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The Effect of Wearable and Tearable Climate and Weather on Wearable Technology

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Abstract: This article discusses the effect of wearable tearable climate and weather on wearable technology. Climate change refers to long-term shifts in temperature and weather patterns, mainly caused by human activities, especially the burning of fossil fuels and unsustainable infrastructural development. SEA (strategic environmental assessment) process can be broadly defined as a study of the impacts of a proposed project, plan, project, policy, or legislative action on the environment and sustainability. The significance of the work entitled "Sustainable Wearable Climate and Weather Management" is mainly confirmatory as it solves environmental and social problems. In this research, the SEA process has been aimed to incorporate environmental and sustainability factors into wearable climate and weather management includes climate change and control as an example like production and manufacturing process project planning and decision-making processes such as project formulation and appraisal of wearable climate and weather projects like wear and tear of dust-producing grinding chrome composite leather clad rollers and washers commonly used in seed-cotton Indian roller ginning machines, wastewater treatment process, rotating biological contactors, trickling filter bed, biomedical parts, marine biopolymers, Indo-Matsushita midget electrode (battery carbon rod) plant in 1979 at Tada, sustainable bridge, road, and sanitation structure, green building, nuclear power plant, cotton roller ginning plant and concrete that included policies, programs, plans, and legislative actions. Sustainable materials for manufacturing process development is a kind of development that meets the needs of the present without compromising the ability and efficacy of future generations to meet their own needs. EIA (environmental impact assessment) process can be defined as the systematic study of the potential impacts (effects) of proposed projects, plans, programs, policies, or legislative actions relative to the physical-chemical, biological, bio-medical, cultural, and socioeconomic components of the total environmental product life cycle. The primary purpose of the EIA process is to encourage the consideration of the environment in the Organizational wearable and tearable climate and weather management project planning and decision-making process and to arrive at environmentally compatible actions. The sustainable wearable climate and weather management process should include the integrated consideration of technical or engineering, economic, environmental, safety, and health, social, and sustainability factors to achieve business excellence as per post COVID-19 World Scenario. Before the NEPA (National Environmental Policy Act) process in 1970 in the USA, technical and economic factors dominance the world's manufacturing process projects. The objective of the study is to conceptualize a training course module incorporating the SEA process for the Sustainable Environmental Wearable and Tearable Climate Change and Weather Control for the officers of BIPARD (Bihar Institute Public Administration and Rural Development), Patna, and Gaya, Bihar, India, during the RY (research year) 2023-2024. The design of the study is cross-sectional. The limitation or recommendation of the study and check is to apply SEA process for sustainable environmental climate change and control towards sustainable development.

Key words: Climate, change, environment, health, impact, tearable, weather, wearable.

1. Introduction and Summary Preamble

The entitled "Climate Change" means the change in general weather conditions in an area over a long period of time or change in weather trend or change in general

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attitude of weather conditions such as temperature, humidity, dew point, pressure, volume, wind rise, LAW (water, air, land) movement, photo chemical and biochemical smog, and sunlight energy (photo energy).

The following project formulation and appraisal statements elucidate on wearable and tearable technologies:

(1) The project formulation and appraisal of wearable and tearable climate and weather projects like wear and tear of dust-producing grinding chrome composite leather clad rollers and washers commonly used in seed-cotton Indian roller ginning machines that contaminate and pollute lint cotton in Indian double roller ginning factories [1].

This article focuses on wearable and technology.

(2) To create awareness on environment, pollution, contamination, protection, prevention, control, and abatement of environmental pollution.

(3) To train about the environmental quality through ecological principles and total quality management principles.

(4) To create awareness on integration of environment and development.

(5) To create awareness about stabilization of GHG (greenhouse gas) concentrations "at a level that would prevent dangerous anthropogenic (human induced) interference with the climatesystem."

(6) To create awareness on various "emissions resulting from human activities are substantially increasing the atmospheric concentrations of greenhouse gases."

(7) To elucidate power point presentations on how to prevent dangerous manufacture interference with the global climate system based on profound knowledge system and case studies.

(8) To train about the protection and improvement of the human health (agricultural safety and health) and biosphere anthropological environment unsafe chromium contamination and pollution from Indian double roller ginning factories commonly use chrome composite leather-clad rollers that chromium adsorbed in lint cotton beyond permissible poison limits, -Log10 (LD_{50}) in standardized in kg per kg body weight [1].

(9) To elucidate importance of sustainable plans and policy decisions that relate to the protection and improvement.

(10) To train various aspect integration of environment and development for sustainabledevelopment.

(11) To train about environmental protection laws, policies and impact assessment laws.

2. Materials and Methods

"Environment" includes water, air and land and the interaction and interrelationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organisms and property. Environment means the surroundings in which a person, animal, or plant lives.

"Environmental pollutant" means any solid, liquid or gaseous substance present in such quantity and concentration as may be, or tend to be injurious to environment.

"Environmental pollution" means the presence in the environment of any environmental pollutant. Water pollution problems, air pollution problems and soil pollution problems in many parts of our country are far worse.

"Hazardous substance" means any substance or toxic substance preparation because of its quantity, concentration, or physical, chemical, physico-chemical or infectious characteristics that may cause, or significantly contribute to an increase in mortality; or cause an increase in serious irreversible, or incapacitating reversible, illness; or pose a substantial present or potential hazard to human health and the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. Examples are: photochemical smog that occurred in Los Angeles in 1944; photochemical smog that occurred in Delhi in November, 2016; November 7, 2017, photo chemical and biochemical smog concentration is approximately 710 $\mu g/m^3$ [1].

Climate sensitivity factor, α,

α, varying for rural, urban and industrial environments.

The inverse of the climate feedback parameter, λ, is the

estimated climate sensitivity parameter 0.4-0.7 ℃/W/m^2 and the energy imbalance of global warming or net radiating forcing is 0.9-1.98 W/m^2 (Fig. 1) that proportionate to genetic (agricultural and rural environment), source specific (municipal corporation and urban environment, specific industrial environment (industry).

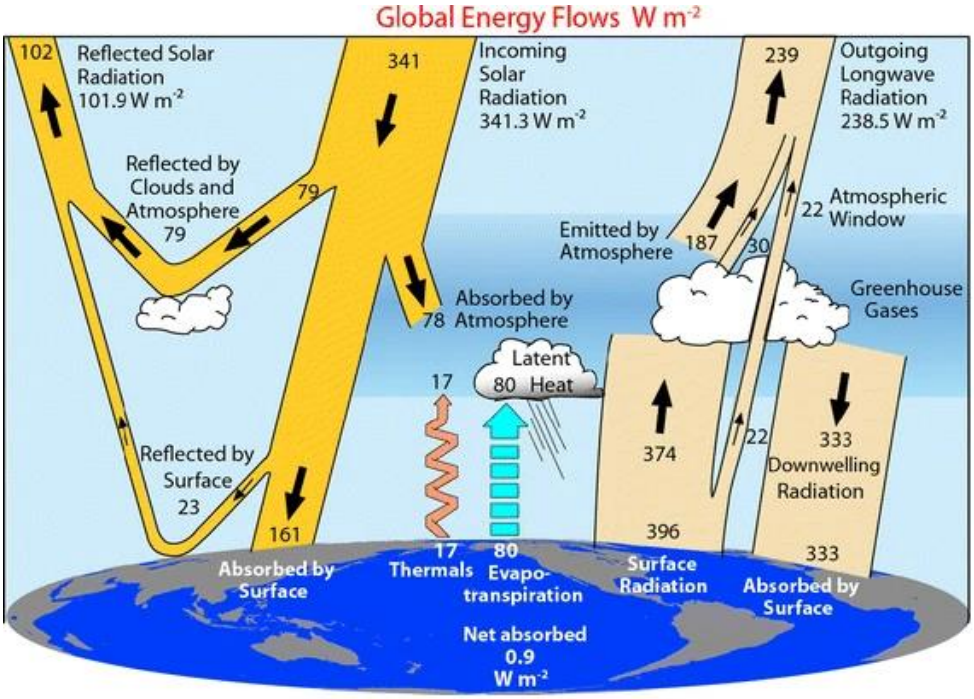


Fig. 1 Global energy flow (GEF) process, in W/m^2.

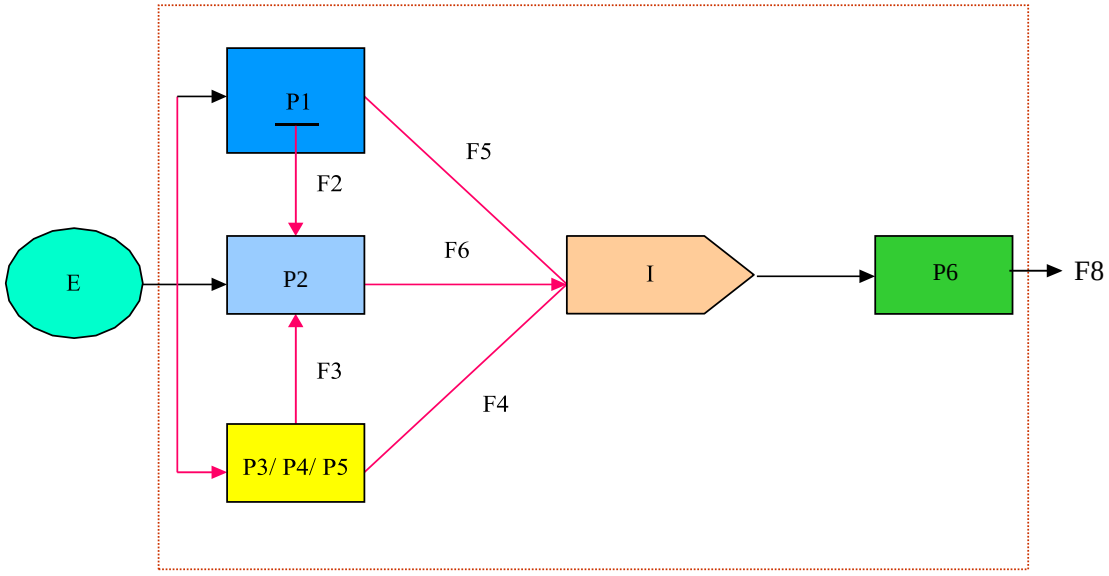


Fig. 2 Climate change systems optimization and modelling diagram for assessment of environmental climate effects of photochemical and biological smog poisoning, ozone concentration of pollution, poison number in environment is 100-150 ppm. Poison number = -Log$_{10}$ (LD50) in standardized in kg per kg body weight.

P1: SPM, RSPM, PM10, PM2.5; P2: carbon monoxide; P3: nitrogen oxide; P4: sulphur dioide; P5: hydrocarbons; P6: photochemical and biological smog; I: synergistic (augmentative) effect, ozone. P1, P2, P3, P4, P5, P6…Pn: are properties state variables.

E: forcing function sunlight (photo energy) temperature, humidity and air movement.

F1, F2, F3, F4, F5, F6, F7, F8, Fn: are forcing functions which are outside mass & energy forces/sources or casual forces that drive the systems.

Interactions and Interrelations I: where forces and properties interact to modify, amplify or control flows.

Entitled "Climate Change" means the change in general weather conditions in an area over a long period of time or change in weather trend or change in general attitude of weather conditions such as temperature, humidity, dew point, pressure, volume, wind rise, LAW (water, air, land) movement, photo chemical and biochemical smog, sunlight energy (photo energy) as shown in above Fig. 2.

Alternative definition of entitled "Climate Change" can be explained as long-term shifts in temperature and weather patterns, mainly caused by human activities, especially the burning of fossil fuels and unsustainable infrastructural development [3].

GHG contributes the greenhouse effect that is the tendency of atmospheric temperature to rise because GHGs absorb infrared radiation from the earth. Chlorofluorocarbons, hydrochlorofluorocarbons are aerosol propellants widely used as refrigerants and trichloro trifluoro ethylene industrial solvents that damage the ozone (a strong smelling poisonous form of oxygen) layer in the earth's stratosphere that contains much for absorbing ultraviolet radiation. There are many such sources of the GHGs and particulate matter pollutes our atmosphere that the greenhouse effect adds temperature magnitude 34 ℃ of warming to the surface of earth. Mathematically, $F_N = F_B + F_D$.

It is very wide ranging on the protection of the environment including protection of air quality, archaeological heritage, historical heritage, architectural heritage, rainforest protection, and water quality in rivers, lakes, and seas and land quality.

The human population growth rates are increasing exponentially. The "greenhouse effect" is one of the environmental problems that results either directly or indirectly from the activities of man. The role of the human population on environmental change is given in the simple equation, $I = P \times A \times T \times SE$

The sustainable impact "*I*" of the population on the environment results from the size of the population (*P*), the per capita affluence or consumption (*A*) and the damage caused by technologies employed to supply each unit of sustainable consumption and *(SE)* Sustainability and Environment. The considerable proportion of the environmental degradation results from uncontrolled urbanization and industrialization for example use of commercial energy, from clearing tropical forests for agriculture to mining, extraction of fossil fuels and road infrastructures.

Sustainable production function and process,

$$y = f \times P(X_1, X_2, X_3, X_4, \ldots X_n)$$

where,

f = functional management products and services

P = process management products and services.

X_1 = Man Power

X_2 = Machineries

X_3 = Raw Materials

X_4 = Methods for production function

X_5 = Money Power (Affluence)

X_6 = Global, National, Local Markets

Unsustainable production function,

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

f =Functional Management

C = Capital Products services

L= Labor products and services

Many resources are being depleted with little recycling and composting, and waste products and services being returned to the environment in a different form and at quantity concentrations that are toxic and damageable. Land use changes are taking place rapidly. About 70% of the global land area is taken up by growing crops, grazing livestock or being utilized for extraction of mineral resources and setting up of industrial and generic estates. The remaining part of the global land area is either desert or covered with ice or is too steep for use. Forests, grasslands and wetlands are disappearing rapidly and deserts are expanding due to soil erosion and a decline in underground water deposits and lowering of water tables. The impacts (effects) of this level of stress and strain on the environment are evident in the form of climate change and the degradation in the quality of the environment from global warming, ozone layer

depletion, ocean acidification, ice melting, natural and man-made disasters and sea level rise at the global scale to river water pollution, food poisoning and urban air pollution photochemical smog at a local scale. The climate change (specifically patterns of temperature, wind rise and rainfall) occurs too rapidly for human societies, industrial and agricultural systems to adjust successfully. Our technological or engineering capabilities and demands for natural and man-made resources have grown rapidly since industrial revolution and outstripped our understanding of the impacts (effects) of changes on the environment and development. The integration of environment and development has been focused in this write-up that aims a number of environmental issues such as climate change, biodiversity, tropical forests and sustainable development [4].

3. Results and Discussions

The results and discussions overview wearable and tearable climate and weather. SEA (strategic environmental assessment) process can be broadly defined as a study and check of the potential impacts (effects) of a proposed project, program, plan, policy or legislative action on the environment and sustainability. SEA process is designed and developed to identify and predict the potential impacts of the physical, chemical, biological, ecological, radio-active, socio-economic, cultural environment and on human health. SEA considers safe design of wearable and tearable systems as their well-being are adequately protected. SD (sustainable development) can be defined as the development which meets the needs of the present without compromising the ability and efficiency of future generations to meet their own needs. The wearable climate and weather including environmental health impact assessment and social impact assessment are fundamental modules of SEA process. Significance of this research work is mainly confirmatory. SEA process is proposed for achieving sustainable environmental climate change control, ecology, and conservation that aims to incorporate environment and sustainability considerations into organizational planning and decision-making processes, and to formulate sustainable projects, policies, plans, programs, and legislative actions. EIA (environmental impact assessment) can be defined as the systematic identification and evaluation of the potential impacts (effects) of the proposed projects, plans, policies, programs, or legislative actions relative to the physical-chemical, biological, biochemical, toxicological, bio-physical, radioactive, cultural, architectural, archaeological, historical, anthropological, visual/aesthetic and socio-economic components of the total environment. The primary purpose of the EIA process is to encourage considerations of the environment, wearable climate, weather and sustainability in the organizational project planning and decision-making process and to arrive at actions that are more sustainable environmentally compatible and safe. Environmental pollution control and public healthprotection process should include the integrated considerations of technical or scientific/engineering, economic, environmental, social, and other factors. The most important of these considerations can be referred as “the three Es” (engineering or technical, economics,and environment) in climate change control, ecology and conservation planning, and decision-making process [5].

As the past five decades that have been characterized by the passage of legislation dealing with the environment including legislations of control of water, air, and land pollution, solid and hazardous waste management, RCR (resource conservation and recovery protection), and soil and groundwater remediation, it is necessary for Industry 4.0 impacts (effects include source-specific, specific industrial, and generic generation or decay period) protocol for SEA process for the sustainable environmental climate change control, ecology, and conservation towards sustainable development.

The wearable and tearable climate and weather that include environmental pollution prevention safe methods are given below.

The pollution should be *prevented or reduced* at the source in an environmentally safe manner whenever feasible;

(1) The pollution that cannot be prevented or reduced should be *recycled* in an environmentally safe manner whenever feasible;

(2) Pollution that cannot be prevented or reduced or recycled or composted should be *treated* in an environmentally safe manner whenever feasible; and

(3) Pollution that cannot be prevented or reduced or recycled or treated should be *disposed or released* into the environment in an environmentally safe manner and should be employed as a last resort.

The SEA treaty protocol pertains to official Government procedures that are helpful for making much earlier decisions than the EIA process. Therefore, it is a key tool for sustainable development [6]

The basic principles involved to integrate environment and development are environmental inventories, environmental impact assessments and environmental impact statements that shall be discussed in subsequent training modules with case studies. A typical case study is presented.

3.1 Vertical Organization Chart Example

The functional based organization is the event-based organization. Quantity values depend upon numbers and that are variables.

The function means work or operation to fulfil the purpose. Traditional organizations typically manage according to the functions in vertical organization chart given below.

In a vertical organization chart, a decision is made by the top management and descended down to employees through the hierarchy. Hierarchy system ranks people or things one above the other according to the status or importance. Employees are required to follow orders and guidance from their upper-level hierarchy in order to compete the tasks. The administrators manage the system well by simply administrating and managing the parts of organization in isolation. No interactions and interrelations of cross functional boundaries and their optimizations are understood by the employees in this system. Therefore, the managers cannot manage well by simply managing parts in isolation because the administrators do not understand psychologically the processes that cross functional boundaries align the processes towards a common vision or goal, and optimize their interactions and interrelations. In vertical organization charts, since the decision is made by the upper level and flows down to employees, collaboration can only occur on some formal occasions like a meeting. The communication in the vertical organization chart mainly occurred within departments or between sub-divisions members and managers. It can be slowed down by the rigid structures [6].

Fig. 3 below shows the vertical organization chart.

Example: Practice of awarding business on the basis of price tag alone (Product approach management).

A statement of the aims and purposes of the organization is created and published to all employees. The management must demonstrate constantly their commitment to this statement.

Employees can make a decision by themselves for daily operation and only have to ask for instructions when it comes to very important issues. In most cases, staffers are not driven by their managers' command, but instead the company's goal. In horizontal organization chart, employees have rights to make decision during the daily operation, therefore, collaboration tends to happen more organically due to cross functional boundary interactions and interrelations. Employees are more accessible to an acquaintance (a person know slightly, is aware of, knowledge or familiarity) in order to produce collaborative and teamwork solutions.

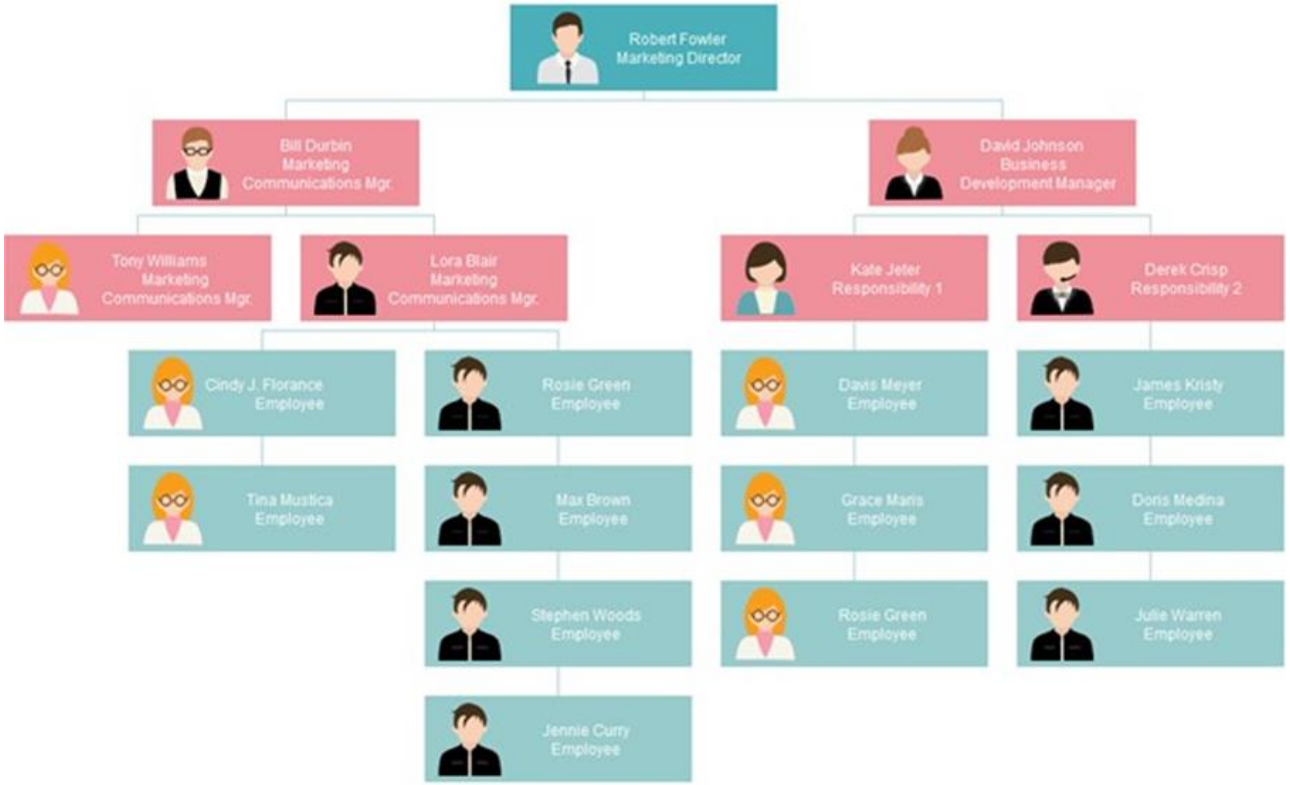


Fig. 3 MBO (management by objectives) as per organizational product-based chart for an ERPF (enterprise resource planning functional management).

The communication in the horizontal organization chart mainly occurred in cross functional boundary interaction and interrelation departments/interdivisional or between sub-divisions members and managers. It can be easier to flow down from one department to another.

The process managers manage well by managing parts in isolation because the administrators do understand psychologically the principles of processes that parts cross functional boundaries align the processes towards a common vision or goal, and optimize their interactions and interrelations [6].

3.2 Horizontal Organization Chart Example

- MBP (management by process);
- Ending the practice of awarding business on the basis of price tag alone;
- Understanding the system of profound (very great) knowledge;
- Elimination of MBO (management by objective).
- Continuously learning capabilities of processes and improving them.

Fig. 4 depicts the HOC (horizontal organization structure) chart or process flow chart or cross functional chart is an example [7].

The above vertical organization management chart and horizontal organization management chart are combined such that the organizational management chart is called hybrid organization management chart or matrix organizational chart. The organizational works functional like an isolated part (vertical organization function chart) and cross functional boundary to understand interrelations and interactions optimization and learn the capabilities of processes and how to improve processes to remove barriers that rob people of pride of workmanship. The environment in which chart is developed is like a matrix grid model, a grid-like array of elements vertical, horizontal and inclined elements [8].

Hybrid management organizational flow chart is depicted in Fig. 4.

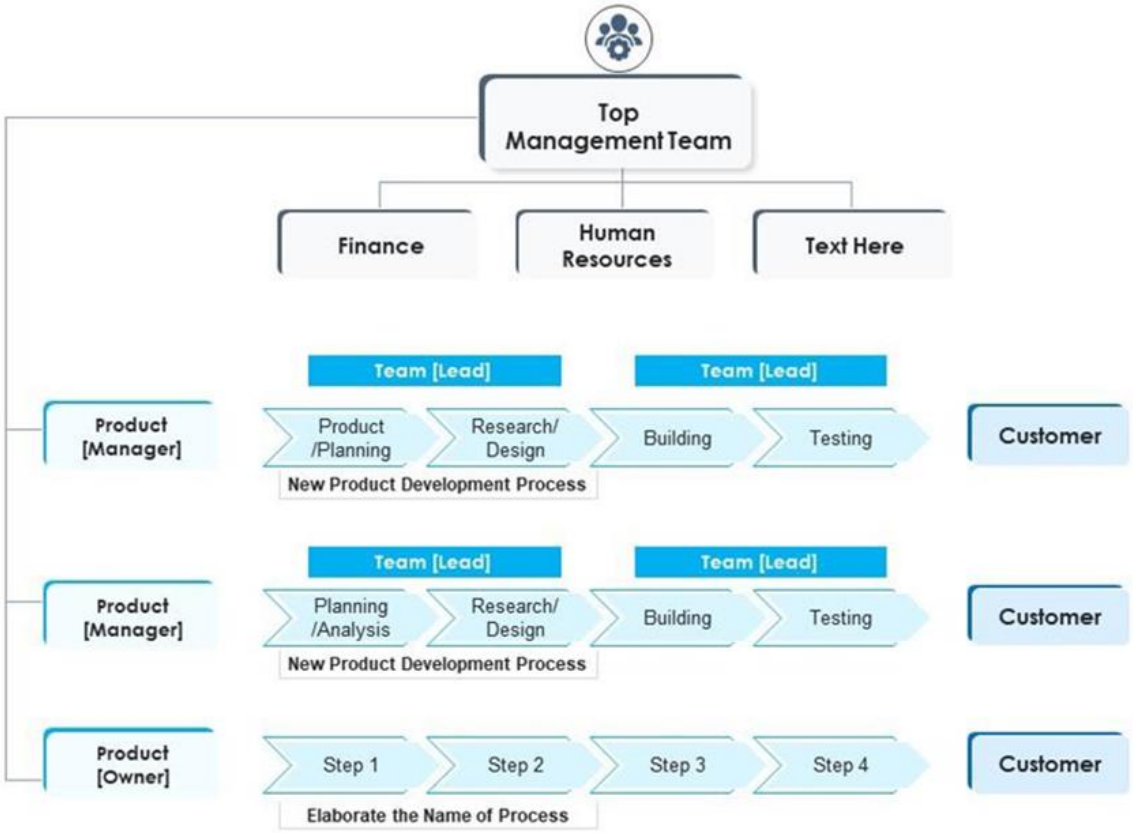
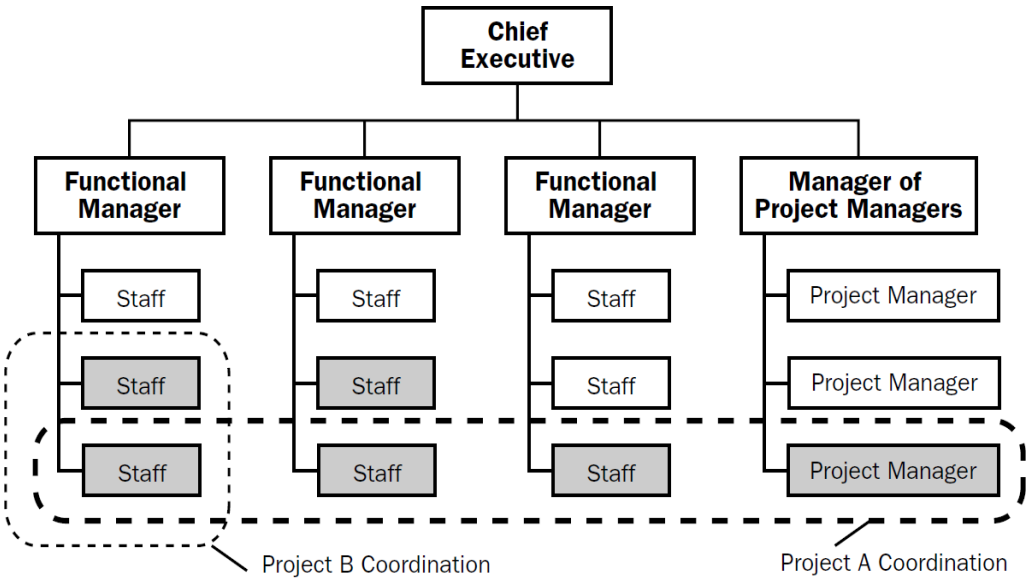


Fig. 4 Hybrid organization product and process-based chart as elaborated combined product-process approach .



(Gray boxes represent staff engaged in project activities)

Fig. 5 MBOP (management by objectives and processes).

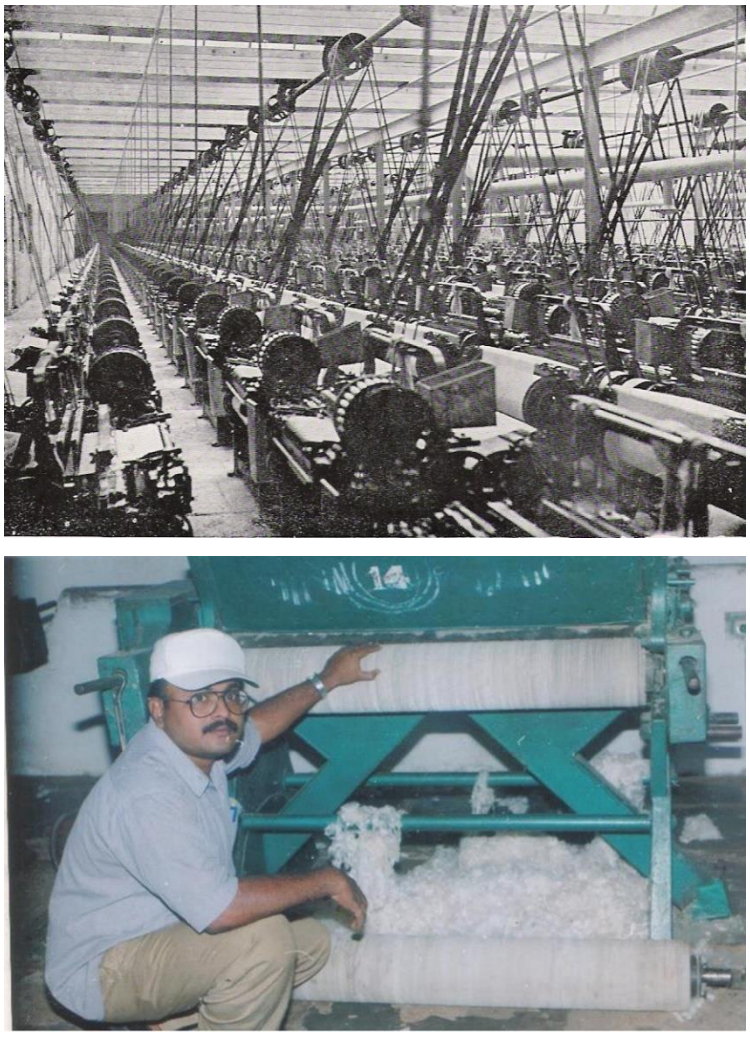


Fig. 6 Unsafe chromium composite leather clad rollers commonly in Indian double roller ginning factories.

4. Conclusions and Recommendations

The case study and check provides the effect of wearable climate and weather on wearable technology.

Further case study and check provides environmental pollution preventer mechanism/functional and cross functional management.

The wearable and tearable technology in Indian cotton roller ginning plant is an example cited for wearable climate and weather [8]. This case study discusses the contamination and pollution caused by wearable and tearable CCLC (chrome composite leather-clad) rollers commonly used in cotton roller ginning mills and suggests an alternative roller material. CCLC rollers contain about 18,000 to 36,000 mg/kg (ppm) total chromium in trivalent and hexavalent forms, which are toxic to human health and carcinogenic (Fig. 6) [9] .

When seed-cotton is processed in DR (double roller) ginning machines, the lint is contaminated with wearable and tearable chromium particles that are carried into the spun yarns and cotton by-products [9]. Specifically, due to persistent rubbing of the leather-clad roller over the stationary knife during the ginning process, the lint is contaminated with about 140 to 1,990 ppm of chromium, and the spun yarns and cotton by-products contain about 100 to 200 ppm, far in excess of the standard limit of 0.1 ppm. Gin and mill workers are directly exposed to this wearable and tearable carcinogenic substance. To offset this problem, pollution-free RCF (rubberized cotton fabric) rollers have been fabricated

Fig. 7 Finished roller is ready for grooving operation using a band saw for grooving chrome composite leather cladding rollers commonly used in Indian roller ginning factories.

and tested roller gins. The RCF roller covering is made of multiple layers of fabric bonded together using a white rubber compound, which has a surface finish conducive to high ginning efficiency. This eliminates chromium contamination and pollution during the ginning process. On the basis of the design and development of various test rollers and subsequent evaluation studies, the performance of pollution-free RCF rollers has been demonstrated with reference to their commercial benefit and eco-friendliness in cotton ginning mills. Since semi-finished chrome leather washers, which contain 3% to 4% chromium, are being used by roller ginning mills in India, Africa, Tanzania, China, and Egypt, attention has been drawn to the contaminating and polluting aspects of the process (Fig. 7). Fig. 7 represents wearable and tearable technology used in Indian Cotton Roller Ginning Factories that contaminate lint cotton.

This research is an attempt to eliminate the contamination of wearable and tearable cotton and its products, air pollution in cotton ginning mills, and other ginning problems at the source through the design and development of an eco-friendly, pollution-free chrome less roller. RCF rollers have been used successfully by U.S. gin machinery manufacturers for more than 30 years. Nevertheless, current roller gins manufactured by Indian and foreign companies commonly incorporate wearable and tearable CCLC materials (Fig. 7) [9].

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