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Sustainable Development for Community: Role of Home Science

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Abstract: Sustainable development is a comprehensive and multidimensional concept that brings together economic progress, social justice, and environmental sustainability. The United Nations 2023 Agenda for Sustainable Development outlines 17 Sustainable Development Goals (SDGs) designed to tackle pressing global concerns such as poverty, hunger, gender inequality, health challenges, and climate change. At its core, sustainable development focuses on fulfilling present needs while safeguarding the ability of future generations to meet their own requirements. Achieving sustainability at the community level demands integrated strategies that promote economic self-reliance, environmental conservation, improved health and education, and social inclusion. Home Science, as an interdisciplinary subject, integrates areas such as nutrition, human development, textiles and clothing, resource management, and extension and communication. It addresses various dimensions of individual, family, and community life. Home Science contributes significantly to sustainable development by equipping communities with essential knowledge, life skills, and practical competencies that enhance health, nutrition, family welfare, and overall quality of life—especially for women and marginalized populations. This paper explores how Home Science supports sustainable livelihoods, encourages responsible environmental practices, strengthens gender equity, and enhances health security within communities. Adopting a descriptive and analytical research approach grounded in secondary sources and case-based analysis, the study highlights the major areas through which Home Science supports the achievement of the Sustainable Development Goals (SDGs). By combining scientific understanding with local knowledge and community practices, Home Science serves as an effective driver of change at the grassroots level. In the contemporary context, Home Science is recognized as a comprehensive and versatile field of study that addresses individual needs and interests while building the skills and capacities required for effective homemaking in a rapidly changing society.

Key Words: Sustainable Development, Community Development, Home Science, SDGs, environmental Sustainability.

INTRODUCTION

The 2030 Agenda for Sustainable Development offers a comprehensive global framework designed to promote peace, shared prosperity, and environmental well-being for present as well as future generations. At its centre are 17 Sustainable Development Goals (SDGs), which represent a pressing call for collective action by all nations working together in partnership. The agenda acknowledges that eliminating poverty and other forms of deprivation is closely linked to strategies that enhance health and education, minimize inequality, stimulate economic advancement, address climate change, and safeguard natural ecosystems. Home Science Discipline plays the household at the core of sustainable societies, recognizing families as the foundational units of development. By addressing complex and interconnected human and environmental concerns, it strives to ensure optimal and sustainable living standards for individuals, families, and communities. The discipline follows a holistic and integrated perspective, drawing knowledge from diverse areas such as food

and nutrition, health, textiles and clothing, housing and shelter, consumer studies, household management, human development, family studies, education, and community services. In addition, Home Science generates new insights through research and strengthens the capacities of families and communities to enhance their quality of life while contributing to the attainment of the Sustainable Development Goals.

Sustainable development is understood as a multidimensional concept that combines economic progress, social justice, and environmental preservation. The 2023 global sustainable development agenda identifies 17 goals aimed at responding to critical worldwide issues including poverty, hunger, gender inequality, health disparities, and climate change. The word “sustainability” originates from the Latin term *sustinere*, meaning to maintain, support, or endure. Broadly, it refers to maintaining balance within the environment while enabling the biosphere and human civilization to coexist harmoniously. It involves aligning technological progress, resource utilization, investment patterns, and institutional reforms so that both present and future human needs and aspirations can be fulfilled. Sustainable development therefore ensures that current requirements are met without limiting the capacity of future generations to meet their own needs. It is also viewed as an ecological process upon which overall quality of life depends, emphasizing the responsible enhancement, use, and conservation of community resources.

Active community involvement remains central to the achievement of sustainable practices. Home Science contributes significantly to community advancement by responding to local needs and equipping individuals with practical knowledge and life skills. It enhances quality of life through education in child care, nutrition, health, and resource management. Although traditionally linked with household management, Home Science has evolved into a scientific and community-oriented discipline that addresses family welfare, management, extension, and communication. Its applied nature makes it particularly relevant to sustainable development initiatives. As a dynamic and continually expanding field, it integrates scientific and humanistic perspectives to promote family welfare in a changing social context. Often described as education for improved living, its central focus remains the family ecosystem. The subject emphasizes skill development in planning, communication, and community engagement through a balanced combination of academic learning and practical training, preparing professionals to work closely with communities and develop effective extension tools.

Home Science makes notable contributions to community development by empowering women and families through education on health, hygiene, and nutrition, thereby reducing malnutrition and enhancing well-being. It supports skill development and livelihood generation by offering vocational training in areas such as food preservation, garment construction, handicrafts, and small-scale enterprises to strengthen economic stability. Extension education within Home Science helps bridge the gap between scientific knowledge and its practical application in rural settings, improving living standards. The discipline also encourages social awareness, promotes positive social change, and fosters democratic values by educating communities about hygiene and environmental responsibility. Resource management further teaches the effective use of time, energy, and finances to maximize family and community assets. Additionally, Home Science contributes to society through rural development initiatives. It promotes awareness of rural industries, improved agricultural practices and healthier living environments. By encouraging entrepreneurship, it facilitates the transformation of home-based skills into income-generating ventures. This article therefore examines the contribution of Home Science to sustainable development at the community level by promoting self-reliance, environmental conservation, health security, and economic resilience. All five major domains of Home Science collectively play a crucial role in strengthening community development and sustainability.

- **ADVANCES IN FOOD AND NUTRITION**

- Home Science professionals design community-based nutrition programs focusing on Awareness programs on balanced diets, promotion of kitchen gardening, training in food preservation methods, and education in nutrition and dietetics play a vital role in improving dietary practices. These initiatives strengthen food security, help address micronutrient deficiencies, and support sustainable improvements in long-term community health.
- Nutrition and Dietetics– It enables the development of individualized dietary recommendations based on a person's genetic makeup. The interaction between genes and nutrients, help the dietitians design personalized meal plans that support improved metabolic health and overall well-being.
- Functional Foods and Probiotics – The growing use of fortified foods, probiotic-rich products such as yogurt, and medicinal herbs has contributed to improved prevention and management of lifestyle-related disorders.
- Innovations in Addressing Malnutrition – Therapeutic approaches such as Ready-to Use Therapeutic Foods (RUTFs) are widely utilized to treat child malnutrition. In addition, community-based initiatives like Poshan Vatikas promote household-level food production and strengthen local food security.

- **ADVANCES IN TEXTILE & APPAREL DESIGN-**

- Advanced textile technologies have led to the development of smart fabrics capable of tracking vital signs, responding to temperature changes through color variation, and providing protection against harmful ultraviolet radiation.
- Environmentally sustainable materials such as bamboo, hemp, and banana fiber are increasingly valued for their biodegradable properties and reduced ecological impact. The use of natural dyes further minimizes chemical discharge and helps prevent water contamination.
- Recycling and reusing textile waste, particularly in rural regions of India, contribute to both environmental conservation and income generation, thereby supporting ecological balance as well as economic sustainability.

- **ADVANCES IN HUMAN DEVELOPMENT AND FAMILY STUDIES**

- Home Science strengthens family system social sustainability and Family Welfare through- Programs such as parenting education, adolescent counselling, early childhood care initiatives, and community awareness activities conducted through the discipline of Human Development and Family Studies contribute significantly to family well being. Well-informed and healthy families serve as the cornerstone of social sustainability and overall community welfare.
- Early Childhood Neuro-development Research – Contemporary studies emphasize the critical importance of the first 1,000 days—from conception to approximately two years of age—in shaping brain development. Interventions during this sensitive period concentrate on adequate nutrition, early stimulation, and responsive caregiving to support optimal cognitive and emotional growth.
- Gender-Inclusive Development – Programs such as Beti Bachao Beti Padhao promote gender awareness and equality by incorporating sensitization efforts within families, schools, and communities.
- Mental Health Support Systems – Home Science professionals are increasingly contributing to adolescent well-being through roles in school counseling, peer support initiatives, and training programs in psychological first aid, thereby strengthening mental health support at the community level.

- **INNOVATIONS IN RESOURCE MANAGEMENT**

- Smart Home Technologies – Modern home automation systems, including energy saving lighting, smart thermostats, and water-efficient fixtures, help households manage and conserve resources more effectively.
- Waste Segregation and Composting Practices – Many urban families are adopting decentralized composting systems and household-level recycling methods, often promoted through community awareness initiatives led by Home Science graduates.
- Time and Financial Management Tools – Digital budgeting applications and time management software are incorporated into resource management education to enhance household productivity and financial organization.
- Green Building Principles – The use of sustainable construction materials and passive ventilation techniques is increasingly integrated into home planning education to encourage environmentally responsible housing design.

- **Advances in Extension Education & Community Development**

- Digital Extension Platforms – Communication tools such as WhatsApp groups, YouTube channels, and online portals are increasingly utilized to provide training to rural women in areas like entrepreneurship, nutrition, and child care. Government initiatives, including DIKSHA and Poshan Abhiyan, further strengthen large-scale dissemination of educational resources and capacity-building programs.
- Participatory Rural Appraisal (PRA) Approaches – Innovative PRA methods encourage active community involvement in identifying needs and developing solutions related to agriculture, health, and livelihood generation, with guidance from trained Home Science professionals.
- Self-Help Group (SHG) Entrepreneurship – Women's self-help groups are supported with skill development in activities such as candle production, food processing, organic cultivation, and home-based textile enterprises, creating sustainable income opportunities and promoting financial independence.
- Health and Sanitation Initiatives – Home Science extension personnel actively participate in government-supported sanitation and public health campaigns, including the Swachh Bharat Mission, by promoting practices such as handwashing, menstrual hygiene management, and the adoption of clean cooking fuels.

Home Science promotes environmentally responsible household practices, including waste segregation and composting, water conservation measures, energy-efficient cooking techniques, and the sustainable use and recycling of textiles. When adopted consistently at the household level, these practices contribute meaningfully to environmental preservation and strengthen climate resilience. Moreover, healthy and well-informed families provide the essential base for building sustainable communities.

Women Empowerment and Economic Sustainability

Training programs in areas such as food processing, tailoring, handicrafts, and entrepreneurship offered through Home Science contribute significantly to women's livelihood development and income enhancement. Extension initiatives that support Self Help Groups help strengthen financial inclusion, encourage savings and credit activities, and promote greater social engagement among women. Extension case studies indicate that Home Science-based skill development programs have a measurable positive effect on various economic indicators.

Indicator	Pre-Training (%)	Post Training (%)
Women engaged in income activities	30	68
Monthly household savings	Low	Moderate
Participation in SHGs	40	75

Source: Extension case reports

REVIEW OF LITERATURE

- I. Sushma (2026) Sustainable development emphasizes meeting the needs of the present without compromising future generations. Home science an interdisciplinary field integrating nutrition, human development textile, home management, and community development, textile, home management and community development, play a critical yet often overlooked role in achieving sustainability goals.
- II. Sudha et.al (2025) In the study Home science the 21st century: Redefining roles and uncovering emerging prospects findings highlight that Home Science not only provides graduates with practical skills but also nurtures critical thinking, creativity, and social responsibility, preparing them to excel in various professional areas. The paper concludes with suggestions for promoting Home Science as an inclusive, skill-oriented, and socially impactful discipline that defies stereotypes and addresses the needs of a changing society.
- III. Chaudhary S. (2025) Transforming Lives through Home Science: A Study of its Impact on Indian Families. The study's findings highlight home science education's transformative potential in promoting healthy living, sustainable practices, and women's empowerment in Indian families. The results have implications for policymakers, educators, and practitioners working in home science and women's empowerment. By promoting home science education, particularly in rural areas, India can empower women, improve family health, and promote sustainable development.

OBJECTIVES

1. Implementing practical strategies and interventions that enable Home Science to contribute effectively toward the achievement of selected SDGs.
2. Promoting skill-based and employment-oriented learning to enhance overall quality of life.
3. Establishing a clear conceptual connection between Home Science education and sustainable development.

RESEARCH METHODOLOGY

The research paper adopts a descriptive and analytical design. Information was collected through an extensive review of peer-reviewed journal publications, examination of policy frameworks such as the Sustainable Development Goals and national development programmes, and analysis of secondary data derived from community-based initiatives. A thematic analysis approach was applied to categorize the contributions of Home Science across the environmental, social, and economic dimensions of sustainability. Sustainable development is fundamentally structured around these three core pillars.

- Social Sustainability (Health, Education, Equality)
- Economic Sustainability (Livelihoods, Entrepreneurship)
- Environmental Sustainability (Conservation, Responsible consumption)

Home Science integrates these pillars at the household and community levels. Mapping of Home Science Subjects and Domains with Sustainable Development Goals (SDGs) are-

Domains of Home Science	SDGs Related	Community Outcomes
Nutrition & Dietetics	2&3	Reduced Malnutrition, Improved health
Human Development	4&5	Quality Education, Gender equality
Resource Management	12&13	Responsible consumption, Climate action
Textile & Apparel	8	Decent work and economic growth
Extension Education	1&10	Poverty Reduction, Reduced inequality

DISCUSSION

Home Science stands out as a transformative field because it connects scientific understanding with daily life practices. By encouraging positive behavioral changes within households, it fosters sustainable lifestyles that gradually contribute to broader community progress. In contrast to development approaches that focus solely on economic growth, Home Science integrates social and cultural dimensions, promotes gender equality, and emphasizes environmental sustainability. Despite its wide-ranging contributions, the discipline often faces challenges such as inadequate recognition and limited resources, which restrict its overall effectiveness. Greater cooperation among educational institutions, non-governmental organizations, and government bodies is crucial to enhance its reach and impact.

CHALLENGES AND OPPORTUNITIES

- **Technology and Innovation:** Home Science Extension programs are increasingly adopting digital solutions such as mobile applications, online platforms, and other technological tools to expand their outreach and enhance the quality and efficiency of services provided to communities.
- **Cultural and Social Barriers:** These programs often encounter challenges due to deeply rooted cultural beliefs, traditional practices, and societal attitudes that may restrict acceptance and reduce the overall impact of extension activities.
- **Limited Resources:** A major constraint for Home Science Extension initiatives is the shortage of essential resources, including adequate funding, trained personnel, and proper infrastructure, which affects program implementation and sustainability.
- **Misconceptions about Home Science:** Home Science is frequently misunderstood as being confined to household skills, which undermines its broader scientific and developmental contributions. Additionally, insufficient financial support for extension work remains a persistent issue for Home Science professionals.
- **Collaboration and Partnerships:** Strengthening partnerships with governmental bodies, non-governmental organizations, and other stakeholders can enhance the effectiveness of Home Science Extension programs by pooling resources, knowledge, and technical expertise.

RECOMMENDATIONS

- Integrate clearly defined sustainability components into the Home Science curriculum to emphasize environmental and social responsibility.
- Reinforce academic departments by establishing dedicated positions or designations focused on Community Development.
- Utilize digital technologies and online platforms to increase awareness and effectively share knowledge and skills.
- Ensure that Home Science professionals are formally acknowledged and involved in local governance structures and development planning processes.

CONCLUSION

Home Science has a significant contribution in promoting sustainable development at the grassroots level by combining aspects of health, livelihood enhancement, and environmental sustainability, through areas such as family welfare, education, health management, resource management, and various extension activities. Nearly 9-10 of the 17 Sustainable Development Goals (SDGs), have been attained through Home Science discipline.

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