Chapter 6
Design and Development of Technology Appropriate for Rural Community to Address Sustainability

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1 Introduction

One of the basic pillars of Indian science and technology (S&T) programme on which it is based on is inclusive growth [22]. The main thrust of the country's S&T policy is to create technical abilities for supporting poverty alleviation, enhance livelihood opportunities, remove hunger and malnutrition, reduce drudgery and regional imbalances in both rural and urban settings [33]. But, in reality, by and large, post-independence Indian S&T programmes have very limited impact on the all-round development of rural people. Penetration of S&T in the villages of the country is not satisfactory, and rural community faces severe technology deficit [5].

No doubt, there is an effort to reorient India's S&T programme towards the need of rural people [32], and technical institutions of the country are passionately working hard to generate appropriate tools/machinery for rural people. For example, numerous research activities have been launched by organizations, viz., Council of Scientific and Industrial Research, Indian Council of Agriculture Research, Indian Council of Medical Research, Department of Biotechnology, Department of Science and Technology, etc., for generation and diffusion of technology which is suitable for rural people. They have successfully developed and disseminated number of technologies for rural community [41]. Yet, such techno-societal efforts are evolved to be a weak entity due to the absence of suitable technology transfer mechanism. Most of such efforts are fragmented, and technical institutions are not able to perform an enabling role in bringing much diffusion of such technology among rural community [34]. The weak interface between the university, government, and community is the major hurdle in such techno-societal efforts.

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One major drawback of the Indian S&T programme is the absence of local technology promotion group in village level due to which technology developed by technical institutions fail to successfully diffuse in rural areas [6]. Due to the absence of necessary linkage between the technical institutions and the village-based organizations, the community cannot approach research institutions; although they want to reap the advantage of technological advancements. Another drawback identified by the Office of the Principal Scientific Adviser to the Government of India is that there are many institutions working for generation and dissemination of technology for agriculture sector, on the other hand, very few institutions have been involved for developing technology particularly for non-farm sector of the country [24].

In such a situation, the office of the Principal Scientific Adviser to the Government of India realized the need for a technology mission in the country to make the synergy among academia, civilian society groups and government organizations to share their knowledge and infrastructure to create an ecosystem for sustainable technology development environment for rural people to make the success of science and technology among rural community felt. It is with such a goal, the office of the Principal Scientific Adviser to the Government of India initiated a mission called Rural Technology Action Group (RuTAG). The main thrust of the program is to rejuvenate the rural economy of the country through upgradation of existing traditional methods/processes in villages with the application of recent advances in science and technology. The prime objective is to create a pool of technocrats in the country who can devote their time for creating small-scale technological solutions which are relevant in local context, economically viable and culturally acceptable. It will help to improve knowledge, skill and overall attitude of rural community towards an increase in quality, productivity, efficiency and to reduce drudgery.

In this article, a special case of RuTAG is illustrated, where a cost-effective and easily adaptable feed block production machine is designed to make it suitable for rural community and strengthen the rural economy of India. A case study analysis is presented to establish the conceptual link between Rural Technology Action Group (RuTAG), inclusive innovation and sustainable development goals (SDGs). The study is expected to bring new perspective to the policymakers in India for future rural technology planning.

2 Theoretical Background

2.1 Inclusive Innovation

We are living in a society where more than 4 billion people are living their life with less than $2.50 per day worldwide [3]. In such a resource-constrained society, mainly present in developing nations where development and poverty reside side by side [38], framing innovation system is conversed to be more complex. The whole process is propelled by numerous socio-economic hurdles. In recent literature space, such hurdles give birth abundance of different variants of technology innovation terminologies, viz., Frugal innovation [2, 19, 36] Reverse innovation [13], Jugaad innovation [35], Bottom of the Pyramid (BOP) innovation [25, 27], Gandhian innovation [26], Empathic innovation [10] pro-poor versus from the poor innovation [11], long tail and long tailoring innovation [1], Below-the-radar innovation [17] and inclusive innovation [31]. Although it is difficult to differentiate among different variants of technology innovation terminologies, one common objective they share is 'inclusiveness' [31], where organic linkages between people, environment, and society are at the central line of technology design agenda. Such innovation system attempts to provide an appropriate, socially acceptable and environmentally sustainable solution to the scarcity induced community [30]. Such technology can be described as '*a level of technology better than the simple methods used in the rural hinterland, more productive than the traditional tools, but far simpler and less capital-intensive than the modern technology imported from the West*' (described by Wood and Schumacher [44] and cited by Deycy et al. [7]).

The conventional capital-intensive and sophisticated machinery cannot solve the crisis pertaining to the resource-poor society. They need alternate sets of technology to address the issues like poverty and underdeveloped economy. It should be simple, small-scale, cost-effective, nonviolent and helps in minimizing the adverse effects on environment and society [45]. Such tools/machinery can only improve productivity, efficiency and reduce drudgery of traditional production processes. At the same time, it should promote community participation, guide for optimal use of natural resources and help in utilization of the working force available in villages. Such intervention should try to reduce dependence on foreign-based capital-intensive technology [28]. Similar thoughts were shared by E. F Schumacher in his book '*Small is Beautiful: Economics as if People Mattered*' [37], where he had mentioned the importance of easily adaptable technology for rural community, which he had termed as 'Appropriate Technology (AT)'. AT is the intermediate between sophisticated, high-tech, capital-intensive technology used for mass production and traditional labour-intensive low-cost process, to lighten the burden of the poor, and to create opportunities for them through increasing their productivity and efficiency. Hence, it tries to utilize the available resources without affecting the community in near feature. This is in the same line of Gandhian Principle of rural technology popularly known as '*production by masses instead of mass production*' [45].

Technology to be realistic in a specific context, the ability of the community and their social value system need to be studied properly. Since, the socio-cultural fabric of society varies from one context to another context [29, 38], just borrowing technology from outside without modification in the local context is impractical. Borrowing high-tech machinery from developed countries and trying to apply in resource-constrained world is totally absurd, irreverent and wasteful [18]. Such wrong practices led to short-term as well as long-term adverse effects on society. For example, degradation of soil health and water scarcity due to wrong agriculture practices, which are used mainly to improve productivity [28]; environmental degradation, ecological imbalance, climate change, etc., due to increase greenhouse gas (GHG) emission results from extensive use of fossil fuels, which are used to achieve energy efficiency; damage of social value system [28], etc., are reported extensively in developing nations.

To remove inequalities arises in the developing nations by use of capital-intensive, large-scale and environmentally damaging technologies, inclusive innovation strategy has become increasingly prominent in both academic and policy discourses [19]. The main thrust of such innovation discourse is to make societal actors and innovators mutually responsive to address issues like acceptability, sustainability and societal desirability [42]. Inclusive innovation as defined by George et al. [12] and cited by Knorringa et al. [19] is—'*the development and implementation of new ideas which aspire to create opportunities that enhance social and economic well-being for disenfranchised members of society*'. Foster and Heeks [8] defined it as—'*inclusive innovation is the means by which good and services are developed for and by marginal groups (the poor, women, the disabled, ethnic minorities*, etc.*)*' [42]. The Inclusion of board group of stakeholders and potential consequences that includes '*public R&D entities, industry, universities, nongovernmental organizations, donors and global networks*', etc., is the central to inclusive innovation [19, 31, 42]. Generating easily accessible, adaptable and affordable solutions for poor to address the needs or wants or problems of the excluded group/bottom of the pyramid of the society is the main objective of such innovation strategy. It should have a positive impact on livelihood or economic activity of the community. At the same, it should not hamper the existing social ecosystem in place [14, 42].

2.2 Sustainable Development Goal and Inclusiveness

After the adoption of the 2030 agenda for sustainable development; with its 17 goals and 169 agenda [9, 15, 43], sustainability has emerged as hegemonic social ethics today [4]. Policy planners, scholars, scientists, technocrats and development practitioners have come forward to discuss how science and technology could contribute to sustainability in a new and more holistic way with consideration of social, economic and environmental issues, which are the triple bottom line of sustainability [20, 36].

The sustainability issues are the centre of discussion since the Brundtland Commission's report on sustainable development in 1987 [32], where the term '*sustainability*' for the first time was defined as '*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*' [39]. However, most of the earlier discussions were concentrated on economic and environmental side of the issues, whereas the social dimensions of sustainability were missing in those discussions [18]. In the question of sustainability, much intention has been given on cost sensitivity of technology and the environmental impacts, like energy efficiency, low carbon prints, etc. Unfortunately, the importance of understanding social fabric of the targeted community received very little significance in most of such technology intervention discussions [20]. Interestingly, rural people do not understand the importance of technological efficiency, carbon print, etc. Instead, they need technologies which are cost-effective and has the ability to improve productivity and reduce drudgery.

Jarfy and O'Neil [16] pointed out that interaction of human–technical relationship is not suitably documented in most of the developing countries that make technology transfer program inefficient in rural areas. Instead of considering society as subject, most of such technology development programs consider the society as an object, where the community has very limited opportunities/scopes to choose their preferred choices of technology. Most of the time engineers are working in a top-down approach [21, 23], where they are detached from the targeted community to whom the designs are meant to help. Mostly, they are influenced by his/her managers and they work with some presumptions and objectives rather than directly studying the community needs [21].

To eliminate such policy bottlenecks, new sustainable development agenda emerges where a more holistic model of Science Technology and Innovation (STI) policy is proposed. The new agenda based on principles of (i) universality, i.e. participation of all the region, sectors and stakeholders (ii) integration, i.e. environmental, social and economic all the dimensions of sustainability will receive equal importance. Local participation in the process and local communities' empowerment and engagement is echoed in the SDG agenda [40].

3 Objective

In the previous sections (Sects. 1 and 2), a brief literature study is presented related to different dimensions of technology development strategy for rural people living in developing nations. Such a study lead to conclusions: (i) today, the world needs technology which is cost-effective as well as easily adaptable for resource constraint society to remove inequalities from the society (ii) Inclusive innovation strategy can only develop technology which is appropriate for bottom of the pyramid (iii) Importance of such inclusive innovation strategy is echoed in new sustainable development agenda coined by the United Nations Organizations.

We have enunciated two hypotheses; Hypothesis 1: RuTAG is creating an inclusive innovation platform and Hypothesis 2: RuTAG's initiatives are fostering implementation of SDGs. Based on case study approach, we will try to verify both the hypothesis.

Fig. 1 Feed block making machine provided by Indian Agriculture Research Institute (IARI) [46]

4 Case Study: Designing Feed Block Making Machine

4.1 Problem Identification

Large population of Yaks and other hill cattle are found in Arunachal Pradesh, Sikkim and major areas of Ladakh, India. There is always a huge requirement of fodder in these regions. But, during winter or dry season, acute shortage of green grass occurs due to heavy snowfall in these regions. That results in dwindling of yak and hill cattle population of these regions face acute food scarcity during extreme winter. There are reports of mortality due to starvation and inter-related mountain constraints.

Keeping in view all these aspects, Indian Agriculture Research Institute (IARI), New Delhi outsourced one feed block production machine as shown in Fig. 1. The machine is used to compress the mixture of paddy straw/wheat straw, molasses, and other fodder ingredients to produce compressed brick shaped feed blocks. These feed blocks can be kept for a long time and also acquire very less space as compared to the uncompressed paddy/wheat straw stakes. Thus, it facilitates storage and easy supply of fodder in the dry season. A few such machines were installed by IARI, New Delhi, and Indian Council of Agricultural Research (ICAR) at Dirang, Arunachal Pradesh.

The machine has following drawbacks:

- The structure of the machine is bulky, thus cannot be transported to remote villages.
- For operating the machine, three-phase electricity supply is required. This will limit the use of the machine in far-flung areas.
- The machine requires frequent maintenance due to breakdowns of the sliding parts. This leads to a high maintenance cost in running the machine.
- The parts of the machine are neither readily available nor repairable locally.
- Initial cost of investment is relatively higher (around \$10,00,000).

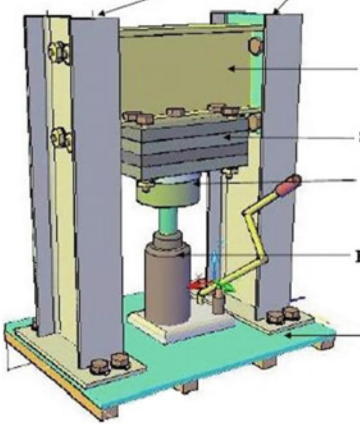

Fig. 2 Computer aided design of the feed block making machine

4.2 Problem Identification

To overcome the difficulties faced by Yak rearers, RuTAG has designed and developed a portable feed block production machine which is shown in Fig. 2. In the machine, a 10-ton capacity hydraulic jack is used to gain the required pressure. The handle of the hydraulic jack is pressed using manual force to generate the required pressure inside the cylinder. It yields compression of fodder mixture inside the cylinder. For withstanding this force, two vertical (W8X10) and one horizontal (W8X10) I-section beams fixed to a horizontal base plate (thickness-12 mm diameter). The same is bolted using the M12 bolts and nuts. A stainless steel (SS) cylinder of 138 mm inner diameter and 5 mm wall thickness is used for compaction of the fodder mixture. The ram which is used to press the mixture inside the cylinder is of 10 mm thickness and 136 mm diameter. Four support plates are used to hold the cylinder and cover assembly along the fodder mixture during the compaction process. The cylinders are of 270×250 mm^2 of area and 254 mm thickness each. The whole machine is given support by four caster wheels of 75 mm diameter.

The paddy or wheat straw cut in small pieces of 20–25 mm of length is mixed with dry fodders and other nutritional ingredients in powdered form along with molasses (2–4% by weight) to form the raw material to produce the feed block. Molasses works as a binder material. The mixture is placed manually inside the cylinder. The cylinder and the cover assembly are locked inside the support plates. It can be locked inside the plates invariably by right or left turn. Now, by a manual hand operation, strokes are given on the input cylinder of the hydraulic jack by means of a lever. Due to this the press ram of the hydraulic jack inside the cylinder compresses the feed and forms the feed block. After an interval, the press ram of the jack is brought down. The cylinder and the cover assembly are unlocked from the supporting plates. The

Fig. 3 Operational model of feed block making machine developed by RuTAG; **a** Feed block production machine; **b** Preparation of mixture for feed block; **c** filling the cylinder manually; **d** Hydraulic jack; **e** Feed block

cover is then detached from the cylinder and by the help of a wooden ram the feed block is brought out. Details about the working of the machine are depicted in Fig. 3.

4.3 Performance of the Machine

The performance of the machine is tested against different mixture compositions of straw, dry fodder and molasses. The most stable weight of the feed block is tried to find out. The test results show that the maximum weight of the feed block should be kept around 300 g so as to get the optimum stability of the block. Otherwise the binding force among the straw is not sufficient to hold the whole weight of the block; as a result, the block gets dismantled.

4.4 Cost–Benefit Analysis of the Machine

The average of total time taken for production of one feed block is about 3 min. Therefore, total number of feed blocks that can be produced per hour is = 20 (approximately).

The weight of one feed block = 0.3 kg.

Total weight of feed blocks produced in 1 h = 20 × 0.3 kg = 6 kg.

If we consider that feed block requirement for one cattle along with the normal fodder = 4 to 5 kg/day.

Thus, one person working for 1 h can meet the fodder requirement of one cattle for one day.

Calculation of cost–benefit analysis is shown in Table 1. Since raw materials are not available during winter season, so, total working days considered is 200 days only.

The study on economics reveals that a profit margin of USD 1342 can be achieved per year with the newly developed multi-nutrient complete feed block production machine. The cost–benefit ratio is found to be as high as 1.87. Thus, this machine is proved to be economically viable.

4.5 Comparative Statement of the New Machine with Existing Machine

A comparative statement of the new machine with ICAR machine is presented in Table 2.

5 Results and Discussions

The analysis of the case study presents a number of interesting findings and lessons that can be summarized in the following subsections:

Table 1 Cost–benefit analysis

Sl. No.	Particulars	Detail explanation	Total amount
1.	Feed block produced per year	Block per hour × 8 h	160 blocks/day
		160 blocks/day × 200 working days/year	32,000 blocks
2.	Raw material Cost of one feed block (300 gm)	0.20 kg Paddy Straw ($0.074/kg) = $0.0148 0.05 kg dry fodder ($0.074/kg) = $0.0037 0.05 kg molasses ($0.22/kg) = $0.011	Total Cost of raw material = $0.0295
3.	Total raw material cost per year	$0.0295 × 32,000	$944
4.	Labour cost involved/year	Wages @ Rs. $2.97/day × 200 working days	$594
5.	Total production cost	Sl. No. (3 + 4)	$1538
6.	Sale price of one feed block	As per present market value @ $0.30/kg	$0.09
7.	Total revenue per year	$0.09 × 32,000	$2880
8.	Net profit per year	Sl. No. (7-5)	$1342
9.	**Cost–Benefit Ratio**	Sl. No. (7:5)	**1.87**

5.1 Better Technology

The said intervention is providing a new machine which is simple, easy to use and adaptable with little infrastructure in remote villages. The technology is economically viable. Moreover, it does not have any extra environmental impact that is, the intervention is environmentally sustainable. It will generate entrepreneurship in villages in two ways: (i) selling of feed block, and (ii) manufacturing the machine and selling it to Yak rearers. Thus, the technology will have the positive impact on the rural economy. A case summary is presented in Table 3.

5.2 RuTAG Evolving as Collaborative Technology Development Strategy

We already have discussed that one of the major hurdles of low technology diffusion in rural India is fragmentation of socio-technical efforts. However, if we analyze RuTAG's technology development and delivery strategy, we can find that different actors from diverse background are parts of the process.

- In this case, the need of technology intervention was identified by an NGO namely, Northeast Centre for sustainable Development (NECSUD), a non-profit organiza-

Table 2 Comparative statement of the new machine with ICAR machine

Sl. No.	Subject	IARI machine	New machine
1.	Cost	Around 10,00,000 USD	USD 450 only which will be reduced on mass production
2.	Transportation	The structure of the machine is bulky, thus difficult to transport to the remote areas	Welded parts are avoided; due to preference for nut and bolt joint it can be easily assembled at the doorstep of the customers that extends its adaptability in remote areas
3.	Mode of operation	3-phase electricity supply is required to operate the machine. Inadequate supply of electricity limits the use of the machine in far-flung areas	Its operation is manual and unskilled labour force can also operate it
4.	Productivity	Productivity is very high; hence not suitable for small and marginal farmers. Again, implantation of cluster mode is also not feasible as the population density is very low in the targeted places	Productivity is optimized to make it convenient for small farmers
5.	Maintenance	For maintenance related issues, users are highly dependent on technical persons situated in cities which is not convenient for farmers	Maintenance related issues can be solved in the village level

Table 3 Comparative statement of the new machine with IARI machine

Sl. No.	Parameters	Observation
1.	Key drivers	Scarcity of fodder during winter that results deaths of cattle due to starvation
2.	Social impact	Appropriate technology which is adaptable in remote villages and has the potential to reduce food scarcity of cattle
3.	Major obstacle	Negative attitude of rural people about new technology and the absence of manufacturing unit in villages
4.	Solution	Developed technology is cost-effective, adaptable to local condition and simple to handle for the unskilled workforce; besides village-based workshop is trained to manufacture the technology locally
5.	Innovation	The compression process is redesigned so that it can be operated manually, and the size of the machine is reduced to make it adaptable in the hilly region
6.	Alternatives	Feed block making machine provided by IARI, New Delhi as shown in Fig. 1

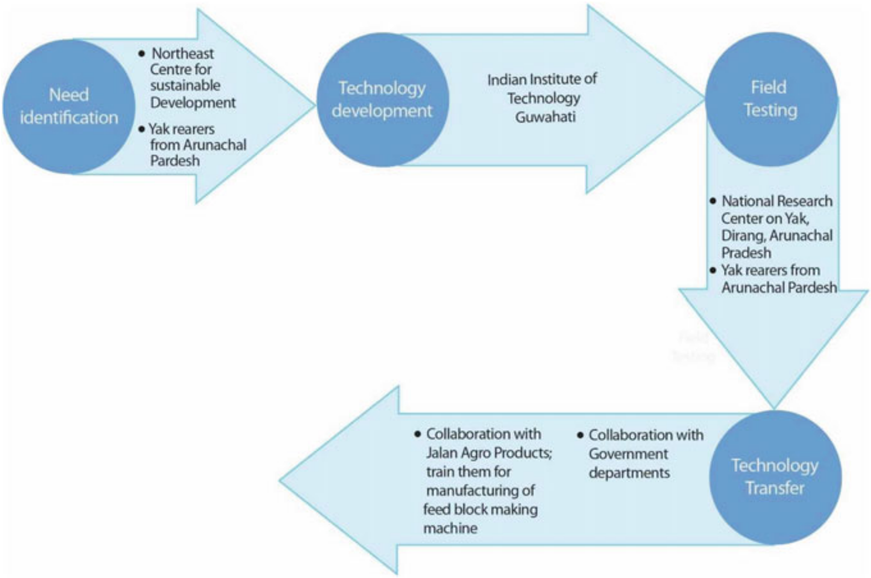

Fig. 4 RuTAG collaborative model for rural technology design and delivery

tion working for sustainable development of the society. They approached RuTAG for the first time to inform about the importance of a new machine for cattle rearers. Based on discussion with NECSUD officials, RuTAG initiated a pre-design study. RuTAG officials interacted with targeted yak rearers to understand the needs as well as constraints of technology intervention. Based on discussion with yak rearers design criteria were finalized.

- The works related to design and development of the machine are carried out at Indian Institute of Technology Guwahati.
- Again, RuTAG made collaboration with National Research Center on Yak, Dirang, Arunachal Pradesh for field testing and technology transfer. Since, the organization has been working for the promotion of research and development for Yak farmers, such kind of collaboration has extended the scope for better understanding of the issue.
- Manufacturing units situated in the state is contacted for mass production of the machine. They were trained so that the machine can be manufactured locally. In doing so, problems arise due to transportation can be reduced. At the same time, maintenance related issues can be solved locally in future.
- Hence, one can conclude that RuTAG's technology development programme is inclusive in nature.

A diagrammatical representation of RuTAG's collaborative technology development process is presented in Fig. 4.

5.3 Correcting Rural Technology Design and Delivery

Reddy [32] discusses different failure modes in rural technology development and delivery in India. Such failure modes can be cited here as (i) failure to understand the needs of the rural society (ii) R&D level failure that fails to develop technology to suit local condition (iii) inappropriate manufacturing strategy (iv) failure to satisfy need of the villager according to their order of priority (v) failure to provide necessary handholding in the long run.

RuTAG is an initiative through which the Government of India is trying to rectify the traditional technology transfer system and creating a new rural technology policy mechanism in the country. In RuTAG, stress has been given to take villagers at the centre of the technology development process so that their needs, constraints and priority can be accessed before design and development of technology. Besides, RuTAG is creating a new hand holding mechanism so that technology users don't face problems related to maintenance in future.

5.4 Empowering Local Community

To ensure empowerment of a community, the development initiative should continue even after a community reaches sustainable development so that community people can be taught about how to use and maintain new intervention in the long run [39]. Community empowerment would be achieved only when the community participation inclusion is ensured in the process of development of new technology.

In this case study, a collaborative platform has been formed with the participation of government officials/department, non-government organizations, local village-based manufacturing units and technology users. Hardware of the technology, as well as the technical knowledge, know-how about the new technology are transferred to community/manufacturing units so that they can manufacture technology and adjust technology features as per needs. Necessary training has been provided for technology manufacturer as well as technology users. Hence, this case study can be seen as one of the examples of community empowerment initiative by RuTAG.

5.5 Case Study Fitting into Sustainable Development Goal

As we mentioned in the Sect. 2.2, the United Nations Open Working Group has crafted 17 sustainable development goals with different agendas to be achieved by 2030 for global sustainability [9]. In each goal, objectives to be achieved are clearly mentioned. In this section, we have aimed to explore how the RuTAG's case is in line with fostering implementation of SDGs. The case is analyzed, fit different dimensions of the framework of the SDGs namely, SDG1, SDG2, SDG8, and findings

Table 4 Case summary fitted with SDGs

Sl. No.	SDGs	RuTAG's intervention fostering SDGs
1.	SDG1: End Poverty in all its forms everywhere	The said intervention has the potential to improve the income of the yak rearers that will help to eradicate poverty
2.	SDG2: End hunger, achieve food security and improve nutrition and promote sustainable agriculture	One of the objectives of SDG2 is double the agricultural productivity and incomes of small-scale food producers. The Yak rearers are primarily farmers and the said machine will ensure food security for hunger. So, the intervention has the potential to help better implementation of SDG2
3.	SDG8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	The Yak rearing activity has a greater impact on the rural economy of the Himalayan region. Many farmers get bread and butter out of the Yak rearing activity. Hence, the said intervention will have greater impact to promote SDG8

are summarized in Table 4. Besides, a diagrammatic representation of RuTAG's contribution to economic, social and environmental sustainability is also presented in Fig. 5.

6 Conclusion

We have explored how RuTAG is creating a technology delivery mechanism for rural people in India which is inclusive in nature and fostering sustainable development in the society. Based on the study following conclusions can be drawn:

- RuTAG is developing such systems, which percolate to the common people for the betterment of their livelihood and economic condition. In this case, while designing the machine, maximum effort is being taken to keep the cost at its minimum. As to match with the economic condition of the poor, manually operated hydraulic jack is used, which has enhanced the adaptability of the machine in resource-constrained society, where the inadequate supply of electricity is a major problem. The overall cost involved in developing the prototype model in laboratory level is around \$450, which is much lower than of the presently available model that costs around \$10,00,000. This will take the machine towards the needy people. Due to the portable design of the machine, which facilitates its easy transportation and thus availability at the doorstep of the actual beneficiary, it provides economic benefits

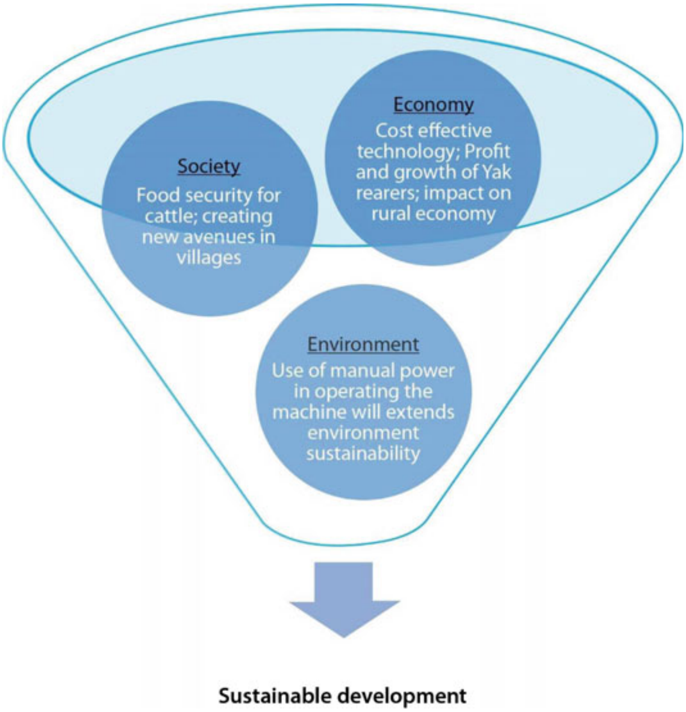

Fig. 5 RuTAG fostering implementation of SDG

by cutting the hidden cost involved in the transportation of both raw material and feed blocks to and from the production centre.

- The feed block is full of nutritious ingredients as compared to that of regular fodder, which will enhance the health of cattle and thus increase the return, in the means of milk and meat production. This will again help in gaining economic uplift of poor farmers. Medicinal plants will also be used as the ingredient in feed blocks, which will protect cattle from different seasonal and deadly diseases. This will reduce the mortality rate of cattle in those terrains and thus indirectly become helpful in economic development.
- How RuTAG is addressing economic, social and environmental sustainability through the development of appropriate technology is shown in Fig. 2. In achieving its goal, RuTAG has successfully created a triple helix model where academic/research institutions like Indian Institute of Technology Guwahati, National Research Center on Yak, Dirang, Arunachal Pradesh; not for profit organizations, namely, NECSUD and Yak rearers have created an ecosystem for mutual knowledge sharing among the actors of the system. Hence, RuTAG may be termed as a catalyst to create a platform of a diverse community that indirectly helps in fostering sustainability in the society.

- The case study has led to the conclusion that both the hypothesis considered here is true. The paper has established a conceptual link between RuTAG, inclusive innovation and SDGs. It will bring a new perspective to policymakers in India for future rural technology planning.

7 Limitations of the Study

To get a border perspective of the objectives, more number of case studies should be included in the study. Due to limited time period, only one case is presented here. Future researchers should consider more such studies with more and more cases from RuTAG to get a better understanding of the subject.

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