

Prediction and Assessment of Environmental Impacts (Effects) on the Design and Interdisciplinary Arts Cotton Textile Environment for Industry 3.0 Cotton Roller Ginning Process

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Abstract: The article discusses prediction and assessment of environmental impacts (effects) on the design and interdisciplinary arts cotton textile environment for industry 3.0 cotton roller ginning process. "Environmental Impact Assessment "(EIA) can be defined as the systematic identification and evaluation of the potential impacts (effects) of proposed projects, plans, policies, programs, or legislative actions relative to the physical-chemical, physical-biological, biological chemical, cultural, anthropological, architectural, archaeological, socio-economical and surveillance components of the total environment. The past five decades have been characterized by passage of EIA legislation dealing with the environment, including legislation on control of land, air and water pollution, solid-and hazardous-waste management, resource conservation and recovery, and soil and ground water and surface water remediation. Coronavirus and Byssinosis Disease Impact Assessment (CIA) is investigated and discussed. Sustainable development is the artistic idea that science and humanities must live and meet their needs without compromising the efficacy and efficiency of future generations to meet their own needs. Prediction and assessment of environmental impacts (effects) on the design and interdisciplinary arts cotton textile environment for industry 4.0 cotton roller ginning process are devised. Sustainable design and interdisciplinary arts environment for cotton ginning process is presented. The case study and check of strengthening of agricultural extension through sustainable entrepreneurship is discussed in this article.

Keywords: Agriculture, cotton, design, environment, entrepreneurship, ginning, interdisciplinary arts, industry 3.0, sustainability, textiles.

INTRODUCTION

Sustainable entrepreneurship (SE) is a kind of an entrepreneurship that meets the needs of the present without compromising the ability, efficiency and values of future generations to meet their own needs. Agricultural entrepreneurs can be developed through well-conceived and well directed training programmes around thrust areas, thus advancing the frontiers of theories and practice sustainable entrepreneurship. The objectives of the study are (i) to introduce the concept of sustainable entrepreneurship in Ethiopia based on an entrepreneurial research conducted in South India, (ii) to formulate and appraise forty three number of detailed project reports (DPRs) of Diploma in Entrepreneurship and Business Management (DEBM) extension learners in twenty batches attached with the DEBM Counselor and Co-ordinator of Entrepreneurship Development Institute of India - Ahmedabad (EDI) during the research year (RY) 2007-2021 [1], and (iii) to promote sustainable policy recommendation so as to strengthen agricultural scientific and technical services focusing on Ethiopian

Agricultural Extension System (EAEM). EDI has conceptualized and launched an innovative entrepreneurship development programme through distance learning and personal counseling DEBM in the year 1983. It was formerly known as Open Learning Programme on Business Entrepreneurship (OLPE) which is an one year programme through open & distance learning and personal counseling. DEBM extension learners are equipped with the knowledge, skills and motivation to set up their sustainable enterprises and function dynamically and manage successfully. DPRs put by learners are bankable projects duly investigated as per guidelines provided by EDI. All entrepreneurial business planning assessment regimes (EBPARs) have been done. The result analysis of sixty-one extension learners has been discussed.

<http://debm.ediindia.ac.in/counsellors/studentrecord/candidates.jsp?Action=Show&CandidateID=13785>, Website address date is 17 th January 2021 [2]

As per Vijayan Gurumurthy Iyer [1], Agricultural green designs find that products and services are sustainable environmental advantage with sustainable production, good performance and cheaper prices.

Pilot plant of a case study DPR-I on unsafe chromium from Ethiopian cotton roller ginneries and

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development of green design and art cotton textile environment roller gin rollers (Chrome composite Leather –cladding) for cotton gins have been investigated.

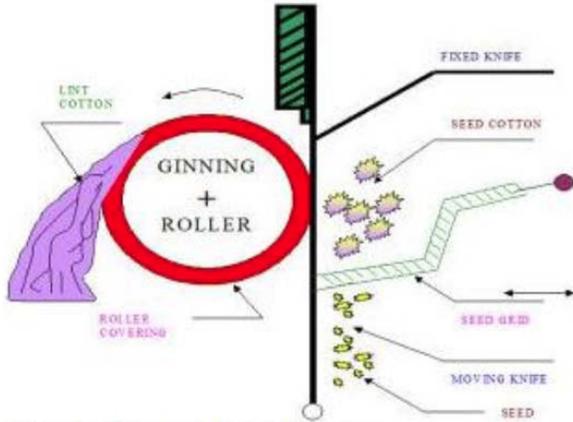


Figure 1: Mc-carthy principle of cotton double roller ginning process.

The chrome composite leather-cladding (CCLC) rollers for cotton double roller gins were investigated in a ginning factory at M/S Vijay Cotton Ginning factory, Bailhongal, Belgaum, Karnataka, India working on McCarthy Principle is virtually investigated which has been demonstrated [2]. McCarthy principle is applied in seed-cotton roller ginning process in agricultural textile engineering and technological machinery is depicted in Figure 1 [3]. The red color illustrates CCLC rollers produce dust-producing grinding synergistic environment.

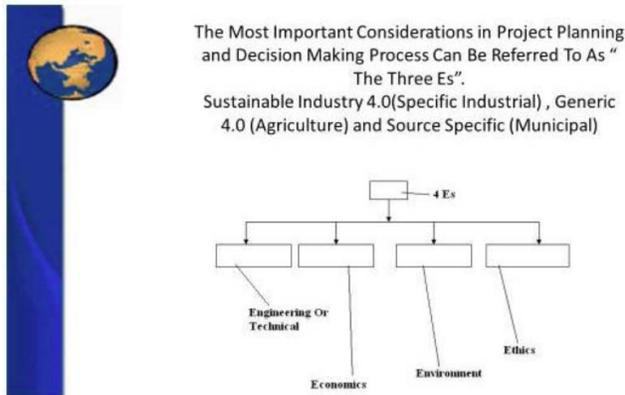


Figure 2: Three ‘Es’ for cotton textile environment.

Figure 2 represents three ‘Es’ that is Engineering or Technical, Economics and Environment factors are considered in the present work in research organization and planning and decision making process.

Figure 3 shows a plate of a double roller ginning factory industry 3.0 equipped with conventional double

roller ginning machines having traditional chrome composite leather clad rollers for ginning seed-cotton (or *Kapas*), where the present investigations are carried out. The investigation realizes scope for industry 4.0 that is sustainable cotton roller ginning factory.



Figure 3: Battery of double roller (DR) ginning machines in a cotton roller ginning industry equipped with traditional chrome composite leather-clad rollers.

Prediction and assessment of environmental impacts (effects) on the design and interdisciplinary arts cotton textile environment for industry 4.0 cotton roller ginning process is devised.



Figure 4: Shows a plate incidences of toxic synergistic poisoning environment in a double roller ginning factory industry 3.0 equipped with conventional double roller ginning machines having traditional chrome composite leather clad rollers for ginning seed-cotton (or *Kapas*), where the present investigations are carried out. The investigation realizes scope for industry 4.0 that is sustainable cotton roller ginning factory.

Coronavirus and Byssinosis Disease Impact Assessment (CIA) is investigated and discussed in Figure 4 [4-11]. Low-carbon and energy-efficient agricultural technologies of agricultural hi-tech industries make important contributions to mitigating the impacts of economic growth on global warming. SE provides innovation to improve agricultural science and technology extension system and sustainable agricultural mechanization for mitigation of rural poverty

in Ethiopia. This action-based research study on SE can promote policy recommendation to strengthen agricultural technical extension in Ethiopia. Coronavirus and Byssinosis Disease Impact Assessment (CIA) is investigated and discussed [4-11]. Entrepreneurship is a process of setting up of new enterprises to pursue opportunities. An entrepreneur, who organizes, manages, assumes risks and enjoys profits of enterprise or business successfully. Agricultural entrepreneurship is defined as a process of setting up of agricultural business at considerable risk. Sustainable entrepreneurship involves all the functions, activities, and actions associated with the perceiving of new sustainable agricultural opportunities and the creation of sustainable agricultural enterprises to pursue them. Entrepreneurs perceive new agricultural opportunities and create enterprises to pursue it. The concept of SE challenges that fosters long-term protection of the cotton textile environment and its habitants as the technological developments are guided by green and sustainable materials, efficiency, productivity, profitability, health and environmental impacts, resource and energy conservation, waste management, and social impacts such as public convenience, unemployment and crime (Hendry, 2004). A sustainable entrepreneur combines efficiently and effectively of six kinds of input resources can be referred to as "The six Ms" such as Man-power, Machinery, Material, Method, Money and Market in order to transform to output goods, products or services (Vijayan Gurumurthy Iyer, 2007). Cotton agricultural entrepreneurs consider cotton textile environment in agricultural planning and decision making and to arrive at actions which are more environmentally compatible plans. The concept of sustainability is highlighted when the resources do not get depleted due to business endeavors. The expert counselor and coordinator has got an autonomy to conduct one year Diploma in Entrepreneurship and Business Management (DEBM) duly awarded by Entrepreneurship Development Institute of India (EDI) to sixty one DEBM extension learners during the research year (RY) 2007-2021.

<http://debm.ediindia.ac.in/counsellors/studentrecord/candidates.jsp?Action=Show&CandidateID=13785>, Website address date is 17 th January 2021

Coronavirus and Byssinosis Disease Impact Assessment (CIA) is investigated and discussed. DEBM counselor has to provide the learners for necessary academic support and guidance, conduct of course work, two contact sessions, evaluation of

assignments, tutorials, detailed project reports (DPR) and conduction of term end examinations.

All DPRs have been formulated and appraised on agricultural green design interdisciplinary arts and structure of products and services.

The course is recognized by All India Council for Technical Education (AICTE), University Grants Commission (UGC) and Distance Education Council (DEC) as per reference <http://www.debm.ediindia.ac.in>; reference agency code number 80410.

<https://www.ediindia.org/>, Website address date is 17 th January 2021

To address the need of developing new and committed agricultural entrepreneurs on a large scale, there is a need of an innovative agricultural technical extension programme through distance learning and personal counseling in Ethiopian Agricultural Extension System (EAES). A dynamic and pragmatic approach is introduced to create agricultural entrepreneurs on a large scale and to strengthen agricultural extension in Ethiopia.

RATIONALE AND BACKGROUND

Education coupled with entrepreneurship is an intricate sustainable educational process towards sustainable development that can be focused on sustainable rural development and poverty eradication in Ethiopia from the emerging enterprise spirit. The poverty is a result of inefficient use of resources. If it aids for sustenance, then that can be eradicated. About 88% of sustainable economic growth is created by sustainable innovation (Vijayan Gurumurthy Iyer, 2021). To achieve this degree of excellence, resources must be utilized at optimum and sustainable levels to maximize efficiency as per the results analysis of optimum competitive and social markets. The referred "A.K" economic model for an optimum output level of economic growth is the product of engineering or technical factor level (A) and the capital (K). The solution is the creation of new sustainable agricultural enterprises sustainable innovation (Vijayan Gurumurthy Iyer, 2021). The entrepreneurial idea generation is based on the concept of entrepreneurship and innovation management. The economic growth development of Ethiopia is explained by three factors which are given below: -

1. The natural increase in the accumulation of labor potential,

2. Capital accumulation or money with which a business is being started and run, and
3. Technological momentum can be referred as total factor productivity (TFP) or efficiency in industrial processes.

The fundamental sustainable entrepreneurial momentum keeps the capital development dynamic which comes from the new agricultural enterprise creation process, new agricultural products or service requirement from customers, the new methods of production and processes, new transportation, and new agricultural markets and new forms of industrial organization.

Standard Production Function (SPF) equation is expressed as

$$Y = f(C, L)$$

Where Y=Output, C=Capital, and L=Labor

As knowledge and skill are important factor for the sustainable economic growth, that are created by sustainable innovations

Standard Production Function (SPF) equation is modified as

$$Y = A(C, L) f(C, L)$$

A' represents Knowledge on engineering or technical extension Y= Output

C= Capital L= Labor

f = Standard production function

Standard Process Function is expressed as

$$Y = f(X_1, X_2, X_3 \dots X_n)$$

Where

Y = Output

X_1 = Input element 1

X_2 = Input element 2

X_3 = Input element 3

X_n = Input element 'n'

(Product and process hybrid approach equation)

As per the given standard production and process function, knowledge and skill transfers are decisive production variation, optimum innovation level is required in engineering or technical extension system. The solution is the application of low-carbon and energy-efficient agricultural green product designs and structures.

MATERIALS AND METHODS

One year DEBM course is offered by EDI and sponsored by Friedrich-Naumann-Stiftung (FNSt)-A foundation of International repute from Germany. Professional expert counselor has conducted DEBM course independently to sixty-one extension learners during the research year (RY) 2007-2021 in eleven batches as per EDI guidelines as per given below web site address:

<http://debm.ediindia.ac.in/counsellors/studentrecord/candidates.jsp>, Website address date is 17 th January 2021

EDI has provided guidelines to conduct the course as per the website reference <http://www.debm.ediindia.ac.in>. Website address date is 17 th January 2021

SE was the targeted research area. The methodology of the DEBM course includes, self-instructional study material, assignment, personal counseling through professional expert counselors and contact sessions during the course. The award of the diploma is based on assessment of the assignments, detailed project reports (DPRs) submitted by the learners and performance in the final (TEE) examination. Sixty one green product design projects were submitted by DEBM learners under the research guidance of expert counselor during the given RY. List of sixty-one extension learners and their academic records were uploaded in web site address as given below:

<http://debm.ediindia.ac.in/counsellors/studentrecord/candidates.jsp?Action=Default&OFFSET=40>, Website address date is 17 th January 2021

http://www.ediindia.org/doc/List_of_Institutions_for_website_latest.pdf serial number 68. Website: www.ediindia.org & <http://debmcourse.blogspot.in/>, Website address date is 17 th January 2021

Figure 5 represents important elements of entrepreneurship and innovation management for

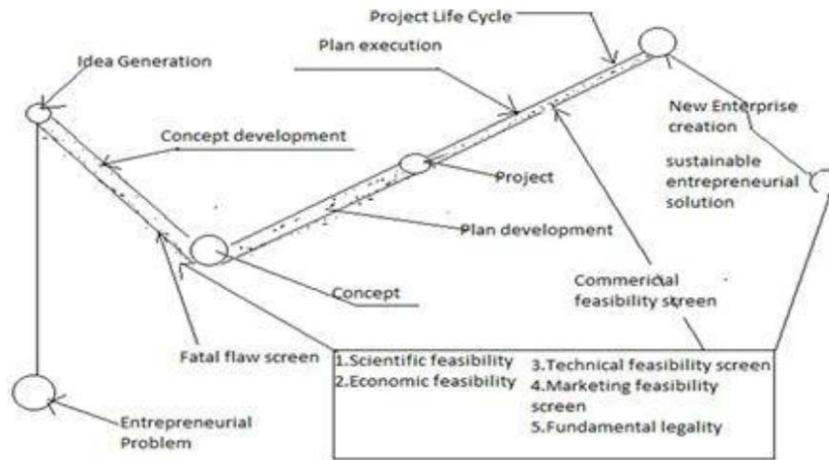


Figure 5: Schematic representation of entrepreneurship and innovation management for sustainable and innovation management for sustainable enterprise creation process.

setting up of sustainable enterprises through sustainable enterprise creation process.

All DEBM projects were screened for the seven fatal flaws, namely, (i) Scientific feasibility, (ii) Economic feasibility, (iii) Technical feasibility, (iv) Marketing feasibility, (v) Environmental feasibility, (vi) Sustainability feasibility study, and (vii) Fundamental legality. All projects have been scrutinized for the fatal flaws (Figure 5). The sustainable entrepreneur or a trusted member of an entrepreneurial team should need skills in ethics, accounting, law, finance, team creation and marketing aspects in order to avoid failures in the process. The sustainable entrepreneur has thorough knowledge on environmental management system (EMS) in order to skillfully bring about and manage resources efficiently to do a dedicated sustainable entrepreneurial process. EMS is a system of a continual cycle involving various processes as planning, implementing, reviewing and improving the activities for the enterprises to comply technical, economic, environmental and social obligations. EMS ensures that agricultural organizations identify and focus on improving areas where they have significant environmental and social impacts. Sustainable entrepreneurs follow the principle of process approach as depicted in Figure 6. Sustainable agricultural technical extension system functions & processes on the principle of process approach which is an activity based management system as outlined in Figure 6. Monitoring, measurement and control including evaluation opportunities in extension system through process approach have been identified during the RY. Coronavirus and Byssinosis Disease Impact Assessment (CIA) is investigated and discussed.

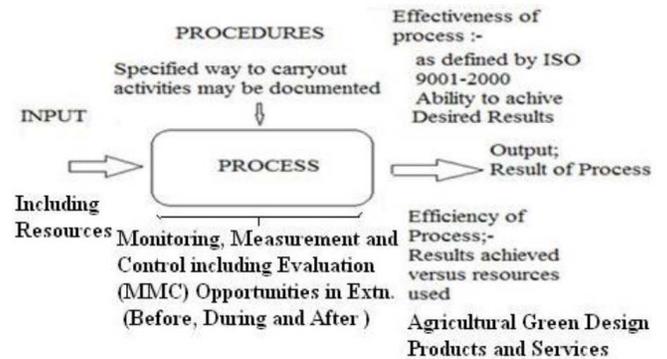


Figure 6: Schematic representation of sustainable entrepreneurial process employed in agricultural technical extension system.

In order to make the venture a dynamic and growing sustainable enterprise, the entrepreneurs have to skillfully bring about and manage resources efficiently to do dedicated sustainable entrepreneurial process. A process approach has been developed in order to bring labor, capital, technology, management, market, machineries, land and information together in new ways and to establish a new mechanism for sustainable rural development and eradicating poverty by providing scientific and technical services in agriculture. This approach enhances innovation in agricultural science and technology, improvement in the agricultural technological extension system and advance agricultural mechanization and agricultural extension education. A methodology on eco-friendly rubberized cotton fabric roller development for cotton roller gins has been elaborated [12].

All projects have been scrutinized for the fatal flaws (Figures 5 and 7). Case study of a DPR-I is discussed on unsafe chromium from Ethiopian cotton roller ginneries and development of green design and

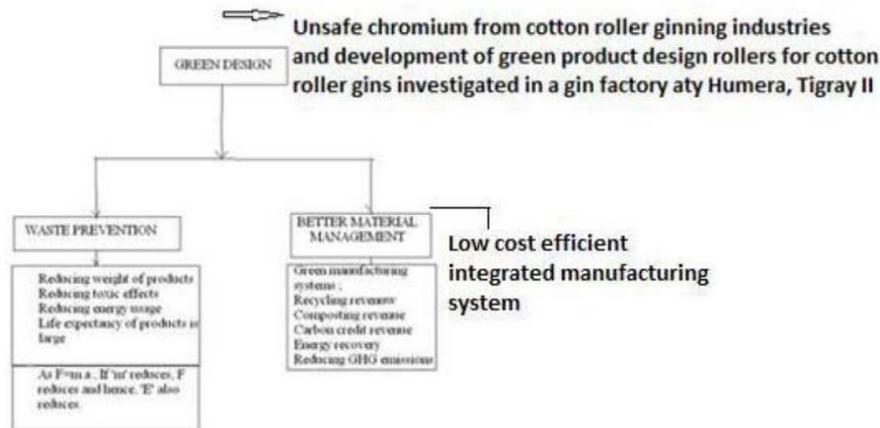


Figure 7: Case study of DPR-I: Sustainable agricultural production and quality.

interdisciplinary arts cotton textile environment roller gin rollers for cotton gins duly investigated virtually in a ginning factory at Humera, Tigray II. The study realizes the hazards of chromium contamination and pollution caused in the use of chrome composite leather-clad (CCLC) rollers commonly used in Ethiopian cotton roller ginning industries and attempts to eliminate the chromium contamination and pollution during the complete process. The cotton roller ginning process is the mechanical separation of cotton fibres from their seeds by means of one or more rollers to which fibres adhere while the seeds are impeded and struck off or pulled loose (Gillum, 1974). Most of the cotton ginning operations are done using roller gins. The CCLC roller coverings contain about 18 000 to 30 000 mg/kg (ppm) as total chromium of trivalent and hexavalent forms which are toxic to human health [12]. When the seed-cotton is ginned, due to the persistent rubbing of CCLC rollers over the fixed knives, the cotton and its products get contaminated with the total chromium of trivalent and hexavalent forms. Hexavalent chromium leaks threat to cotton mill workers and to those who wear cotton garments [13]. Cotton garments get contaminated and polluted with toxic hexavalent chromium [14]. Consumers of cotton garments and ginning mill workers are exposed to chromium pollution and are susceptible to health hazards. Toxic effects are produced by prolonged contact with airborne or solid or liquid chromium compounds even in small quantities. There are many chromium based diseases that come out of the case industries 3.0. [15]. Coronavirus diseases (COVID-2019) and byssinosis diseases are investigated in cotton double roller ginning industries.

To avert the problems in cotton ginning factories, an eco-friendly rubberized cotton fabric roller has been designed and developed. This green design and interdisciplinary arts cotton textile environment product

has been successfully demonstrated for its performance (Figure 8). The objectives of DPR-I were (1) to identify and study the environmental and health related problems existing with the present CCLC rollers employed in cotton roller ginning industries including the investigations of coronavirus diseases (COVID-19) and byssinosis synergistic diseases among occupationally exposed Indian gin and mill workers, and 2) to virtual design and interdisciplinary arts and develop green design cotton roller gin rollers for Ethiopian and Indian cotton roller gins in Seed-Cotton Roller Ginning factories and to evaluate its performance with a particular reference to technical, economical, and environmental and social aspects in cotton ginning industries as per author's sustainable design and art cotton textile environment as per given below plate[17].



Figure 8: Gin rollers of double roller gin are made of rubberized cotton fabric roller covering material; green design-cast study-DPR-I.

RESULTS AND DISCUSSIONS

Sustainable entrepreneurial process is a set of interacting and inter-relating entrepreneurship activities in

an organized manner. Sixty-One virtual projects were formulated and appraised. The study material of the DEBM course and help provided by EDI counselors enable the extension learners to set up their own agricultural businesses. The course enables the learners to assess their entrepreneurial competencies and understand weakness and strength to start business. Overall the extension course equips learner to function and process dynamically and acquire the requisite knowledge and skill to plan and successfully launch their own agricultural ventures. The result analysis of all projects have been uploaded in website references.

<http://www.debm.ediindia.ac.in/counsellors/studentrecord/candidates.jsp>, and counsellor code number (User ID) 80410, Website address date is 17 th January 2021

The success of a good entrepreneur is determined by a sustainable business plan development. It is an important document that provides critical aspects, basic assumptions, and financial projections regarding the business venture. It is the basic document used to interest and attract financial support. All entrepreneurial business planning assessment regimes (EBPARs) have been published [18]. A sustainable entrepreneurial agricultural venture includes four key ingredients as per process hybrid model A talented lead sustainable entrepreneur with a balanced and compatible team.

1. A technically and environmentally sound and marketable idea for a green product or service.
2. A thorough venture analysis leading to a complete sustainable business plan.
3. A clear statement of the cash required, phased over the period until the venture becomes cash flow positive and an indication of the minimum equity component.

DEBM extension learners were focused to work on agricultural green design and interdisciplinary arts products and services oriented towards low-carbon and energy-efficient agricultural technologies during the RY. Sustainable enterprises reduce environmental impacts associated with the manufacture, use and disposal of products. The output of green products and services that are sustainable production, environmental advantages with good performance and price [19,20].

A case study of a DPR on unsafe chromium from Ethiopian cotton roller ginning industries and

development of green interdisciplinary arts and as per Masters [19,20] green design eco-friendly rollers for cotton double roller gins are investigated in a cotton ginning factory at Humera, Tigray II, a pilot plant is demonstrated. Such low-carbon and energy-efficient agricultural technologies of agricultural hi-tech industries can make important contributions to mitigate the impacts of economic growth on global warming (Vijayan Gurusurthy Iyer, 2014). SE provides innovation to improve agricultural science and technology extension system and sustainable agricultural mechanization for mitigation of rural poverty in Ethiopia [21]. Coronavirus and Byssinosis Disease Impact Assessment (CIA) is investigated and discussed. All DEBM extension learners were equipped with the knowledge, skills and motivation to set up their sustainable enterprises and function dynamically and manage successfully. The DEBM programme promotes the application of multidisciplinary technologies to agricultural industries and sustainable agricultural production with education and research.

All DPRs can be accessed from the reference website, <http://www.debm.ediindia.ac.in>. DPRs may also be obtained from EDI or counselor [22].

Website address date is 17 th January 2021

As per the characteristics and assessment of DEBM extension learners, handbook cum guidelines have been prepared with respect to entrepreneurial requirements to become a sustainable agricultural entrepreneur and to set up sustainable enterprise. All seventeen steps are not discussed however step number 6 is focused which has been considered important step on sustainable entrepreneurship.

Step- 1: Decision to be self-employed to become an agricultural entrepreneur and to set up an enterprise.

Step- 2: Product and Innovative Process selection including marketing feasibility. Step -3 : Deciding on size of the unit

Step- 4: Location of the unit

Step- 5: Technical and financial feasibility of the unit

Step- 6: Environmental and Social feasibility of the unit.

Step- 7: Awareness on statutory requirements including fundamental legality. Step -8: Infrastructures for the unit

Step- 9: Working out project cost

Step- 10: Provisional micro, small and medium scale industry (SSI/MSME) registration Step- 11: Bio-data of the agricultural entrepreneur

Step- 12: Preparation of sustainable business plan

Step- 13: Project implementation schedule (PIS)

Step- 14: Project report preparation –Bankable project report (Preliminary project report and detailed project report)

Step- 15: Financial assistance for setting up an agricultural enterprise.

Step-16: Cotton Textile Environment and Sustainability Reports' assessment and evaluation.

Step- 17: Sustainability health impact assessment of the legislative action

Step 6: Environmental and Social Feasibility Including Sustainability of the Project

A project may be technically and economically feasible but can be implemented only if environmentally and socially feasible. Environmental impact assessment (EIA) can be defined as the systematic identification and evaluation of the potential projects, plans, programs, or legislative actions relative to the physical-chemical, biological, cultural, and socio-economical components of the total environment [23]. The purpose of the EIA process is to encourage the consideration of the environment and sustainability in planning and decision making and to ultimately arrive at actions which are more environmentally and sustainably compatible [24]. It is important to conduct social impact assessment (SIA) and sustainability health impact assessment to avert Corona virus biochemical epidemic and pandemic disasters separately for the projects for example COVID-19.

This action-based research study on sustainable entrepreneurship promotes policy recommendation to strengthen agricultural extension in Ethiopia and India based on the study conducted in India [25].

CONCLUSIONS

Agricultural entrepreneurs can be developed through well-conceived and well directed training programmes around thrust areas, thus advancing the frontiers of theories and practice sustainable

entrepreneurship. This action-based research and extension field study can give avenue for national development specifically to Ethiopian agricultural extension system. SE challenges and prospects that fosters long-term protection of the environment and its habitants as the technological developments are guided by efficiency, productivity, profitability, health and environmental impacts, resource and energy conservation, waste management, and social impacts such as public convenience, unemployment and crime. The development of new knowledge is an important factor for the economic growth of Ethiopia. The standard production function has indicated that knowledge is a decisive production variation. About 88% of economic growth is created by innovation. The agricultural project planning and decision making should include the integrated consideration of technical, economic, environmental, social, and other factors. The most important of these considerations can be referred to as "The four *Es*" (engineering or technical, economics, environment and ethics) in planning and decision making process. A project may be technically and economically feasible but can be implemented only if environmentally and socially feasible as per Coronavirus and Byssinosis Disease Impact Assessment (CIA) which is investigated and discussed. A process approach has been developed in order to bring labor, capital, technology, management, market, machineries, land and information together in new ways and to establish a new mechanism for sustainable rural development and eradicating poverty by providing scientific and technical services in agriculture. Monitoring, measurement and control including evaluation opportunities in extension system through process approach have been identified during the RY.

The objective of the DEBM extension course is "New Sustainable Enterprise Creation and Management". DEBM course develops motivation to extension learners and reinforces agricultural entrepreneurial traits with the spirit of setting up sustainable agricultural enterprises. Sixty-One green design and interdisciplinary arts projects proposed by DEBM extension learners attached with the counselor during RY 2007-2021 have been formulated and appraised.

<http://debm.ediindia.ac.in/counsellors/studentrecord/candidates.jsp?Action=Default&OFFSET=20>, Website address date is 17 th January 2021

Projects were screened for seven fatal flaws, viz., (i) Scientific feasibility, (ii) Economic feasibility, (iii)

Technical feasibility, (iv) Marketing feasibility, (v) Environmental feasibility, (vi) Sustainability feasibility, and (vii) Fundamental legality. EBPAs have been evaluated. The learners have set up their own sustainable enterprises based on sustainable creation process under the research guidance of expert counselor. Sustainable agricultural enterprises were set to focus on green design and interdisciplinary arts products and services that reduce environmental impacts associated with the manufacture, use and disposal of products. The results are environmental advantages with sustainable production, good performance and price. The extension learners have been duly awarded Diploma by EDI.

Education coupled with entrepreneurship is an intricate sustainable educational process towards sustainable development that can be focused on sustainable rural development and poverty eradication in Ethiopia from the emerging enterprise spirit. Agricultural cleaner technologies can produce more output than conventional technologies by causing less damage to the environment. Agricultural greener technologies as those that are less polluting, use resources in a sustainable manner, recycle more of their wastes and products and handle all residues in a more environmental acceptable way. Pilot plant of a DPR-I on unsafe chromium from Ethiopian cotton roller ginneries and development of green design and interdisciplinary arts roller gin rollers for cotton gins virtually investigated in a ginning factory at Humera, Tigray II. This green design and art product has been successfully demonstrated for its performance.

DEBM study material and help provided by the counselor enable the learners to set up their own agricultural enterprises. DEBM course assures the learners to assess their entrepreneurial competencies and understand weakness and strength to start business. The study can promote policy recommendation to strengthen agricultural extension in Ethiopia based on the entrepreneurial research conducted in India. The programme promotes the application of multidisciplinary technologies to agricultural industries and sustainable agricultural production with education and research. It is recommended that such kind of entrepreneurial service system with financial support is essential for sustainable development. As recommended in this paper, it is imperative that such a dynamic and pragmatic approach be implemented to create agricultural entrepreneurs on a large scale in Ethiopia.

For further reading http://www.ediindia.org/doc/List of Institutions for website_latest.pdf serial number 68.

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ACKNOWLEDGEMENTS

The author expresses his gratitude to Organizing Committee Secretary Mr. Elias Zerfu (Dr.) of Ethiopian Society of Rural Development and Agricultural Extension (ESRDAE) who has reviewed paper and review comments for giving an opportunity to participate in 1 st Professional Conference of the ESRDAE for the theme entitled “ Strengthening of Agricultural Extension and Advisory Services for Improved of Livelihood Smallholders” held at Ethiopian Institute of Agricultural Research (EIAR) Hiruy Hall during 6-7 November 2014 in Addis Ababa, Ethiopia including presentation FDRG on 6 th November 2014 and publication of the paper in Ethiopian publication. The author is thankful to the organizers of 35 th Indian Engineering Congress namely The Institution of Engineers (India) for the acceptance of the manuscript for possible presentation in webinar technical session 3 held on 18 th December 2020 during IST 14.30-16.00 in Session T3R6 Interdisciplinary Engineering Room number 6 in virtual mode during celebrating Centenary Year in 2020. The author further thank to the editor-in-chief of Journal of Emerging Trends in Engineering and Applied Sciences (JETEAS) (ISSN: 2141-7016 E, Scholarlink Research Institute, Manchester, United Kingdom for publication in JETEAS. <http://jeteas.scholarlinkresearch.com/>

Thanks to the sponsorship of web link pertain to this paper entitled “ <http://debm.ediindia.ac.in/counsellors/index.jsp> website sponsorship “.

Website address date is 17 th January 2021

I thank the honorary chief editor of the World Journal of Textile Engineering and Technology for

Sustainable motivation of the manuscript.

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Received on 02-01-2021

Accepted on 27-01-2021

Published on 03-02-2021

DOI: <https://doi.org/10.31437/2415-5489.2021.07.1>

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