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Dr.K.Sasi Kumar
Editor-in-Chief

SUSTAINABLE ECONOMIC DEVELOPMENT - INDIAN PERSPECTIVE

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Editor in Cheif

Dr.K.Sasi Kumar, Assistant Professor/MBA,VICAS

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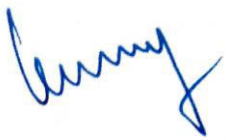
EDITORIAL MESSAGE

We take great pleasure in welcoming you to our Edited Book. The immediacy of e-based publication makes it possible for us all to be fully connected to each other and to developments in our field and to be directly involved in ongoing knowledge construction.

With several economies gearing towards the end of lockdowns, it's time for organizations to implement Post-COVID-19 business recovery strategies. Although it will let organizations restore balance to an extent, total recovery from the crisis is going to be a long and strategic battle. With these concepts in mind, we invited with scholarly discussions to facilitate new ideas for business sectors. This book also stands as a platform for Students and research scholars to express their innovative business models and solutions.

We are thankful to all academicians, research scholars and students who have contributed for this edited book. We also acknowledge the valuable suggestions and support offered by our colleagues and students. We are delighted that you are joining us as readers and hope you will also join us as contributors.



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SUSTAINABLE DEVELOPMENT OF ECONOMICAL GROWTH IN ELECTRONICS

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INTRODUCTION

Sustainable Development is an interdisciplinary concept, including the environmental,Health, Energy, Economic and Socio-Cultural areas. India constitution envisages specificprovisionsfortheprotectionandimprovementofenvironment.Indiaalsohascredittobefirst countrywhichmadeprovisions for theprotectionandimprovementofenvironmentinits `constitution. However, it plays a significant role in creating climate change policies, thedevelopmentof cleanerenergy sources and thedevelopmentof technical developments.Physicists have a crucial role to play in this work and are responsible for innovations rangingfromlow-energycomputingtobreakthroughsinsolarandwindpowerandthebatterytechnology which is needed to store energy drawn from new sources. Without Physics wewouldn'thavemanyofthethingstoday,includingtransport,constructionandtelecommunication sorsomeofthemostvitaladvancesinhealthcaresuchasMRI Scanners.

EconomicimportanceinPhysics

Physics makes a significant economic contribution across all sectors, drives growthand creates highly skilled jobs resulting in long-term economic growth and prosperity. Itgenerates fundamental knowledge needed for the future technological advances thatwillcontinue to drive the economic engines of the worldand contribute to the technologicalinfrastructure and to skills needed to take advantage of scientific advances and discoveries.Physics improves our quality of life by providing the basic understanding necessary fordeveloping new instrumentation and techniques for medical applications. Such as computertomography, magnetic resonance imaging, positron emission tomography, ultrasonic imagingandlasersurgery.

SignificanceinElectronicindustry

Today, India is in a position to offer cost effective, great quality, high reliability andspeedy deliveries.Italsoprovides theapplication of the state-of-arttechnologiesin thesoftware industry. The electronics industry in India started ***with radio manufacturing in the1850s***. The setting up of the ***Indian Telephone Industry (ITI) in 1950*** at Bangalore gave aboost to this industry. It now meets the needs of post and telegraph, defence, railways,electricity boards, etc. ITI now has the main manufacturing units located at Bangalore, Naini,RaiBareli,Mankapur,PalakkadandSrinagar.

BharatElectronicsLtd.(BEL)wassetupatBangalorein1956,tofulfilltheneedsof the defence services, All India Radio and the meteorological department. Its main centresof production are located at Bangalore, Ghaziabad, Pune, Panchkula, Chennai, Hyderabad,Kotdwara, Machilipatnam and Taloja. BEL also exports a variety of equipments to Asian andEuropeancountries.

The Indian electronics industry is also helping the development and growth of spacetechnology.Indiaproducedelectronicgoodsworthmorethan70,000croresin2001-02.Bangalore is the largestcentre of electronics goods production, and is rightly called the‘Electronic Capital of India.’ It is expected that the software exports would account for abouthalfofthetotalforeignexchangeearnings ofIndia.

Fig1.EctronicsIndustry

Sustainable ICT will enable us toprotectand enhancehuman health and well-beingand the environment over generations while minimizing the adverse life-cycle impacts ofdevices, infrastructure and services.” Electronics contain many chemicals that are known tocauseissues with human health.Thefavourablematerials usedin green electronics arealuminium, borosilicate glass, iron alloy, graphene and biomaterials .Aluminium is known asthe ‘green metal’ and the best eco metal due to the fact it has a virtually infinite lifespan. Itcan be recycled repeatedly without losing any quality.The importance of electronic industryisthati)Ithaslargelycontributedtospacetechnology,communication,information

technologyandsoftwareIndustry.Indiansoftwareisingreatdemandintheworld.ii)Ithashelpedmedicalsciencesanddefence todevelopwithelectronic apparatus.

1. Designforenvironment andcircularity.
2. Sustainablechoicesofrawmaterials.
3. Energy-efficientandmaterial-efficientmanufacturingtechniques.
4. Sustainabilityfortheusephase.
5. End-of-lifemanagementforcirculareconomy.

Renewableenergysourcesincludewindpower,solarpower,bioenergy(organicmatterburnedasa fuel)andhydroelectric,includingtidalenergy.

WindPower:

Wind power or wind energy is mostly the use of wind turbines to generate electricity.Windpowerisapopular, sustainable, renewableenergy sourcethat has a muchsmaller impact on the environment than burning fossil fuels. Historically, wind power hasbeenusedin sails, windmills and windpumps buttodayitismostlyusedtogenerateelectricity. Windfarms consistof manyindividual windturbines,which areconnectedtothe electricpowertransmissionnetwork.

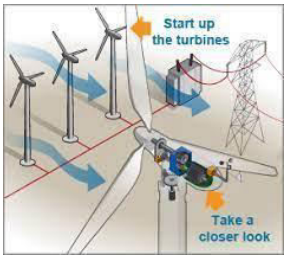

Fig2.WindPower

SolarPower

Solar power works by converting energy from the sun intopower. There are twoforms of energy generated from the sun for our use electricity and heat. Both are generatedthrough the use of solar panels, which range in size from residential rooftops to 'solar farms'stretchingoveracresofruralland.

Fig3.SolarPower

Bioenergy

Bioenergy is one of many diverse resources available to help meet our demand forenergy. It is a form of renewable energy that is derived from recently living organic materialsknown as biomass, which can be used to produce transportation fuels, heat, electricity, andproducts.

Fig 4.Bioenergy

Hydroelectricenergy

Hydroelectric energy, also called hydroelectric power or hydroelectricity, is a form ofenergy that harnesses the power of water in motionsuch as water flowing over a waterfall togenerate electricity.

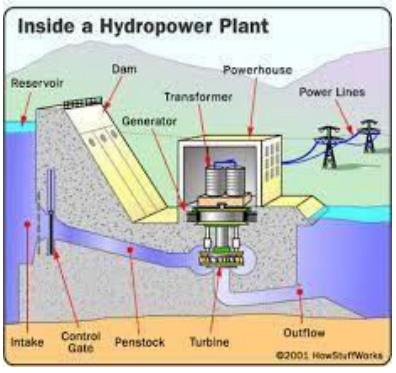

Fig5.Hydroelectricenergy

Impactofelectronicsin industry

Advances in the field of electronics have also played a key role in the development ofspace technology and satellite communications, inaugurated a revolution in the computerindustry that led to the introduction of the personal computer. The environmental impact ofelectronics manufacturing is a global ecological issue, which is not just limited to the creationof rubbish.It raises concerns aboutairpollution,water and soilcontamination,privacyconcernsandevenworkerexploitation.

RoleofPhysicsin Environment

It is essential for understanding the deep structure of earth and the natural phenomenathat affect Earth's surface such as earthquakes and volcanic eruptions. Nuclear power (bothnuclear fission and fusion) and renewable energy (including wind, hydropower, photovoltaiccellsandsolarthermalenergy).Electronicsproducedthroughenvironmentally-friendlyprocesses aregreenelectronics.They takeintoaccounttheconsumption of energy andproductionofcarbon.Madeoutofrecycledmaterials,greenelectronicsreducetheconsumption of vital natural resources. Research and development efforts on all of thesealternative technologies are under way around the world. The weather and climate are drivenby the absorption of solar radiation and the subsequent re-distribution of that energy throughradiative, advective and hydrological processes. Although electricity is a clean and relativelysafe form of energy when it is used, the generation and transmission of electricity affects theenvironment. Nearly all types of electric power plants have an effect on the environment, butsome powerplants havelargereffects thanothers.

Futureofelectronicsin India:

A new kind of electronic architecture called the memristor is paving the way for whatmight be next in electronics Neuromorphic Computing. It promises a new way to computethat is fast, energy efficient and allows to build truly intelligent hardware. The electronicsector has the potential to become one of the top exports of in India in the next 3-5 years.Electronics exports may occur for significant contributions to the Indian economy in terms offoreignexchange earnings andemploymentgeneration.

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