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Review Article

REVIEW ON ROLE OF LIVESTOCK FARMING IN ACHIEVING SUSTAINABLE DEVELOPMENT GOALS (SDGS)

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Abstract: Sustainable development is the development that meets the needs of both the present as well as the future generations as defined by United Nations. The Sustainable Development Goals (SDGs) build on the broader sustainability agenda, go much further than the MDGs, was coming into force from January 1st, 2016 to end poverty, fight inequality and injustice, and tackle climate change by 2030. These goals should balance three dimensions (economic growth, social inclusion and environmental protection) of the sustainable development. Livestock is positioned at the interface of the world's human and natural systems, which has been at the basis of the understanding sustainability. As our understanding of economic development advances, so must our recognition of livestock's continued importance. Livestock sector has shifted the emphasis of the conversation from fostering sustainable production per se, for enhancing the sector's contribution to the achievement of the SDGs. Thus, this systematic review study was carried out to identify the role of livestock farming in achieving SDGs.

Keywords: Development, Economic growth, Livestock farming, Sustainable Development, Goals, United Nation

INTRODUCTION

Livestock farming is playing a significant role in achieving Sustainable Development Goals (SDGs). The SDGs could be grouped into those that describe **people's needs and aspirations** (no poverty, zero hunger, good health and education, gender equality, reduced overall inequality, and peace and justice); those that describe environmental or "**planet" requirements** (water, energy, marine systems, land and biodiversity, and climate); and those that describe desirable **processes** (Decent Work and Economic Growth; Industry, Innovation and Infrastructure; Sustainable Cities and Communities; Responsible Consumption and Production and Partnership for the Goals) in achieving 17 SDGs through PPP approach. All 17 Goals are interconnected, success in one-goal motivates for the success of others. This study makes an attempt to understand the role of livestock sector in achieving the SDGs.

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METHODOLOGY

For this a systematic review study was carried out to identify the role of livestock farming in achieving SDGs through collection of review articles and reports from various national and international organization, collated the collected material under each goal and discussed in detail.

ROLE OF LIVESTOCK FARMING IN ACHIEVING SDGs

Livestock is directly related with **SDG 1, 2, 3, 5, 12, 13, 15 and** indirectly related with **All other SDGs** and have induction role in achieving **SDG 4 and 5.** The role / significance of livestock sector across SDGs are discussed as below.

SDG	Role of livestock farming in achieving the goal
1. Zero poverty	Livestock contribute to make people out of poverty by increasing resilience, improving smallholder and pastoral productivity, income and increasing market participation [11,13 & 19].
2. Hunger eradication	At the global level, livestock products contribute to the global human diet with 33 percent of protein intake and 14 percent of the total calories [6]. Furthermore, livestock can transform non edible materials / items into high-quality protein.
3. Healthy lives	In human health, major zoonoses are responsible for an estimated 2.5 billion cases of illness. Of the known animal diseases, 75 percent are zoonotic, meaning that they can also infect humans [12]. Thus, effective disease surveillance and preventive measures in livestock needed for healthy lives [1 & 2]
4.Quality education	Livestock providing half of the rural poor with income, farm animals represent a significant source of household revenues and employment. In addition, consumption of ASFs can improve children's cognitive and physical development as well as school attendance and performance. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
5. Gender equality and women's empowerment	Globally, rural women represent two-thirds (290 million) of low-income livestock keepers. However, women's contribution is reduced and constrained by the challenges viz., poorer access to, and control over, productive resources such as land and livestock, diminished access to credit, markets, technical information and innovations [7,14 &20]. Thus, suitable policies and programs in livestock sector should help to remove all obstacles and constraints in in achieving gender equality and empowering women.
6. Sustainable management of water	Agriculture uses approximately 70 percent of the available freshwater supply, and in this roughly 30 percent goes for livestock production. Livestock production also makes a positive contribution to water quality, by protecting the soil

	surface from erosion, and improved manure management. This will also help to reduce pollution, and associated public health risks, providing benefits to biodiversity and better economy.
7. Clean energy	Livestock are a sink and a source of energy. Energy contained in animal manure is often neglected and partially lost. Recycling affordable and renewable energy from animal manure, can provide an alternative to fossil fuels, both in large and small livestock operations. The digested residue from anaerobic fermentation makes an excellent fertilizer [23]. In the current context, solar, wind, geothermal power, animal and biomass energies are considered as clean. Livestock production relies on energy embedded in biomass, which comes mainly from solar energy, although other sources may also contribute.
8. Economic growth	Globally, up to 1.3 billion people are employed in different livestock product value chains. Livestock contributes up to 40 percent of agricultural GDP. It is one of the fastest-growing economic sectors in developing countries (2.5 percent per year during the last two decades). Livestock production and merchandizing in industrialized countries account for 53 percent of agricultural GDP [24]. In 2014, the value of livestock production in developed countries accounted for 40 percent of total agricultural output, and 20 percent in developing economies. Projected demand for animal products fueled to climb from 7.6 billion in 2017 to 8.6 billion in 2030.
9. Industrialization	The animal product processing industry is one of the fastest-growing in emerging nations. Livestock sector with excellent opportunity to add value and achieve more inclusive economic growth. However, most of the developing countries contribute to livestock global value chains primarily through the provision of primary and unsophisticated products to downstream actors in developed countries. Hence, public investments and policies should promote market access for the small producers in value addition of animal products.
10. Reduced inequalities	To reach this goal, efforts to foster growth need to be complemented by equity-enhancing policies and interventions [25]. About half of the rural poor rely on livestock [17]. While ownership of livestock is often considered more equitable than ownership of land.
11. Sustainable cities	Until recently, urban livestock production was often regarded as problematic and was severely restricted by city laws and policies [12]. However, keeping livestock in urban settings is now gaining greater recognition because of the benefits it can offer city dwellers.
12.Sustainable consumption and production	Almost one third of all food produced is lost or wasted between field and fork. For every kg of meat/ litre of milk produced, respectively about 200 grams and 100-250 are lost or wasted [5] Meat losses and wastes in industrialized regions are steepest at the end of the food supply chain because of high wastage rates by retailers and consumers in Europe and the United States. In

	the case of developing countries, losses in meat and meat products are distributed fairly equally throughout the supply chain, but high losses occur at the production stage, especially in sub-Saharan Africa, because of poor animal health. Limiting wastes and losses all along the supply chain, considering regional priorities, can contribute to improved efficiency and sustainability. Also at global level, rebalancing to reach nutritional targets could also contribute to raising overall efficiency in food systems [21].
13. Take urgent action to combat climate change and its impacts	Climate change impacts livestock directly and indirectly. Direct impact reported were decrease in animal productivity, non-availability and quality of forages and feed crops, animal health problem and biodiversity loss. Heat wave during summer killed more than 17 million chickens in India [16]. At the same time, the livestock sector also contributes significantly to climate change [3 & 18]. Emissions from livestock supply chains, account for about 14.5 percent of total anthropogenic emissions [8]. Packages of mitigation techniques can bring large environmental benefits and readily available technical interventions in livestock production systems could reduce livestock's impact by between 14 and 41 percent [15]. Climate-smart interventions are also required in livestock and their implementation requires transfer of technology and knowledge, together with the right incentives and a conducive regulatory framework.
14. Life below water	Over three billion people depend on marine and coastal biodiversity for their livelihoods, while broadly people obtain almost 20 percent of their average intake of animal protein from fish [9]. Overall demand continues to grow making a substantial contribution to the depletion of marine stocks. Pigs and chickens currently use about 27 percent of global fishmeal production [10]. Livestock are also responsible for eutrophication and hypoxia, resulting in high concentrations of algae and bacteria, which compete with marine life and reduce oxygen supply. This can be limited by promoting adequate manure management and by recycling nutrients (and energy) from animal manure.
15. Life on land	Livestock production is ubiquitous, with up to 25 percent of the earth's land area covered by rangelands. Livestock populate depend on 70 percent of that area while 33 percent of croplands are used for fodder production. Genetically diverse livestock populations are a precious resource for livestock keepers and society in overcoming future challenges, and should be conserved [4]. Added sustainable grassland management, enhanced provision of ecosystem services through livestock and moderate improvements in feed-use efficiency are key to achieving this goal.
16. Peace and justice	This goal envisages peaceful and inclusive societies for sustainable development provide access to justice for all and build effective, accountable and inclusive institutions at all

	levels. Investing in livestock development in order to lessen competition for resources can contribute to conflict reduction
17. Partnerships for the goals	At present, livestock sector counts on number of multi-stakeholder partnerships at global and regional levels. Such inclusive partnerships, together with agreed goals and principles that hold people and the planet as central [22].

CONCLUSION

Livestock production is central to the food systems development and it is particularly a dynamic and complex agricultural subsector, as one of the important pathways to sustainable agriculture development (crop–livestock interactions). Sustainable food systems along with the value chain from production to consumption and changes in dietary patterns will be critical in food security and nutrition. Thus, policy makers and other stakeholders will design a framework to implement feasible options of sustainability pathways for development. It will hopefully contribute to sustainable food systems, food security and nutrition for all at the grass root level and more broadly to achieve SDGs within 2030. In addition to livestock sector, shepherding the achievements of the SDGs is an enormous task that requires the involvement of every sector and each level of society. The vibrant platform should be created to build meaningful with multiple partnerships to achieve the vision of "sabkasaath, sabkavikas (collective effort, inclusive growth).

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