droughts, melting of polar

regions and rise in sea level. Some significant ways to reduce our carbon footprints are, Cut down on plastic, Recycle your materials, Cut down on food waste, Conserve water, Reduce heating and cooling to save energy, Travel wisely and efficiently, Plant more and more trees, Invest in green projects, Start walking or biking instead of driving, Turn off lights and unplug devices when you are not using them, Use the cold water cycle for washing your clothes, Choose organic and local seasonal foods, Try to be a vegetarian, Try to use renewable sources of energy, Insulate the windows of your home to be more energy efficient all the time, Donate old clothes to give them a second life, Buy the products of you use from the companies that are environmental responsible and sustainable, Talk to your local representative and vote on policies that protect the environment, Switch to CFLs/LEDs, Conserve paper. Our mother Earth is in danger today. It is the urgent demand of the time that we move back to our roots and adopt a simple life following the basic principles of Vedic environmental science.

Keywords: carbon footprint, global warming, life style changes

INNOVATIVE SOLUTIONS FOR E-WASTE MANAGEMENT

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Innovative Solutions for E-Waste Management" explores cutting-edge approaches to address the growing challenge of electronic waste (e-waste). As the world becomes increasingly dependent on electronic devices, the disposal and recycling of these items pose significant environmental and health risks. Traditional methods of e-waste management, such as landfilling and incineration, are not sustainable in the long run and contribute to pollution and resource depletion.

This paper discusses several innovative solutions that have emerged to tackle the e-waste problem. One such solution is the implementation of extended producer responsibility (EPR) programs, which hold manufacturers accountable for the entire lifecycle of their products. EPR programs encourage companies to design products that are easier to repair, upgrade, and recycle, thus reducing the amount of e-waste generated.

Another innovative approach is the development of circular economy models for electronics. These models emphasize the reuse and refurbishment of electronic devices, rather than their disposal. By promoting the circular economy, we can prolong the lifespan of electronics, minimize the need for raw materials, and reduce the environmental impact of e-waste.

Furthermore, advancements in technology have led to the emergence of new recycling techniques for e-waste. Processes such as mechanical shredding, pyrolysis, and hydrometallurgy are being used to extract valuable materials from electronic devices, such as gold, silver, and copper, in an efficient and environmentally friendly manner.

Overall, this paper highlights the importance of adopting innovative solutions for e-waste management to mitigate its adverse effects on the environment and human health. By embracing these solutions, we can move towards a more sustainable future where electronic waste is minimized, and valuable resources are conserved.

CARBON EMISSION REDUCTION: SUSTAINABILITY IN HUMAN LIFESTYLE

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Carbon footprint, comes from the main culprit i.e. carbon dioxide emissions produced by the burning of fossil fuels- coal, gas and oil, in factories, power stations and motor vehicle. A huge amount carbon dioxide escapes to the atmosphere. It emits methane, nitrous oxide and other GHGs. It continues emissions grow and doubles the atmospheric levels of carbon dioxide which gradually leaves its footprints into the earth, the Nature.

Carbon emissions gradually increasing and resulting nature, the mother earth suffer with many severe consequences for which we have to act sincerely to cure it, i.e. focus on sustainability to the world's environment. The global warming cause's sea levels to rise as polar ice caps and glaciers begin to melt, along with the thermal expansion of water which causes droughts and floods, terrible storms, more hot days, severe diseases like malaria, dengue, chicken gunia, corona etc. Also impacts on agriculture, forest, water conservation, environment pollution, economic system and to all earth inhabitant. The question arises that who is actually responsible for all these disastrous consequences into the climate change?

We the human being, the silent answer, racing into the population race dwelling into luxury life style and activities. Humans, first started settling down, they have harnessed nature to meet their various needs. Landscapes have been transformed- whether it was - by cutting trees, clearing jungles, fishing, raising animals, growing crops, constructing houses, using excess vehicles or setting up industries. This human life style altering the face of the earth such as the concentration of carbon dioxide and other greenhouse effective gases into the troposphere and ozone depletion in the stratosphere of atmosphere. Thus, this environmental research focuses on sustainability, conservation and climate change mitigation. Human begins, as an individual must analyse and indulge into the practical ground activities to eradicate these atmospheric inequalities, imbalances while changing the human life style towards nature.

ई-कचरे के प्रबंधन के लिए शिक्षा एवं संचार के उपाय

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ई-कचरे के प्रबंधन में शिक्षा और संचार की महत्वपूर्ण भूमिका है। इन दोनों क्षेत्रों के माध्यम से लोगों को ई-कचरे के प्रबंधन के महत्व और तकनीकी दिशा निर्देश प्रदान किया जा सकता है।

शिक्षा के माध्यम से, स्कूलों और कॉलेजों में ई-कचरे के प्रबंधन के महत्व पर ध्यान दिया जा सकता है। छात्रों को ई-कचरे की सही ढंग से उत्पन्न होने वाली समस्याओं के बारे में शिक्षित किया जा सकता है और उन्हें इसे सही तरीके से निपटने के लिए प्रेरित किया जा सकता है।

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संचार के माध्यम से, सामाजिक मीडिया, टीवी, रेडियो, और अन्य माध्यमों का उपयोग करके लोगों को ई-कचरे के प्रबंधन के तरीकों के बारे में जागरूक किया जा सकता है। सरकार और गैर-सरकारी संगठन इसे प्रोत्साहित करने के लिए सार्वजनिक संवाद कार्यक्रम और जानकारी अभियान चला सकते हैं।

Recommendations of the conference on Climate Change

Government Side Interventions:

1) Encouraging Industries to engage with institutions

- a. For carrying out research and development.
- b. Also planning / implementations of program's under Corporate Environment Responsibility (CER) and Social Corporate Responsibility (CSR) budgets available with Industry.

2) Incentivize institutions (e.g. Rajasthan State Pollution Control Board or The Department of Environment, GoR) to fund the equity participation of institutes in domains of:-

- a. Workshops, Conferences aimed at Environmental advocacy towards Climate Change.
- b. Societal engagement programs related to study the impact of carbon emission on public health and find solutions.
- c. More scientific studies towards monitor carbon concentration & VOCs' in the atmosphere.

3) Sponsor State and District level Seminars for propagation of:-

- a. Policy and Advocacy, Opinion building for usage of E powered* (E-vehicles, Bio Fuel (ethanol), Hydrogen fuel based) vehicles.
- b. As Supply side intervention – propagate messages and interactions in society for acceptance of low carbon systems being adopted by government and developing content for gram sabha, block and district level social messages (digital & personal interactions based) covering: –
 - i. All UTIs and ULBs to initiate buying of E powered* Public transport as comfortable and environment friendly proposition.”
 - ii. Construction of the safe pathways for pedestrians and also to promote bicycles on roads.
 - iii. Use of eco-friendly materials for various purposes must be increased by public.

iv. More and more awareness about the carbon foot-print, generation and simple methods in daily life to reduce it.

Institutes can play important role & participation:

1) Institutes to participate in devising and implementing novel ideas that are low cost and still effective for the industries to implement change in the Carbon Footprint across the life cycle, example:

a. Help by engaging interns (qualified and committed young human resource available at much lower costs) for programs like plantation & forestry projects leading to Increase the green cover and plantation area as a carbon sink.

b. Engaging youth in Waste Minimization and Waste put to Use strategies for various types of wastes by the Nagar Nigam and the like organizations.

c. Use of students and research scholars as interns in the Solar / Wind / Alternative energy sources being set up by government organizations within their campuses.

4) Institutes may be involved by inviting and engaging qualified youth in following Government programs to enhance the Demand side intervention for:-

a. Prepare and propagate messages in the form of posters, VIDEOS and Digital / Social media content for "Use of E powered Public transport as comfortable and environment friendly proposition."

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PROCEEDINGS OF CONFERENCE

ON
"CARBON FOOTPRINT AND CLIMATE CHANGE"

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The new National Education Policy-2020 envisages bringing about significant reforms in higher education to cater to the changing landscape of knowledge and create global standards of education. Conferences are considered to be dynamic concept wherein people from different expertise meet and discuss things for various purposes. Internal Quality Assurance Cell (IQAC) Department of Vedic Kanya P.G. Mahavidyalaya is organising Multidisciplinary Conference on "Carbon Footprints and Climate Change". This Conference aims at providing a common platform to all the stakeholders like Department of Education, DST, Pollution Control Board, Department of Environment, Industries, and Researchers and so on. It aims to bring about a welcoming change in the society, a step towards innovation. Carbon footprints emitted by an individual, organization, or any natural event have become a critical focal point for the unwanted changes in the climate. These human activities alter the composition of world's atmosphere. Fortunately, each and every one of us can work together in the fight against Climate Change, if we promote reducing our Carbon Footprint. This Conference is a great opportunity to think collectively on a significant topic.



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MULTIDISCIPLINARY NATIONAL CONFERENCE ON "CARBON FOOTPRINT AND CLIMATE CHANGE" PROCEEDINGS

वैदिक कन्या पीजी महाविद्यालय में विज्ञान दिवस पर नेशनल कांफ्रेंस कार्बन फुटप्रिंट व क्लाइमेंट चेंज विषय पर नेशनल कांफ्रेंस का आयोजन

परिष्कार पत्रिका जयपुर। वैदिक कन्या पीजी महाविद्यालय राजापार्क में विज्ञान दिवस के उपलक्ष्य में कार्बन फुटप्रिंट व क्लाइमेंट चेंज विषय पर एक नेशनल कांफ्रेंस का आयोजन किया गया इसके उद्घाटन सत्र में मुख्य अतिथि जयपुर नगर निगम की मेयर डॉक्टर सोम्या गुर्जर रहीं। उन्होंने कहा की कार्बन उत्सर्जन एक वैश्विक समस्या है जिस पर समय रहते कार्य किया जाना जरूरी है। उन्होंने कहा कि यदि हम पृथ्वी के

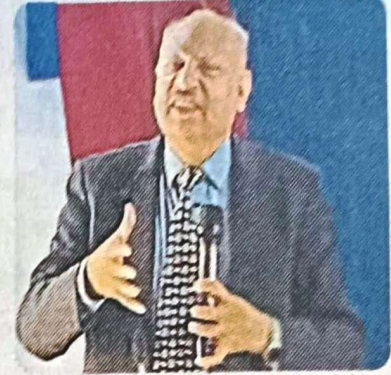


पुत्र है तो अपनी मां का ख्याल रखना हमारा कर्तव्य है। इस अवसर पर समाजसेवी रवि नईयर भी उपस्थित रहे एवं उन्होंने भी कहा की जहां तक हो हमें प्रकृति के समीप रहना चाहिए जिससे कार्बन उत्सर्जन कम हो। इस अवसर पर प्राचार्य डॉक्टर ललितका झा ने अतिथियों का स्वागत करते हुए कहा की कॉलेज की छात्राएं हर गतिविधि में आगे रहती हैं व महाविद्यालय उनके समग्र विकास में हमेशा तत्पर रहता है। अपने विधास दिलवाया कि भविष्य में भी नगर निगम द्वारा आयोजित सभी कार्यक्रमों में हमारी भागीदारी रहेगी। संस्था सचिव डॉक्टर अनिरुद्ध साहनी ने कहा की वैदिक पद्धति से जीवन जीने से इस प्रकार की समस्याएं सर नहीं उठा पाएंगे पर्यावरण विशेषज्ञ डॉक्टर संजय पलनीटकार ने कहा की जलवायु परिवर्तन को गंभीरता से लेने की आवश्यकता है क्योंकि आने वाले समय में इसके परिणाम घातक होंगे। वे राजा पार्क के वैदिक कन्या पीजी महाविद्यालय में जलवायु परिवर्तन पर आयोजित राष्ट्रीय सेमिनार के उद्घाटन सत्र में मुख्य वक्ता के रूप में संबोधित कर रहे थे। अलीगढ़ मुस्लिम यूनिवर्सिटी से विशेषज्ञ विकास ब्रिज कौशली ने फिरोजाबाद के चूड़ी कारखाने की केस

स्टडी करके उन्हें ऐसी क्रियाएं विकसित करने का तरीका बताया जिससे ऊष्मा वी कार्बन उत्सर्जन में कमी हो सके उन्होंने कहा की जलवायु परिवर्तन व प्रदूषण का दुनिया भर को नुकसान उठाना पड़ रहा है। उन्होंने इसे नियंत्रित करने के लिए तरीके तलाशने पर जोर दिया। नोएडा से आई कार्बन एक्सपर्ट डॉक्टर गरिमा शर्मा ने कहा कि हमें कार्बन डाइऑक्साइड के स्रोत का पता लगाकर उस पर अंकुश के प्रयास करने होंगे तभी बदलाव संभव है। सेमिनार के प्रथम तकनीकी सत्र में प्रोफेसर टी आई खान ने सेमिनार की अध्यक्षता करते हुए अंजोन लेयर और कार्बन उत्सर्जन से उत्पन्न पर्यावरणीय खतरों के बारे में बताया और इससे निवटने के सुझावों पर चर्चा की। कांफ्रेंस में एमिटी यूनिवर्सिटी एसेंट विटफेड कॉलेज व वैदिक कन्या महाविद्यालय की शोध छात्राओं ने भी अपने विचार प्रस्तुत किये। कांफ्रेंस में कॉलेज के वनस्पति शास्त्र विभाग की एसोसिएट प्रोफेसर डॉ लक्ष्मी शर्मा लक्ष्मी माधुर डॉ रुचि माधुर ने भी अपने विचार व्यक्त किये। कांफ्रेंस की कन्वीनर डॉक्टर अर्चना पारीक ने कांफ्रेंस की पूरी जानकारी दी। डॉ नेहा खत्री ने सभी को धन्यवाद ज्ञापित किया।

जलवायु परिवर्तन पर हुई चर्चा

जयपुर @ पत्रिका प्लस. नेशनल साइंस डे पर वैदिक कन्या पीजी महाविद्यालय में कार्बन फुटप्रिंट व क्लाइमेंट चेंज विषय पर नेशनल कांफ्रेंस का आयोजन हुआ। कांफ्रेंस के मुख्य वक्ता पर्यावरण विशेषज्ञ डॉ. संजय पलनीट कार ने कहा कि जलवायु परिवर्तन को गंभीरता से लेने की आवश्यकता है, क्योंकि आने वाले समय में इसके परिणाम घातक होंगे। अलीगढ़ मुस्लिम यूनिवर्सिटी के प्रोफेसर विकास ब्रिजकौशली ने फिरोजाबाद के चूड़ी कारखाने की केस स्टडी करके, ऐसी क्रियाएं विकसित करने



का तरीका बताया जिससे ऊष्मा व कार्बन उत्सर्जन में कमी हो सकती है। कार्बन एक्सपर्ट डॉ. गरिमा शर्मा ने कहा कि हमें कार्बन डाइऑक्साइड के स्रोत का पता लगाकर उस पर अंकुश के प्रयास करने होंगे, तभी बदलाव संभव है।



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