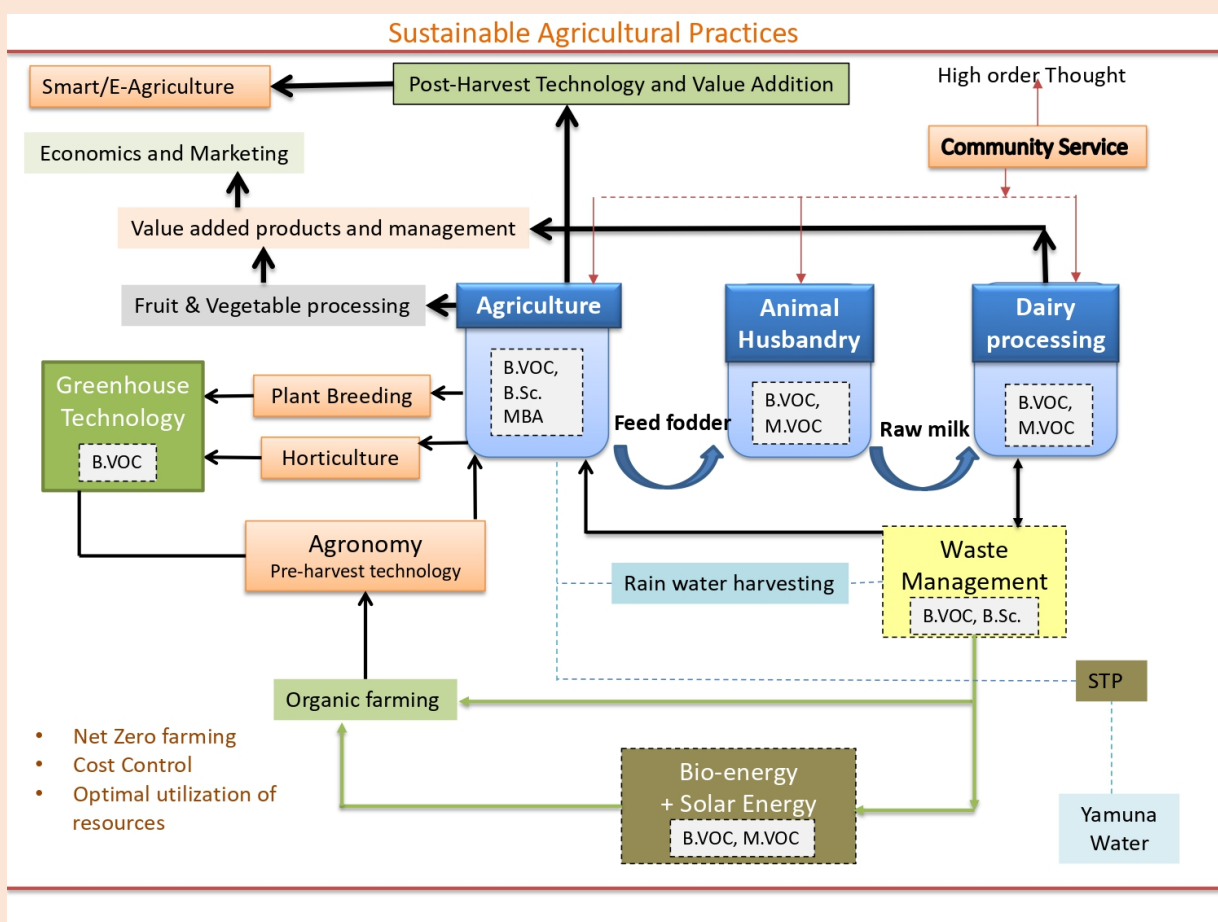


Box No. 1: Systems Approach to Vocational Programmes in Agriculture and Allied Fields.



Agriculture and its branches like agronomy, horticulture and plant breeding are closely allied with dairy and animal husbandry. They form an integrated system with interconnections involving multi skills, multiple skills and vocational program at every niche.

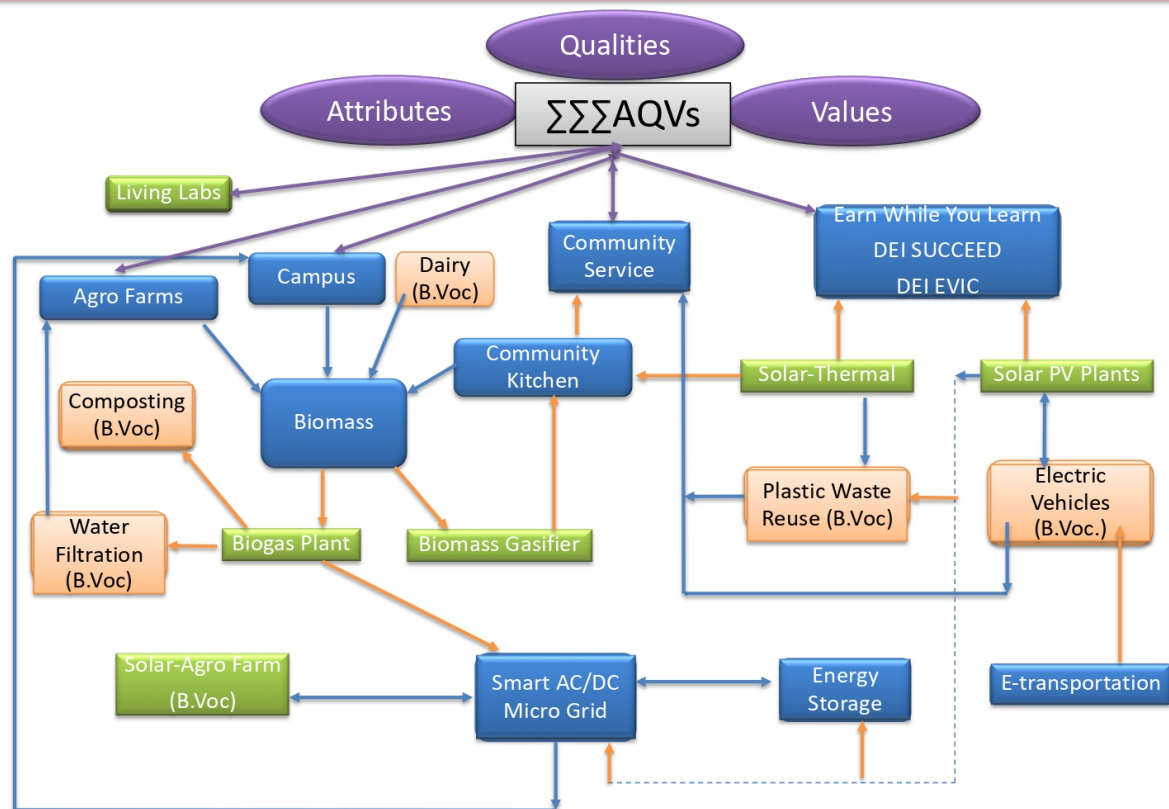
Sustainable agriculture practices at DEI include Integrated Farming System (IFS) with optimum use of resources where waste or output of one enterprise becomes the input for another, ensuring environment friendly and cost-effective farming. The primary products of plants like grains are used for human consumption and green fodder, straw and husk are utilized by cattle. The milk produced by cattle is utilized for various products and value additions. The crop residues can be used for animal feed, while manure from livestock can enhance agricultural productivity. Whatever wastes is derived from these activities is further processed to get useful products like compost, bio-ethanol etc.

Integration of greenhouse technology, seed technology, plant breeding boost-up production with improved input to farm. Output gets channeled to market through value addition units and courses like MBA helps in creating new markets. Smart agriculture initiatives get like remote sensing, disease forecasting, resource management, ICT and others get promoted.

-Contributed by: Rajiv Ranjan, J. N. Shrivastava & D. Prem Kumar, DEI

Box No. 2: Systems Approach to Skilling in Renewable Energy

Systems Model of Renewable Energy Initiatives



Renewable energy initiatives at DEI provide living laboratory like Solar-Agro farm, Dairy, Biogas Plant, Biomass Gasifier, Solar SV Plants for live experimentation and multi-skilling activities for students. Skill development in renewable energy is not limited to B.Voc. Renewable Energy students but its application in other areas is promoted by courses like B.Voc. Agriculture, Auto, Sanitation & Waste Management and Dairy, as shown via systems model for renewable energy.

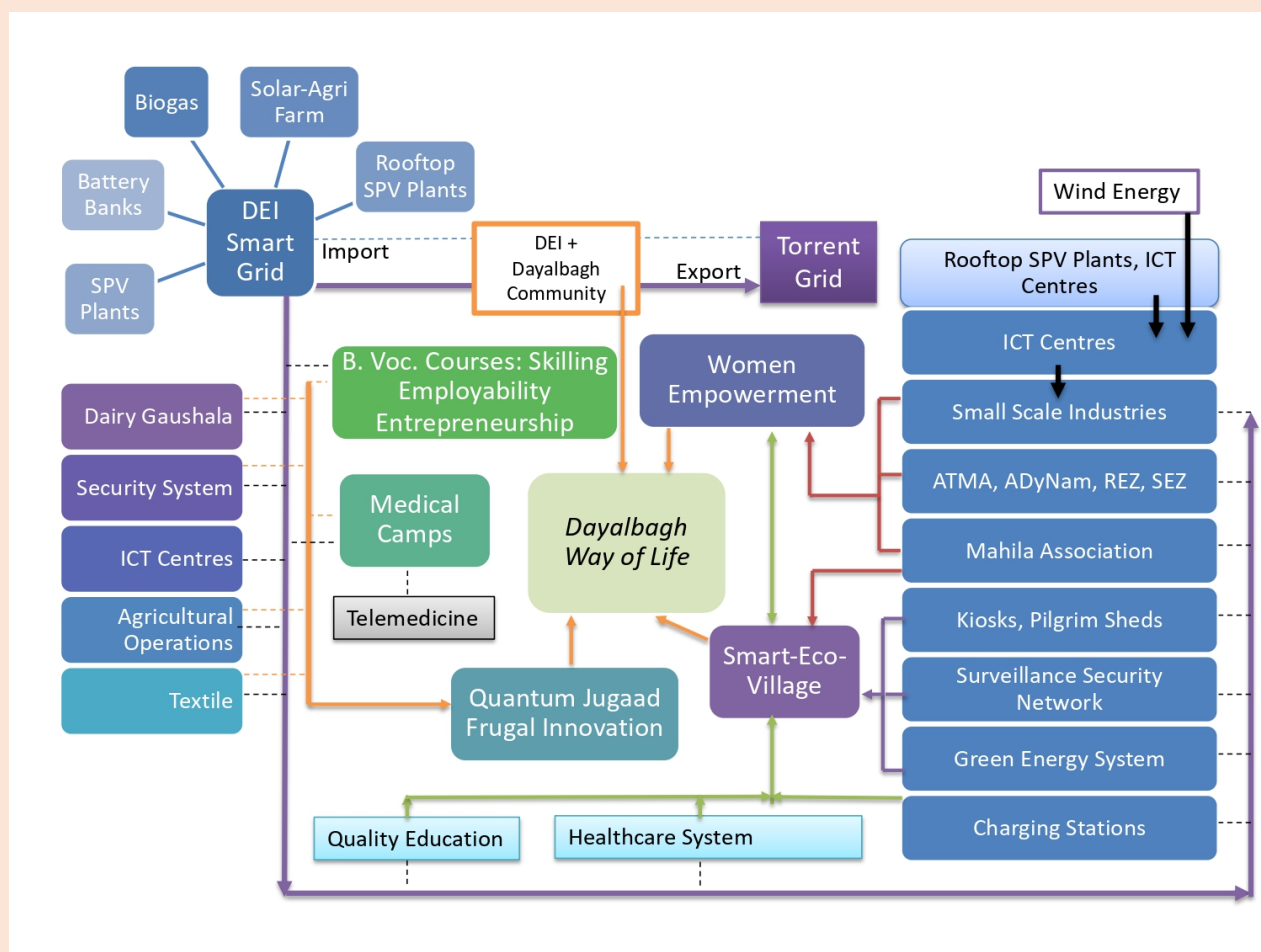
The waste generated from farms, campus, colony, dairy, kitchen serves as the biomass used for energy generation. The wood waste, husks and stalk goes to biomass gasifier, and residue fuel i.e. activated charcoal is utilized for water filtration and as pesticide and disinfectant in agriculture farms and slurry for composting.

DEI has installed distributed roof-top solar photovoltaic (SPV) power plants for efficient clean energy with storage banks. It has its own smart microgrid with remote monitoring and control. Further improvements are under process to convert it into an AC/DC smart micro grid which can feed both AC/DC loads and can synchronize different sources of renewable energy on the same grid. SPV powered Charging stations are developed in the Institute which assist E-transportation for local commute within the campus and in colony.

This system altogether promotes Institute framework of Quality-Air, Water, Agriculture & Dairy, Innovation, Education, & Healthcare, Attributes-Smart, Mobile, Resilient and Values- Ethical, Moral and Spiritual.

-Contributed by: Gaurav Pratap Rana, D. Bhagwan Das & A.K. Saxena, DEI

Box No. 3: Systems Approach to integration and aggregation of technology: DEI Smart Grid



Comprised of several types of renewable energy sources, the DEI smart grid is tied with the main service grid (torrent power) via hybrid inverters, capable of importing as well as exporting power to the grid. The grid supplies clean energy for pasteurization, chilling, cow parlours in *Gaushala* and for induction cooking in dairy and other agricultural activities. Uninterrupted power is provided to the DEI Security surveillance network, medical camps, textile and other initiatives at DEI and ICT Centres.

A healthcare synergic system exists in Dayalbagh with an ayurvedic *davakhana*, acupressure centre and yoga centre and a hospital equipped with ECG, Pathology, X-ray centre, Maternity centre, ICU facilities,.

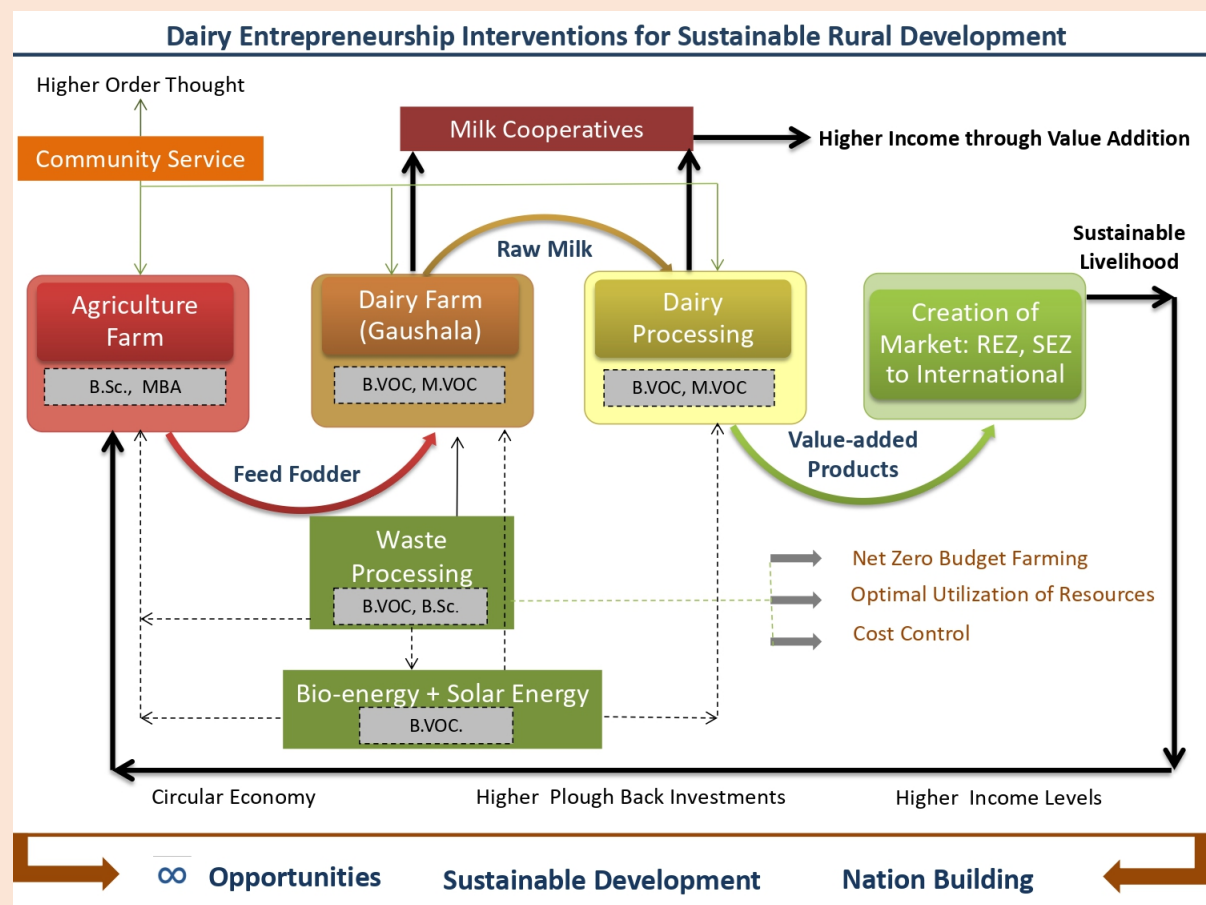
Small scale industries like Textiles, Footwear, Handloom and Pharmacy provides basic industrial training with hands on experience to the students and interested residents of the society. *Mahila* Associations and ATMA centres create avenues for local women to learn, earn and become self-reliant while serving the community.

Rural economic zones are made and are connected to state economic zones further connected to global market and e-markets. This enables to create a socio-economic platform for students and budding entrepreneurs to market their frugal innovations and creative products through DEI Quantum Jugaad. It comprises outlets where students can market their own products.

All these activities are relying on the developing and ever-growing DEI smart grid, which enables Dayalbagh to become an Eco-village and serve as a model of self-sustainable community living in harmony with nature and practicing simple living and high thinking.

Contributed by: Gaurav Pratap Rana & Prem Kumar Kalra, DEI

Box No. 4: Systems Approach to Rural Development through Dairy Entrepreneurship



A sustainable intervention for rural development focusses on diversification of the livelihood sources of the farmers to include non-farm sources of income. There are many integrated models of academics, skilling and entrepreneurship that lead to creation of sustainable rural economies, one of them is in the area of dairy.

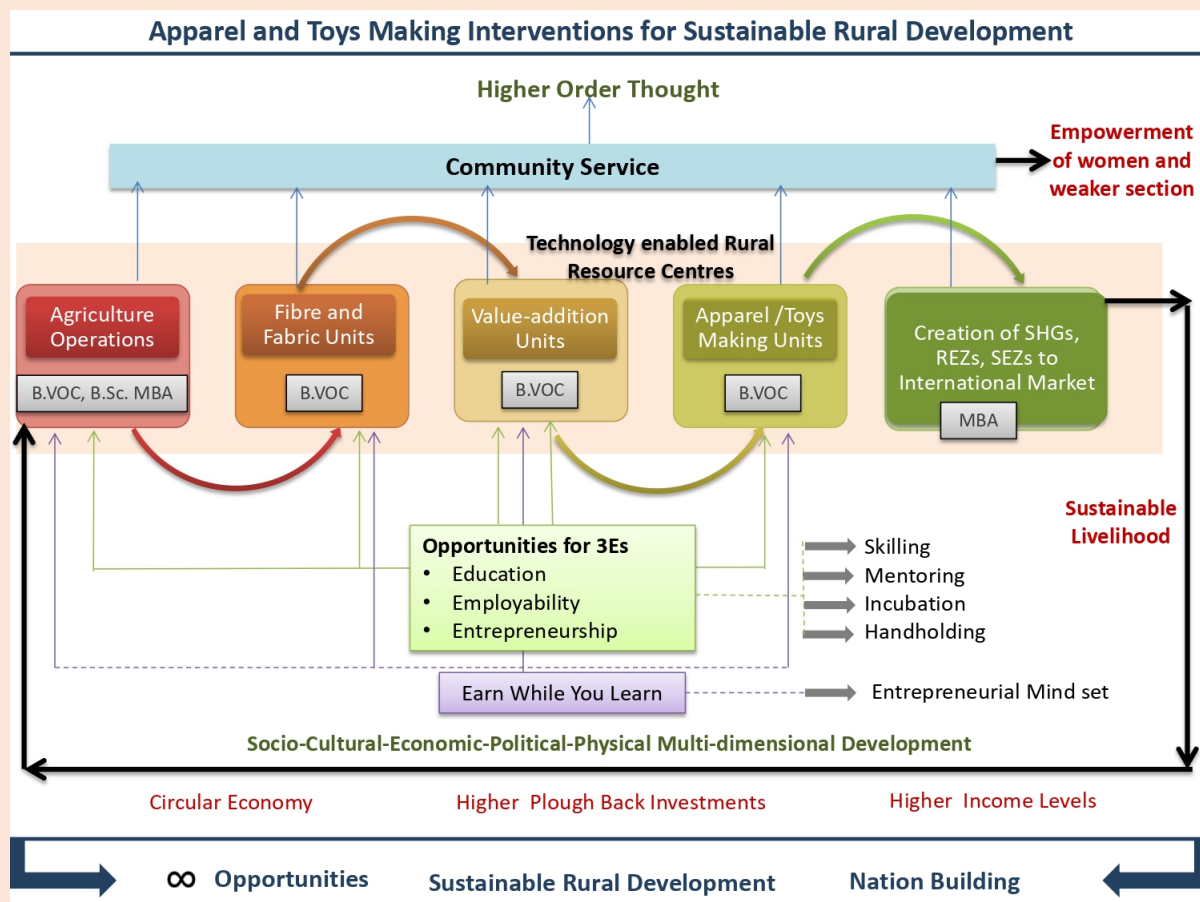
The village-level dairy entrepreneurship model integrates agriculture operations, dairy farming, waste management, dairy processing technologies, value-addition, marketing facilities and the creation of linkages between rural economic zones (REZs), special economic zones (SEZs) and international markets.

At every stage opportunities for skilling, vocational education (B.Voc., M.Voc.) and entrepreneurial incubation are available to the students and farmers, with financial support systems like 'earn while you learn' scheme. Waste management techniques support net zero budget farming.

This is a classic system of linking local network to education network in promoting skilling, benefits to farmers and sustainable livelihood for rural population

-Contributed by: D. Sumir, K. Srinivas & Soami Piara Satsangee, DEI

Box No. 5: Systems Approach to Rural Development through Apparel & Toy Making



One of the sustainable rural development model is in the field of apparel and toy making, where natural fibres can be produced through agricultural operations and converted into fabrics which are thereafter dyed with natural colours. Value addition based techniques like embroidery, printing, painting followed by conversion of selected range of fabrics into apparels and toys can lead to creation of rural to national to international level markets.

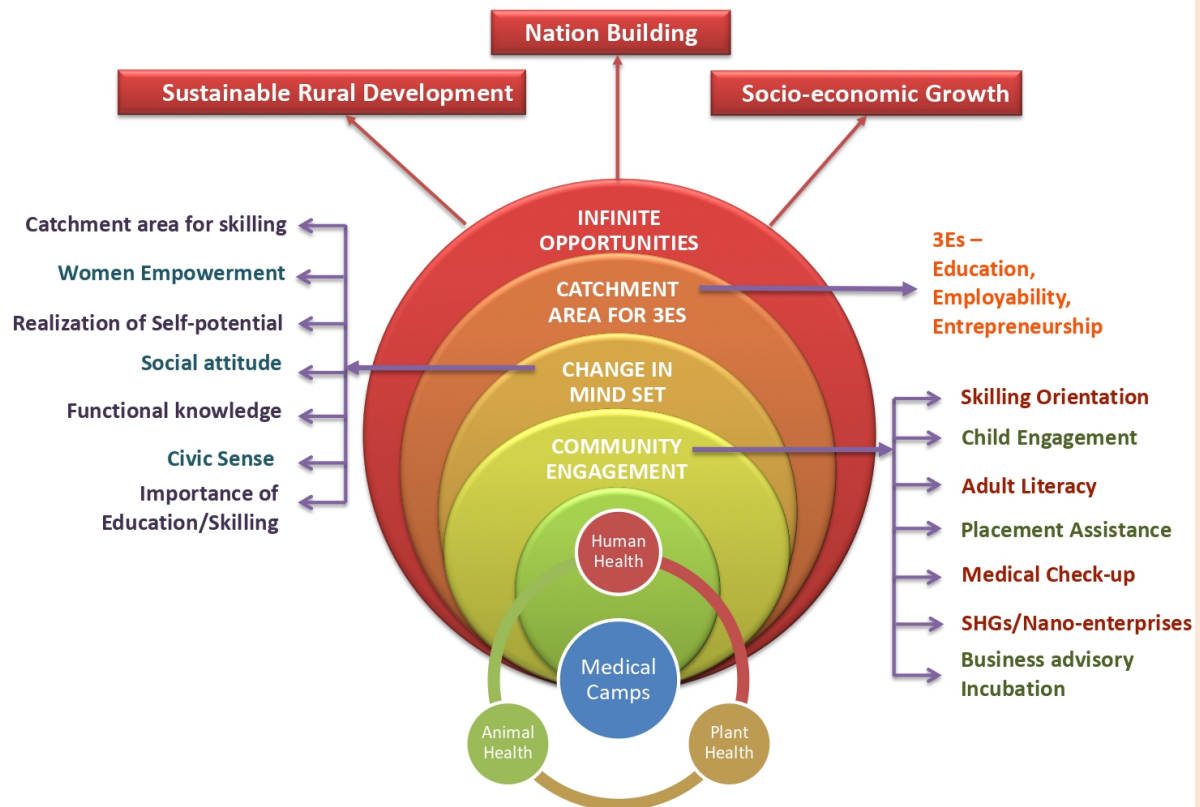
Self-help groups (SHG) created at rural zones would bring in sustainable livelihood for women leading to a higher income level. With an assured quality of the produce, the market of items can lead to creating special economic zones (SEZ) not only within the country but also at international level. The village-level technology enabled community resource centres provide skilling and entrepreneurial opportunities right from growing the input raw material in agriculture fields to operating fabric production looms, apparel manufacturing, designing, packaging and marketing.

B.Voc. and M.Voc. programmes in the area of textiles and garment manufacturing, waste management, renewable energy become the integral part of such models, benefit the local communities but also provide labs on the land for the students. Hence vocational education can easily lead to employability which in turn would encourage entrepreneurial efforts by setting up small units.

-Contributed by: Sangita Saini & D. Sumir, DEI

Box No. 6: Medical Camps: Skilling & Creativity Hub for Education, Medical & Entrepreneurship (SCHEME)

MEDICAL CAMPS FOR COMMUNITY MOBILIZATION AND SUSTAINABLE DEVELOPMENT



Medical camps provide necessary healthcare services to the weaker sections and also create a platform for interaction with local communities, building trust, creating the willingness for change, knowledge orientation, counselling and mentoring. These camps expand beyond their traditional definition and create a multi-dimensional community impact, causing early prevention of diseases, improvement in the health indicators of the community and act as catchment area for youth where they get oriented to skilling and employment opportunities.

The Medical camps comprise several activities for children, like recreational centres, hole in the wall (computer based learning), interest & aptitude identification and for youth activities across skilling, English speaking, literacy and career counselling are planned. Advise is given by experts for crop and animal health, farming, SHGs creation, business and nano-enterprise setup. This helps in attracting students and out of school children/youth, enhance their functional skills, tap their aptitude, motivate them to explore avenues for improving quality of life.

Opportunities thus created and availed by a few in the beginning has demonstrated that over a period that numbers grow exponentially. This is unique working model of community engagement that creates infinite opportunities through the 3Es i.e. Education, Employability and Entrepreneurship, empowering young women, under privileged and unserved people.

-Contributed by: A.S. Ragini & Shalini Nigam, DEI