**Artificial Intelligence (AI) in Green Assets**

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ABSTRACT:

Green artificial intelligence is an Artificial intelligence technique that helps in lowering computational costs to help reduce carbon emissions and facilitate reduction in climate change to help save the environment and thereby the planet. It actually combines the immense value of artificial intelligence with the green values that we need immensely to lower the carbon emissions in the atmosphere and successfully protect our planet from further climate change and destruction that follow so commonly. The reflective and predictive capabilities of Artificial Intelligence are immense and valuable for renewable energy generation which is important to reducing carbon emissions. A significant benefit of Artificial Intelligence in renewable energy is the ability to collect the real tie world data that includes historic weather data and the energy demand patterns so that organizations can make well-informed decisions pertaining to the future energy requirements of the globe. Artificial intelligence can help apply powerful predictive capabilities and intelligent grid systems to manage the supply and the demand of renewable energy. For example, more accurate weather forecasts can facilitate optimization of efficiency, cut costs, and help prevent unnecessary carbon pollution generation that is the key problem facing the modern civilization. In fact, Artificial Intelligence is good for identifying and scaling solutions where it can help us detect, adapt and respond to climate change in many different areas that include key areas of weather prediction, achieving efficiency in energy generation and by helping in emissions reduction for from transport, agriculture and industry that are the key source of all emissions. The facility Managers can use the stored data can then be used or even make it publicly available to evolve ways and means for improving the output. Even the machines themselves can learn from the information that they store using AI tools. This allows for a regular and continuous accurate sorting. All this reduces our reliance on manual sorting.

**Keywords:** Green Assets Carbon Emission Artificial Intelligence Energy Generation Weather Prediction Transportation

**1.1 Introduction:**

The world is reeling under the negative impact of Carbon Emission that is causing serious transition in the global weather conditions and in a few cases endangering life in that like Joshi Math areas in Uttarakhand, India. There are other serious consequences to like increase in sea storms across the globe, Ice Storms, unseasonal rains playing havoc with agricultural produce and crops. No wonder it has left the world worried and looking for ways and means for controlling this havoc. In this direction experts feel that Artificial Intelligence can play a very important role be keeping us aware of the befalling danger and suggest corrective or precautionary measures on time. This paper tries to look at various issues that confront the world and the tools of Artificial Intelligence that can help reduce the impending disasters through the use of Green Assets that can control or reduce Carbon Emissions.

**1.2 What Are Green Assets?**

Green Assets are assets that stand for anything that has a social, environmental and/or economic value for being owned by the individual, a business, the family or a community. They include: non-physical assets, resources intangible assets, and or any type of rights and privileges, and all other things that have value for they give the firms and communities some type of competitive advantage and benefits to those who own them. We can surely say that every Green Asset is termed as an asset because it has tremendous positive environmental impact. In other words, it is an asset that generates more energy than it consumes thus reducing carbon emissions in the atmosphere. They create a positive impact on the environment, and provides net positive benefit to the economy. The common examples of green assets include: waterways, trees, waterbodies and storm water treatment systems, equipment’s that reduce carbon emissions. The Investors support global green initiatives by investing in green mutual funds, green index funds, green exchange-traded funds (ETFs), green bonds, or by holding stock in environment friendly companies thus help the cause of making the universe a better place to live in and free from emissions. Pure green investments are investments in which most or all revenues of the entity come from green activities i.e. activities that do not emit carbon through their activities. We can also say that they generate revenue by having an additional ability to be renewable in nature E.g. Solar Energy. Thus, the green assets and infrastructure companies comprises of a substantial part of a long-term approach that helps them to managing the carbon performance of the entity.

**1.3 What is Artificial Intelligence?**

Artificial Intelligence is a replication of human intelligence processes by machines, especially the computer systems and their specific applications of AI that include expert systems, natural language processing mechanism, speech recognition systems, forecasting, storage and analysis of data and machine vision. As people become more familiar with the uses and benefits of AI. The use of AI tools has got accelerated to a great extent in modern industries. All the vendors are thus, scrambling to promote how their products and services use the AI tools extensively. We should appreciate the fact that what they refer to as AI is just one component of AI, namely machine learning. AI requires a firm base of specialized hardware and software’s that can be effectively used for writing and training all the machine learning Algorithms. A single programming language is not synonymous with AI, but a few such as Python, R and Java, are popular. If one goes deep into the AI systems work by feeding large amounts of categorized training data, analyzing the data pertaining to correlations and patterns, and using them to make predictions about future states. In this way, a chatbot is a nurtured example of text chats that can learn to produce lifelike exchanges with people, or evolve an image recognition tool, can learn to identify and describe objects in images by reviewing millions of available examples. Basically, all AI programming focuses on three cognitive skills**: Learning, Reasoning and Self-correction**.

**1.4 Review of Literature:**

**D. Hemanand,**1Nilamadhab Mishra,2G. Premalatha,3Dinesh Mavaluru,4Amit Vajpayee,5Sumit Kushwaha,6and **Kibebe Sahile: The above authors wrote a paper titled Applications of Intelligent Model to Analyze the Green Finance for Environmental Development in the Context of Artificial Intelligence:**The research states that Green finance is a financial investments made on sustainable projects and policies that focus on a sustainable economy. The procedures include promoting renewable energy sources, energy efficiency, water sanitation, industrial pollution control, transportation pollution control, reduction of deforestation, and carbon emissions, etc. Mainly, these green finance initiatives are carried out by private and public agents like business organizations, banks, international organizations, government organizations, etc. Green finance provides a financial solution to create a positive impact on society and leads to environmental development. In the age of artificial intelligence, all industries adopt AI technologies. In this research, we see the applications of the intelligent model to examine the green finance for ecological advancement with regard to artificial intelligence. Feasible transportation and energy proficiency and power transmission are two significant fields to be advanced and focused on minimizing the carbon impression in these industries. Renewable sources like solar energies for power generation and electric vehicles are to be researched and developed. This R&D requires a considerable fund supply, thus comes the green finance. Globally, green finance plays a vital role in creating a sustainable environment. In this research, for performing the green finance analysis, financial maximally filtered graph (FMFG) algorithm is implemented in different domains. The proposed algorithm is compared with the neural model and observed that the proposed model has obtained 98.85% of accuracy which is higher than the neural model.

2.[**Tan Yigitcanlar**](https://sciprofiles.com/profile/93377)**,** [**Rashid Mehmood**](https://sciprofiles.com/profile/621904) **and** [**Juan M. Corchado**](https://sciprofiles.com/profile/369549)**: Intheir research the titled Green Artificial Intelligence: Towards an Efficient, Sustainable and Equitable Technology for Smart Cities and Futures** the authors saySmart cities and artificial intelligence (AI) are among the most popular discourses in urban policy circles. Most attempts at using AI to improve efficiencies in cities have nevertheless either struggled or failed to accomplish the smart city transformation. This is mainly due to short-sighted, technologically determined and reductionist AI approaches being applied to complex urbanization problems. Besides this, as smart cities are underpinned by our ability to engage with our environments, analyze them, and make efficient, sustainable and equitable decisions, the need for a green AI approach is intensified. This perspective paper, reflecting authors’ opinions and interpretations, concentrates on the “green AI” concept as an enabler of the smart city transformation, as it offers the opportunity to move away from purely techno centric efficiency solutions towards efficient, sustainable and equitable solutions capable of realizing the desired urban futures. The aim of this perspective paper is two-fold: first, to highlight the fundamental shortfalls in mainstream AI system conceptualization and practice, and second, to advocate the need for a consolidated AI approach—i.e., green AI—to further support smart city transformation. The methodological approach includes a thorough appraisal of the current AI and smart city literatures, practices, developments, trends and applications. The paper informs authorities and planners on the importance of the adoption and deployment of AI systems that address efficiency, sustainability and equity issues in cities

**3. Jochen Papenbrock and Peter SChwendner,AI for Sustainable Finance and ESG Technology**:

The authors are of ESG stands for Environmental, Social, and Governance. Asset managers, asset owners, banks, insurance companies, regulators, and central banks are increasingly applying ESG criteria as part of their analysis process to identify material risks and growth opportunities.

Artificial Intelligence – sometimes referred to as New Electricity – has tremendous potential to accelerate and industrialize evidence-based, data-driven sustainable finance, ESG-related decision making, and climate risk management. Natural language processing (NLP) and spatial AI have become leading technologies in this area, as have simulations, digital twins, virtual worlds, and omniverse.

AI models themselves are also under ESG scrutiny: accountability, unbiasedness, explainability, and trustworthiness of AI-driven applications are components of AI governance and are subject to new AI regulations linked to the EU AI Act. There is a global trend and need for responsible investing: with the advent of climate change, health crises, and global pollution, the United Nations’ Sustainable Development Goals (SDGs) have become an inevitable new paradigm. Herein, it is increasingly recognized that SDG-compliant investing and policy design have the potential to reshape entire industries and positively impact the development of corporations, economies, and societies towards more sustainability. To actively guide policy and decision-making in this regard, alternative data can serve as a widely available, yet objective and reliable, data source.

High-quality ESG data has become very valuable over the last years, as the financial regulators in the EU and US have imposed strict reporting rules on asset managers. Timely, reliable, and objective data clearly provides a competitive edge vis-à-vis competitors and minimizes the risk of “greenwashing”. We observe rising demand for financial products and funds with an evidence-based “ESG label” and complying with EU Regulation (Art. 6 to 9), while non-compliant funds lose their rank and are removed from the recommendation lists. Some decision-makers in finance are not aware of the capabilities of AI4ESG and some AI model builders are not aware of the meaning of ESG for society, economy, and our planet. The aim of this Research Topic is, therefore, to improve know-how transfer between both camps and to moderate a dialogue. It facilitates the exchange of innovative ideas and cooperation opportunities in the field of AI4ESG, Sustainable Finance, and ESG Technology as well as Climate Intelligence.

4. Peter Gailhofer, E.V. Ankeherold, Jan Peter Schemmel, Cara-Sophie Scherf, and others **The role of Artificial Intelligence in the European Green Deal.** In this research the authors have presented their views on Artificial Intelligence (AI) can be deployed for a wide range of applications to promote the goals of the European Green Deal. However, adverse environmental impacts of AI could jeopardise the attainment of these goals. The report describes environmental potential, clarifies characteristics and causes of environmental risks, and outlines initiatives and best practices for environmental policies. It illustrates the need for regulatory action to align design and deployment of AI with the goals of the European Green Deal and concludes with specific recommendations. This document was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the Special Committee on Artificial Intelligence in a Digital Age (AIDA)

5. Analys Tahereh, Tarbiat Modares and Tarbiat Modares Artificial intelligence for Sustainability in Energy Industry: A Contextual Topic Modeling and Content state that Parallel to the rising debates over sustainable energy and artificial intelligence solutions, the world is currently discussing the ethics of artificial intelligence and its possible negative effects on society and the environment. In these arguments, sustainable AI is proposed, which aims at advancing the pathway toward sustainability, such as sustainable energy. In this paper, we offered a novel contextual topic modeling combining LDA, BERT and Clustering. We then combined these computational analyses with content analysis of related scientific publications to identify the main scholarly topics, sub-themes and cross-topic themes within scientific research on sustainable AI in energy. Our research identified eight dominant topics including sustainable buildings, AI-based DSSs for urban water management, climate artificial intelligence, Agriculture 4, convergence of AI with IoT, AI-based evaluation of renewable technologies, smart campus and engineering education and AI-based optimization. We then recommended 14 potential future research strands based on the observed theoretical gaps. Theoretically, this analysis contributes to the existing literature on sustainable AI and sustainable energy, and practically, it intends to act as a general guide for energy engineers and scientists, AI scientists, and social scientists to widen their knowledge of sustainability in AI and energy convergence research.

**1.4 Understanding the reflective and predictive capabilities of Artificial Intelligence:**

For understanding the Predictive capabilities of AI, the people involved in the process use it more as a marketing tools, that is driven by technological improvements that have move from rule-based automation to something closer to sentience. We see a number of examples of this everywhere, like Google’s Waze, to financial fraud protection and the personalized recommendations on Amazon. These represent the Predictive capabilities of AI.

Further we can also look at it as a tool that was grounded in concrete use cases for the technology, showcasing a wide variety of businesses that have used machine learning and AI to predict consumer behaviors and create a better business outcome. These opportunities are open to all companies now, but seizing and utilizing them to their advantage is a much more complex task than merely purchasing some new software.

**Fig. 1: Key success factors that inhibit the predictive modelling and analytical capabilities**



**Source:towardsdatascience.com**

On the other hand, Analytical AI encompasses a variety of techniques and different types of data investigation techniques. Most analytical work undertaken by organizations falls under the banner of either descriptive - what happened? or exploratory - why did it happen?

The key consideration involved here is the skill level that is needed by the person to operate the technology behind future predictive analytics systems as is likely to get lower over time, but the businesses still need to ensure their team has a detailed knowledge of data analytics before investing in some new, exciting artificial intelligence systems. The fact of the matter is there are plentiful resources and qualifications to aid with this training, as long as businesses are willing to invest in them fruitfully and willingly. It is necessary and critical that both theory and practice should be considered as the fundamental components of this training as they help immensely. For getting appropriate results a broad knowledge base is very much essential. Without having the ability to ask the right questions or to know what the technology is capable of doing and what it isn’t capable of, the outputs will not be fit for purpose for which AI is being used.

**1.5 Use of AI in Green Assets:**

**I Understanding the true cost of greenhouse gas emission reduction:**

The real challenge before the modern society is to ascertain the true cost of greenhouse gas emission reduction. The general and scientific expert’s consensus is on this aspect is very clear. According to them the climate change problem is associated with increasing number, frequency and intensity of natural disasters ranging from droughts and wildfires to hurricanes and coastal flooding. While the extent of the economic damage cannot be known with certainty, there are [strong evidence](https://www.ipcc.ch/sr15/)s that clearly  suggests the damage could be quite severe. The challenge for policymakers will be to decide how much to spend on various measures required to reduce the greenhouse gas emissions. To do that, they must be able to compare the costs of various options, including using renewable-energy sources and electric cars. Only after a thorough analysis is completed on the cost and damage involved can they draw conclusive evidence on the damage caused. For this analysis to be done effectively AI is extremely useful and beneficial.

**II Role of AI in Agriculture:**

When one looks at human existence on this planet one finds that agriculture and farming have been the oldest and critical human activity in the world. They play an important role and support and rater drive the in the economic activities globally. The size of the worldwide agriculture is an astonishing $5 trillion annually. This is enough to understand its nature of the sector and the importance it enjoys for human civilization industry.

**Understanding Artificial Intelligence from the Agriculture Perspective:**

Artificial intelligence is based on the basic premise that human intelligence can be defined in a way that a machine can easily mimic it and accordingly execute the tasks assigned, from the simplest to those that are even more complex. The goals of artificial intelligence commonly include Learning, Reasoning, and Perception.

It is expected that the global population is will reach more than nine billion by 2050 which will require an increase in agricultural production by around 70% of the current level to fulfill the demand for food of all the inhabitants of this planet. As the world population is increasing due to which land water and resources becoming insufficient to balance and continue the demand-supply chain of the world. So, we need a smarter approach and need to become more efficient about how we farm and can be most productive in these activities.

**Fig 2: Lifecycle of Agriculture**



 **Source: analyticsvidhya**

**1.6 Challenges faced by farmers by using Traditional methods of farming:**

The general challenges that exist in the agricultural domain are as listed below:

* When viewed carefully we find in agriculture climatic factors such as rainfall, temperature and humidity play an important role in determining the agriculture lifecycle. Increasing rate of deforestation and pollution result in severe climatic changes, so it’s becomes difficult for farmers to take decisions to prepare the soil, sow seeds, and plan the harvest.
* The reality is in agriculture is that every crop requires specific nutrition level in the soil. There are three major nutrients required in soil viz. nitrogen(N), phosphorous(P) and potassium(K) in soil. The deficiency of any of these nutrients can lead to poor quality and output of crops.
* One can see clearly from the agriculture lifecycle that weed protection has an important role in agriculture life cycle. If it is not controlled on time, it can lead to an increase in the production cost and it also absorbs the vital nutrients from the soil causing severe nutrition deficiency in the soil.

**1.7 Applications of Artificial Intelligence in Agriculture:**

The industry is turning and looking towards Artificial Intelligence technologies to help yield healthier crops, successfully evolve pest control measures, monitor soil quality and make growing conditions conducive for higher yield, organize data for farmers, help with the workload of farmers, and improve a wide range of agriculture-related tasks in the entire food supply chain such as:

**1.7.1 Use of weather forecasting:** With the changes in climatic condition and increasing pollution it becomes difficult for farmers to determine the right time for sowing seeds. But with help of Artificial Intelligence farmers can analyze weather conditions by using weather forecasting techniques that help them plan the type of crop they can grow and when should the seeds be sown.

**1.7.2 Soil and crop health monitoring system:** The type of soil and nutritional value of soil plays an important factor in the type of crop to be grown and the final quality of the crop. Due to increasing, deforestation soil quality is regularly getting degraded and it becomes hard to determine the quality of the soil.

A German-based tech start-up PEAT. PEAT is a surface of organic layer of a soil that consists of partially decomposed organic matter, derived mostly from plant material, that has accumulated under conditions of waterlogging, high acidic contents, Nutrient deficiency and finally oxygen deficiency, high acidity and nutrient deficiency. This German firm has developed an AI-based application called Plantix that can identify the nutrient deficiencies in soil conveniently that includes plant pests and diseases by which farmers can also get an idea to use what fertilizer that can help him improve the harvest quality. This app uses an image recognition-based technology wherein the farmer can capture images of plants using smartphones He can also understand and identify the different soil restoration techniques with tips and other solutions through short videos found on this application.

Likewise, another entity Trace Genomics includes another machine learning-based company that helps farmers to do a thorough soil analysis. These applications help the farmers to regularly monitor the soil quality and in turn the crop’s health conditions and thus produce healthy crops with a higher level of productivity.

**1.7.3. Analyzing crop health by drones**: Another technology firm Sky Squirrel Technologies, that is a company that represents a unique blend of technical and creative capabilities through which they leverage aerial technology (UAV/UAS systems, or “drones”), aerial photography, and aerial videography to create a dynamic solution that can be individually tailored to one’s projects’ needs and adopts a drone-based Ariel imaging solutions for monitoring the overall crop health. In its of Ariel technology, the drones capture the data from fields which is then transferred from the drone to a computer via a USB and gets analyzed by experts who then conclude the information non the soil its quality and thereby the productivity of the farm.

This company uses different algorithms to analyze the captured images and is able to provide a detailed report containing the current health of the farm. In this way it helps the farmer to identify the pests and bacteria present in the soil and helps the farmers to timely use of pest control techniques and similar other methods to take the required action for improving the soil quality.

**1.7.4 Precision Farming and Predictive Analytics**: AI applications in agriculture have extremely developed and advanced applications and tools which help farmers to adopt an accurate and controlled farming practices by providing them proper guidance about water management, crop rotation, optimum planting, type of crop to be grown, pest attacks, nutrition management, timely harvesting of the crop. This enables them to avoid losses associated with farming.

While using the machine learning algorithms in relation to the images captured by satellites and drones, AI-enabled technologies help predict weather conditions, analyze crop sustainability and evaluate farms for the presence of diseases or pests and identify if poor plant nutrition on farms with critical data that can impact the output such as temperature, drizzle, wind speed, and solar radiation.

Farmers without connectivity can get AI benefits instantly by using tools that are as simple as an SMS-enabled phone and the Sowing Application. Meanwhile, the farmers who have access to Wi-Fi can easily and conveniently use AI applications to get a continually AI-customized plan for their farms. With such IoT (internet of Things)- and AI-driven solutions, farmers can meet the world’s needs for increased food sustainably growing farm output and increased revenues without depleting precious natural resources. It is expected that these techniques of AI will help farmers evolve into agricultural technologists in future, by using the available data to optimize yields even down to individual rows of plants in their farms. This may sound unbelievable but AI can make it happen.

**1.7.5. Agricultural Robotics:**AI companies are constantly making efforts to develop robots that can easily perform multiple tasks in farming fields. This type of multi- skilling by robots that are trained to control weeds and harvest crops at a faster pace with greater volumes compared to human beings doing the work manually. These robots are trained to check the quality of crops and detect the weeds present while picking and packing of crops at the same time. These robots are also capable to counter the challenges faced by agricultural force labor too.

**1.7.6 AI-enabled system to detect pests**: Pests are one of the worst enemies of the farmers that cause immense damage to the crops. AI technology is suitably tuned to use the existing satellite images and compare them with historical data or images using AI algorithms. They can finally detect if any insect has landed in the farm and which type of insect has landed whether a locust or a grasshopper, etc. After this it sends quick and timely alerts to farmers on their smartphones to help them take the required precautions and initiate immediate pest control measures. Thus AI helps farmers to fight against pests and save the crops.

**II. Importance of Artificial Intelligence (AI) in Transportation:**

Since we as a race have started introducing of AI technology in the transportation sector, many positive things have taken a gradual turn as AI has brought many desirable improvements in the sector. Artificial intelligence is regularly used in the predicting of accidents, thus helping reduce loss of life and assets. Many companies utilize AI techniques to predict crashes based on environmental and other related factors.

Another great development in this sector is the integration of electric vehicles with artificial intelligence systems. Electric vehicles it is presumed will greatly aid in the reduction of environmental pollution as they have a lower rate of emissions. A great example of such a mechanism is to connect travel that uses electric buses that are integrated with AI systems. Artificial intelligence (AI) has also brought the development of self-driven cars that are able to detect traffic and plan the travel route. Self-driving cars it is expected will certainly reduce traffic accidents as the AI-equipped vehicle as they have the ability to detect pedestrian and cyclist’s paths. This by far increases transportation safety and helps the society in the long run.

We can even achieve reduction in traffic congestion on roads resulting in a smooth traffic flow, with the help of AI traffic management systems. The traffic is being monitored in many smart cities around the world to monitor traffic and permit smooth flow of traffic. AI can also aid the motorists who can be issued timely warnings about dangerous spots on a certain roads or routes. Even security threats and any unforeseen occurrences in traffic can also be predicted effectively and accurately using AI for the assistance of motorists.

AI in transportation is still in its infancy stage but it holds great potential in revolutionizing the global transport sector. Trust is one of the prime factor that has affected the speed of adoption of AI in this sector. The lack of trust has further aggravated the situation due to lack of proper regulation certification and standardization of AI tools in the transport sector. However, once the public policy on AI has fully matured, adoption of AI in transport will follow as safety will be assured and consequently trust will get restored.

**III Emissions by Industry:**

**1.8 Key Sectors creating Emissions:** There is a strong need is for adopting multiple solutions to urgently decarbonize the economy. The global data shows te extent of Carbon generated includes:

**1.8.1 Energy** (electricity, heat and transport): is generating 73.2% carbon globally and the Energy being used by this sector is: 24.2%

**1.8.2 Iron and Steel**: Energy-related emissions from the manufacturing of iron and steel are high too and stand at 7.2%.

**1.8.3 Chemical & petrochemical:**Energy-related emissions from the manufacturing of fertilizers, pharmaceuticals, refrigerants, oil and gas extraction, etc. amount to 3.6%.

**1.8.4 Food and tobacco: E**nergy-related emissions from the manufacturing of tobacco products and food processing stands at 1%. This is due to the conversion of raw agricultural products into their final products, like the conversion of wheat into bread.

**1.8.5 Non-ferrous metals:** Non-ferrous metals are metals which contain very little iron. These include aluminum, copper, lead, nickel, tin, titanium and zinc, and alloys such as brass. The manufacturing of all these key metals requires energy that results in an emission of **0.7%.**

**1.8.6 Paper & pulp: The E**nergy-related emissions from the conversion of wood into paper and pulp is **0.6%.**

**1.8.7 Machinery:**energy-related emissions from the production of machinery is 1.5%.

**1.8.8 Other industry:**energy-related emissions from manufacturing in other industries including mining and quarrying, construction, textiles, wood products, and transport equipment (such as car manufacturing) is 10.6%

**1.8.9 Transport sector:** creates16.2% carbon. Although it includes a small amount of electricity (indirect emissions) as well as all direct emissions from burning fossil fuels used in the power transport activities. These figure of 16.2% actually does not include the emissions that we otherwise see from the manufacturing of motor vehicles or other transport equipment’s. These emissions have been included under the head of ‘Energy use in Industry’.

**1.8.10 Road transport: Here the** Emissions mainly occurs due to from the burning of petrol and diesel from all forms of road transport including cars, trucks, lorries, motorcycles and buses. Around sixty percent of road transport emissions is a result of passenger travel using cars, motorcycles and buses; and the remaining forty percent from road freight such as lorries and trucks used for transporting goods. This means that, if we should electrify the whole road transport sector, and this transition can help us fully decarbonized the electricity mix, we could feasibly reduce global emissions by around 11.9%.

**1.8.11 Aviation: The e**missions from passenger travel and freight including domestic and international aviation amounts to 1.9%. 81% of this aviation emissions come from all passenger travels; and the balance 19% comes from freight transport done. From the passenger aviation, emission amounts to 60% from international travel undertaken, and 40% from domestic travel undertaken.

**1.8.12 Shipping: E**missions from the burning of petrol or diesel on boats stands at 1.7%. The emission stated here includes both from passenger and freight maritime trips taking place.

**1.8.13 Rail:** Emissions from passenger and freight rail travel is 0.4%.

**1.8.14 Pipeline: The** Fuels and commodities including oil, gas, water or steam are often needed to be transported both within or between countries using pipelines. This requires a lot of energy inputs, which results in emissions of 0.3%. The problem pertains to poorly constructed pipelines causing leakages, leading to direct emissions of methane to the atmosphere – however, this aspect is captured in the category ‘Fugitive emissions from Energy Production’.

**1.8.15 Energy used in Buildings:** The emission anticipated here is 17.5%

**1.8.16 Residential buildings:** The Energy-related emissions from the generation of electricity for lighting, appliances, cooking etc. and heating at home results is 10.9%.

**1.8.17 Commercial buildings: The** energy-related emissions from the generation of electricity for lighting, appliances, etc. and heating the commercial buildings like offices, restaurants, and shops is around 6.6%. In addition to this there is also emission due to Unallocated fuel combustion that stands at 7.8%

**1.8.18 Energy-related emissions** from the production of energy from other fuels including electricity and heat from biomass; on-site heat sources; combined heat and power (CHP); nuclear industry; and pumped hydroelectric storage also a mounts to 5.8%. This is termed as Fugitive emissions from energy production: 5.8%

**1.8.19 Fugitive emissions from oil and gas: The** Fugitive emissions are the often-accidental leakage of methane to the atmosphere during oil and gas extraction and transportation, from damaged or poorly maintained pipes. This also includes flaring which is the intentional burning of gas at oil facilities. Oil wells also releases gases that includes methane, during extraction the producers often don not have an existing network of pipelines to transport it, or it would not make any economic sense to provide the required infrastructure that is needed to effectively capture and transport the same. But under the environmental regulations in force they need to deal with it somehow: intentionally burning it is often a cheap way to do so. But there is emission here that amounts to 3.9%.

**1.8.20 Fugitive emissions from coal (1.9%):** fugitive emissions are the accidental leakage of methane during coal mining.

**1.8.21 Energy used in agriculture and fishing** Energy-related emissions from the use of machinery in agriculture and fishing, such as fuel for farm machinery and fishing vessels 1.7%

**1.8.22 Direct Industrial Processes**: The emissions stand at 5.2%

**1.8.23 Cement:**carbon dioxide is produced as a byproduct of a chemical conversion process used in the production of clinker, a component of cement and it amounts to 3%. In this reaction, limestone (CaCO3) is converted to lime (CaO), and it produces CO2 as a by-product. The cement production also generates emissions from energy inputs. The emissions level is 3% These and all the related emissions get included under ‘Energy Use in Industry’.

**1.8.24 Chemicals & petrochemicals: G**reenhouse gases are produced as a byproduct from chemical processes. For example, CO2 can be emitted during the production of ammonia, which is used for purifying water supplies, cleaning products, and as a refrigerant product and used in the production of many materials, including plastic, pesticides, fertilizers, and textiles. Chemical and petrochemical manufacturing also produces emissions mainly from energy inputs that are used in the industry. These emissions are included under ‘Energy Use in Industry’.

**1.8.25 Waste:** The emissions here are 3.2%

**1.8.26 Wastewater: The emission** stands at 1.3% where organic matter and residues from animals, plants, humans and their waste products can collect in wastewater systems. When this organic matter decomposes over time it produces and emits methane and nitrous oxide in huge quantities.

**1.8.27 Landfills: The emissions stand at 1.9%** landfills are often low-oxygen environments. In these environments, the organic matter gets converted into methane when it gets decomposed.

**1.8.28 Agriculture, Forestry and Land Use**: The emissions stand at 18.4%. Agriculture, Forestry and Land Use together account for 18.4% of all the greenhouse gas emissions. The food system as a whole including activities like refrigeration, food processing, packaging, and transport accounts for around one-quarter of greenhouse gas emissions.

**1.8.29 Grassland:**When the grassland gets degraded, the soils tends to lose carbon, in the process the carbon gets converted to carbon dioxide in the process. The emission stands at 0.1%. Conversely, when the grassland gets restored for example, from cropland, carbon can be appropriated.**The** Emissions so generated here refer to the net balance of the carbon losses and gains fromgrassland biomass and soils seen during the process of conversion.

**1.8.30 Cropland:**Depending on the management practices used on croplands, carbon can be lost or sequestered into soils and biomass and the emission stands at 1.4%. It affects the balance of carbon dioxide emissions. CO2 can be emitted when croplands get degraded or impounded when they are restored. The net change in carbon stocks gets captured in the emissions of carbon dioxide. This excludes the grazing lands used by livestock.

**1.8.31 Deforestation:**Net emissions of carbon dioxide from changes in forestry cover is 2.2%. This means reforestation is treated as ‘negative emissions’ and deforestation is treated as ‘positive emissions’. Net forestry change thus the difference between the forestry loss and gain achieved. Emissions are thus based on the carbon stores from forests and changes in carbon stores in forest soils get evaluated and analyzed.

**1.8.32 Crop burning:**The emissions occur due burning of agricultural residues and stands at 3.5%– leftover vegetation from crops such as rice, wheat, sugar cane, and other crops – releases carbon dioxide, nitrous oxide and methane. Farmers are often seen burning crop residues after harvest to prepare the land for the sowing the crops again.

**1.8.33 Rice cultivation:** It is often noted that the flooded paddy fields produce methane through a process that is commonly called ‘Anaerobic Digestion’. Here the emission is 1.3%. The organic matter in the soil is converted to methane because of the low-oxygen environment of the water-logged rice fields. 1.3% seems substantial in the carbonization process , but it is important to put this into context: rice accounts for around one-fifth of the world’s supply of calories, and is a staple food of billions of people globally[.](https://ourworldindata.org/emissions-by-sector#note-8)

**1.8.34 Agricultural soils:** Nitrous oxide is a strong greenhouse gas. It gets produced when synthetic nitrogen fertilizers are applied to soils. It has an emission level of 1.4%. This includes emission from the agricultural soils for all the agricultural products, including food meant for direct human consumption, animal feed, biofuels and other non-food crops like tobacco and cotton).

**1.8.35 Livestock & manure:**animals mainly ruminants, such as cattle and sheep, produce greenhouse gases through a process called ‘enteric fermentation’ and the level is 5.8% when microbes in their digestive systems break down the food, they produce methane as a by-product. This means beef and lamb tend to have a high carbon footprint, and eating less of it is an effective way to reduce the emissions of your diet.

It is a known fact that nitrous oxide and methane can be produced from the decomposition of animal manures under low oxygen conditions. This often occurs when large numbers of animals are managed in a confined area like dairy-farms, beef feedlots, and swine and poultry farms, where manure is typically stored in large piles or disposed of in lagoons and other types of manure management systems that are used. ‘Livestock’ emissions include direct emissions from livestock only they do not consider the impacts of land use change for pasture or animal feed.

**Trade Offs:** The use of AI is a very powerful tool to combat and reduce climate change and its effects. But one would be failing miserably if one fails to overlook its contribution. Thus the first step is to promote and evaluate the practices that are more holistic and multi-dimensional model. The major focus should be on Research and Innovation for creating more realistic algorithms so that new technology gets created and steps are taken to reduce the carbon prints. In order to build the models, we need to consume larger amounts of data for building even more complex and realistic models. In order to attain exponential increases in model size and the training requirements, there are undeviating improvements of performance in the process less priority is given to developing methods with greater resource efficiency. Moving forward one needs to remember that a trade-off is needed between accuracy and efficiency and the model’s carbon footprint both during training and when making inferences.

**Conclusion**:

The above research clearly shows that the problem confronting the global community is increasing carbon emission. In order to reduce the level of emission increasing the use of Green Assets. Green finance a model that is designed to allocate financial resources for the development of the environment. The allocation can be provided for the maintenance of natural resources, ecology, and human development, and in some cases, it also focuses on the reduction of human intervention in natural disasters or calamites. It can also be allocated for the social well-being of the environment where the person lives. In this research, the green Assets and their allocation are needed to derive the benefit of Carbon Emission. For this analysis, this research states that proper use of algorithm are adopt appropriate AI Apps and apply the same so that the same gives proper results for reducing carbon print and benefits the globe.

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