

**Consultancy project report**

**on**

**Integrated cycle of Cow- Project for Rural Self  
Sustainable Economic Development**

**Prepared by**

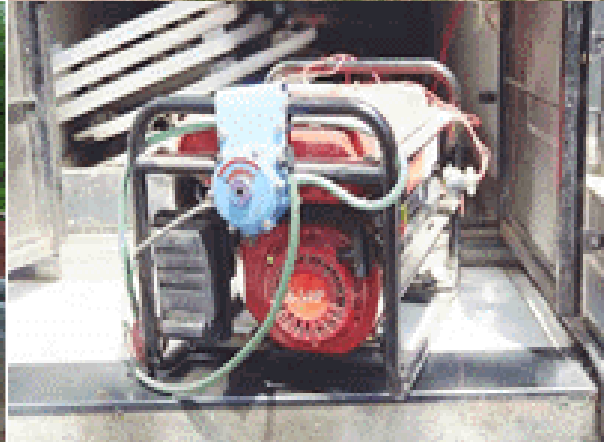


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# **Integrated cycle of Cow- Project for Rural Self Sustainable Economic Development**



**An Indigenous Cow based Model Project for Sustainable Rural Income & Employment generation**

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## **Integrated cycle of Cow- Project for Rural Self Sustainable Economic Development**

### **SUMMARY OF THE PROJECT:**

A major part of India's population lives in rural areas. Though our national economy is totally agro-based is a known fact, no longer the agriculture be a substitute to meet the needs of rural people. It is clear from the major flow of money, which is through urban areas. To improve this prevalent condition government has started several schemes. Despite the fact wherein large amounts of money allocated for the series of schemes designed to generate employment in rural areas, the scenario is not so conducive and encouraging, where million of people remain jobless or are partially employed, which borne little fruits. Unemployment is the major cause of rural poverty and migration of rural people to urban areas.

The proposed project aims towards holistic development of villages. The indigenous cows rearing in small group of dairies (10 cows per dairy and at least 5 dairies in one village) and processing of cow products are the major activities for sustainable income and employment generation involving weaker sections of the society i.e. small marginal farmers, SC/ST, women, unemployed youth etc. The key resource here is Cow. It is tried to achieve partial independence in energy requirements using biogas generated from cow dung for cooking, lighting and electricity generation at village level. Along with rural energy need, milk and milk products are to be produced at village level and further these are to be consumed in the house hold and also sold in the local market for income generation and protection against malnutrition. The digested slurry from biogas plant will be used for organic farming and for cultivation of medicinal plants and herbs in the area. Cow urine will be used for preparation of biopesticides. The project provides an assured alternative energy supply at lower cost. Human resource development will also be an integral part of the proposed activities. Local people will be given training as per need for their skill development and processing of the material to fetch more income for them. The project establishes rural industrial estates for efficient utilization of local available resources based on integrated cycle of cow. This will create number of employment opportunities in the area, thus rural people will earn and generate more income, thereby, reducing poverty level existing in the area. The proper management and potential utilization of locally available resources without disturbing the environment will make the village self reliant in economy as envisaged by Mahatma Gandhi.

Key features of the proposed project are based on holistic development of rural areas:

1. Integrated cycle of cow based products and its backward-forward linkages for income and employment generation in rural areas
2. Self reliant local energy generation from cow dung (biogas for cooking, lighting and electricity generation)
3. Supply of cow milk and its products after value addition and prevention of malnutrition in the area
4. Encouraging shifting from chemical agriculture towards organic agriculture
5. Growing medicinal plants and herbs for rural local health care
6. Waste land development for food, fodder, fiber and employment generation

**Project Title:**

# **Integrated cycle of Cow- Project for Rural Self Sustainable Economic Development**

## **OBJECTIVES:**

The proposed project is formulated for the following objectives:

- 1) Integrated cycle of cow products and its backward- forward linkages for income and employment generation in rural areas
- 2) Establishing group of dairies (herd of 10 cows in each dairy) for cow milk and its products production at village level involving small and marginal farmers, women, landless labours, SC/ST etc.
- 3) Generation of biogas for cooking, lighting and electricity generation to achieve self sufficiency in energy demand
- 4) Organic farming using digested slurry and producing other organic manures and cow urine based pesticides
- 5) Cultivation of medicinal and herbal plants for local health care system

## **1. INTRODUCTION**

The unemployment rate in India during 1993-94 was 6.0%, which has been increased to 7.3% in the year 1999-2000. 75% of the population out of these is from rural sector. This is primarily because of the present practice of shredding excess labour, increased capital intensity per unit output and pattern moving towards capital intensive sector. The employment generated by organized sector is only 8%, while the rest 92% is generated by unorganized sector. So, the future employment strategy is to encourage the use of labour intensive and capital saving technology. Special attention should be given to small, medium and micro enterprises in the villages and rural industries, the areas identified for employment generation.

Agriculture having little capacity to absorb surplus labour now, the rural population began to migrate to urban areas, creating numerous social, economic and hygienic complications. The trend increased with the rapid growth of population and subsequent quick expansion in the availability of machine made manufacturing. This created, apart from the aforesaid problems, much more intensity in the cities. It also led economic and social injustice between men, society and regions (Bhattacharya 1980). The above aforesaid problems direct us to generate more employment opportunities and avenues in rural areas. At the same time (keeping in mind the constraints) the employment opportunities should be such, which are economically viable, eco friendly in nature (to achieve sustainability), technologically feasible and socially acceptable.

Agriculture is the most important sector of the Indian economy from the perspective of poverty alleviation and employment generation. Agriculture contributes close to a 1/4 of India's national income, though the share has decreased from 56.5 % in 1950-51 to 24.3 % in 2001-02. The percentage of workforce engaged in agriculture has declined from 76 % in 1961 to 60 % in 1999-2000. Industrial growth of the country largely depends on agricultural production.

A number of case studies conducted in Rajasthan shows that a probable thrust on sustainable tiny village industries, may take care of the abundantly available human resources, by throwing up opportunities to them to emerge not only as entrepreneurs but also as wage employers. This will also avoid huge transportation costs and generate sufficient gainful employment to those underemployed in the agriculture sector. Moreover, the case study shows that the upgradation

and quality control of the products was one of the major limitations of such industries.

Therefore, the balanced mixture of modernity and tradition in the real sense will facilitate the development of a nation. The results will be fruitful if we combine both modern science and traditional science and get best out of them. No economy can really be beneficial in making country great unless it takes into consideration of the social and ethical well being of the nation.

We have neglected the importance of cow and her products due to modernization, industrialization and influence of western culture. But, once again the whole world is realizing the importance of her immense potentialities. She can prove to be a boon in the areas of agriculture, science and technology, industry, energy, medicine etc for the development of any nation, in addition being eco-friendly in nature. Thus *panchgavya* (cow milk, curd, ghee, cow urine and cow dung) and its products can form the basis for revitalization of rural economy.

In India the total cow breed population is estimated up to 17 crores. The average production of cow urine/day/cow is 5-6 litres and of cow dung/day/cow is 10-12 kilograms. In total approximately 95-102 crore litres of cow urine and 170-204 crore kilograms of cow dung is produced everyday. Very small proportion of this production is utilized these days. Proper utilization of cow dung and cow urine into manure, pesticides, medicines and other daily products can generate millions of employment opportunities in rural areas as well it can protect soil from chemicals and fertilizers and improve soil fertility. The whole cow based integrated cycle is environmentally friendly.

Increasing awareness about ill effects of chemicals and pesticides in quality, taste and other properties of agricultural produce all over the world indicates that people prefer buying organic food products and in future higher prices of agricultural produce can only be fetched with organically produced materials. While input cost is less in organic farming at the same time selling cost is higher for such produce. It has also been established at many places in our country that in this way yield is not reduced. This is the only way for agriculture to sustain in long future.

Traditionally organic agriculture is very rich and time tested (scientific) practice in India and therefore, agriculture survived here for last five thousand years. The large quantity of organic manure can also be produced in village having large number of animals. Vermi compost, pesticides and herbicides can be prepared by cow urine & cow dung and neem leaves formulations in large quantity at village level.

Day by day draught animals are becoming burden on farmers and are proving uneconomical. This will also explore the avenues for the use of bullocks to run animal drawn tractor, generator and carts, which are eco friendly, sustainable and economical way to perform different agriculture practices, electricity and transportation which will enhance their utilization hours. And also the dung could be utilized for biogas production, which will provide bio-manure and bio-energy on a sustainable basis. This will also help to establish animal-human-agriculture synergy to sustainable development.

## **2. THE PROJECT**

The project aims towards utilization of indigenous cow resources of rural areas for the benefit of weaker section of the society for their better livelihood, employment opportunity and protection against malnutrition. Small and marginal farmers, women, landless labours, artisans, SC & ST, unemployed youth etc. are the beneficiary groups whom the project aims to strengthen. It is

based on the integrated cycle of indigenous cow in which the cow products like milk, cow dung, cow urine etc. will be processed for:

1. Value added milk and milk products for protection against malnutrition in the rural areas.
2. Cow dung for biogas production and efficient utilization of bullock power for energy self reliance.
3. Cow urine, biogas slurry and manure for organic agriculture and cultivation of medicinal and herbal plants.

It is envisaged that in every village a group of 5 families will be taken up initially who will take up cow rearing (dairying) as its occupation for the family. Each family will have 10 indigenous cows (5 milching + 5 non-milching) at the time of starting to make it economically viable and sustainable. Therefore, approximately 50 adult cows will be owned by these groups of five families in addition to the calves with milking cows. Milk produced with them will be processed or sold after their own consumption. Cow dung will be collected and a family size biogas plant will be installed for gas supply in these individual families for cooking need and electricity generation. Cow dung slurry will be used for organic farming in the village. In addition to these families other families may take up work of waste land development for supplying fodder, cultivation of herbal and medicinal plants, preparation of cow urine based pesticides and making other products. It is assumed that sufficient income is generated to each family in this occupation and linked activities. Marketing of their products will also be assisted in a proper way. They will form a self help group and supported through various schemes of the Government such as NABARD, Ministry of Rural Development, Ministry of Agriculture etc.

The major components of the project are:

1. Establishing 5 small dairy of 10 indigenous cows by involving 5 families in a village
2. Value addition of milk produced from these cows (common for all 5 group)
3. Preparation of cow urine medicines and pesticides (common for all 5 group)
4. Construction of 4 m<sup>3</sup> biogas plant in each established dairy and slurry management
5. Cultivation of herbs and medicinal plants
6. Promotion of organic farming and waste land development
7. Training cum service cum marketing support services

The weaker section of the society in village will take advantages of the project for their livelihood and contribute in the rural economy, sanitation and environmental up gradation.

### 3. PLAN OF WORK FOR SUSTAINABLE RURAL ECONOMY (METHODOLOGY)

The proposed project is hereby formulated for holistic development of rural area via effectively utilizing the resources from cow rearing.

	Resource	Outcomes
Rearing cow (Dairying)	Milk	Direct income by selling raw milk/protection from malnutrition Making various milk products and further selling in near by market
	Dung	Biogas generation for their own energy application <ul style="list-style-type: none"> <li>• Cooking food</li> <li>• Lighting and electricity</li> <li>• Engine operation for irrigation pump sets</li> </ul>
	Urine	cow urine distillate fraction for making various medicines and bio-pesticides
	Biogas Digested dung	Enriched manure- organic farming, Growing quality crops and medicinal plants
	Cultivation of medicinal and herbal plant	Additional income generation and local health care
	Bullock	Efficient utilization of animal power

#### 3.1 Indigenous Cow Dairy Development

A group of 5 families having 5-6 members will be identified. The families which have small agricultural land and willing to associate will be considered.

Number of Group	Number of cows in each group		Resource generated from a single group		
	Milking	Non-Milking	Milk	Dung	Cow Urine
5	5	5	25 litre per day	50+50= 100 kg/day	50 l/day
Total from 5 group			125 l/d	500 kg/d	250 l/d

Note: 1. Average dung production per day per cow 10 kg.  
2. Average milk production per day per cow approx. 5 litre.  
3. Average urine production from one cow 5 litre per day.

#### 3.2 Rearing and Management

Rearing and management involves construction of cow shed and raising them properly.

**3.2.1 Construction of cow shed:** A shed of 12 metre in length and 5 metre in width is sufficient to accommodate 5 milching cows with calves and 5 Non-milching cows in standing position when kept facing towards the wall and the manger shall be adjacent to wall. The calves of the



milking cows shall be kept apart in a common shed from the mother cows.

The dimension of the manger shall be as listed below:

Dimension of brick manger (all dimension in cm)			
Height of fore curb, Max	Thickness of fore curb, Min	Inner width of manger, Min	Depth of manger, Min
30	10	75	30

### 3.2.2 Feeding and rearing:

The feed required per day is listed below.

Feed	Milking cow	Calves	Non-Milking cow	Total feed per day per group, kg	Total for 5 group, kg
Dry matter, kg	$5 \times 3 = 15$	$5 \times 1.2 = 6$	$5 \times 3 = 15$	36.00	180
Green Fodder, kg	$5 \times 6 = 30$	$5 \times 2 = 10$	$5 \times 4 = 20$	60.00	300
Cake, kg	$5 \times 3 = 15$	$5 \times 1 = 5$	$5 \times 2 = 10$	30.00	150

### 3.2.3 Cost involved in construction of shed and daily feeding and rearing:

Item	Approximate cost, Rs.
<b>A. Capital cost</b>	
Construction of shed for cows and calves	1, 000, 00/-
Cost of cows ( 5+5) (Cow @ Rs. 8, 000/- and Non-milking cow @ Rs. 6, 000/-)	70,000/-
<b>Total capital investment for one dairy</b>	<b>1, 70,000/-</b>
<b>Total capital cost for 5 group</b>	<b>8,50,000/-</b>
<b>B. Daily feeding cost</b>	
Dry matter (Bhusa etc.) @ Rs. 2.50/kg	36 kg 90/-
Green fodder @ Rs. 1.50/kg	60 kg 90/-
Cattle feed @ Rs. 5.00 /kg	30 kg 150/-
Other associated cost	20/-
<b>Total daily feeding cost</b>	<b>350/-</b>
<b>Total daily feeding cost for 5 group of dairies</b>	<b>1,750/-</b>
<b>Total annual feeding cost</b>	<b>6, 38, 750/-</b>

Labour work will be done by family members.

## 4. MANAGEMENT OF RESOURCES

### 4.1 Utilization of Biogas for Cooking and Lighting

The group of 10 cows (milking and non-milking) will produce daily 100-125 kg dung.

- This is sufficient to produce 4 m<sup>3</sup> biogas daily.
- One person needs 0.24 m<sup>3</sup> biogas daily for cooking food (5 person requires 1.2 m<sup>3</sup> biogas daily).
- One mantle lamp of 100 candle power needs 0.13 m<sup>3</sup> biogas/h (for 4 h lighting 0.52 m<sup>3</sup> biogas requirement).
- Total biogas requirement for cooking and lighting is 1.72 m<sup>3</sup> biogas daily for a family of 5 members.
- Along with above 1 kWh electricity can be generated from 0.75 m<sup>3</sup> biogas.
- Biogas plant of 4 m<sup>3</sup> per day capacity is sufficient to meet the daily cooking lighting and other heating requirement of a family having 5 members.

Biogas plant: A 4 m<sup>3</sup> /day capacity KVIC type biogas plant will be constructed at beneficiary's home site to meet his requirement.

**Cost involved:** Rs. 25, 000 per plant including Government subsidy.

Total cost for installation of 5 family size (4 m<sup>3</sup> capacity) biogas plant = 1, 25, 000/-

#### 4.1.1 Slurry management

Along with 4 cubic metre biogas 30 kg dry slurry will be produced daily. This will amount 10.95 tonnes per year per biogas plant. It is proposed that this biogas spent slurry is used for organic farming and cultivation of medicinal plants.

### 4.2 Production of Cow based Fertilizers and Pesticides

Traditionally organic farming has been the agricultural practice in India. Intake of toxic substances in human beings and animals has increased due to chemical inputs in agriculture. People are now seriously concerned with the protection of our environment and even more about safeguarding their health. Cattle will not only supply the dung and the urine for the making of compost and pesticide but will also produce milk, which is the raw material for wide range of dairy products. Organic farming automatically leads to the diversification of farm activity. For, small marginal farmers, organic farming is most suitable as considerable integration is possible and appreciable cost savings could be achieved through recycling of waste and other materials that are available within the system.

One of the major advantages of organic farming therefore is that both the farmer and the government are able to minimize expenditure, and in particular, the farmer is able to make environmental friendly compost without heavy outlays. Even if some farmers would have to buy organic manure the price indeed will be very low as this produced out of what are called today waste materials. Specialists say that organic manure will prevent weed growth, as against chemical manure, which stimulate weeds. In the present circumstances many farmers use chemicals to keep weed in check. Going back to the natural methods of farming has benefits, which are self-reinforcing. It creates a safer environment for both the consumer and the producer. Organic farming produces healthy plants and safeguards the health of animals because the grass that the cattle feed is not fertilized by chemical nutrients. One of the most important

considerations is that organic farming can be deployed everywhere and in any kind of agriculture in the country, irrespective of where the land is situated and it is applicable to all crops without exception.

Cow based fertilizers and pesticides are organic in nature and will help in restoring, maintaining and enhancing the ecological balance. The potential estimated is 600 million tones of wet dung contains about 4.2 million tonnes of nitrogen, about 2.1 million tonnes of phosphorus and about 2.1 million tonnes of potash. The combined value of these three fertilizer elements from inorganic sources would come over 3,500 crores of rupees at current fertilizer prices. A successful experiment has been conducted in Goseva Kendra at Wardha. In consultation with fifteen villages they began biological farming. Earlier they had to spend Rs 5100/- on chemical fertilizers for one hectare of land. Now it has come down to Rs 3100/-. In the same time their health is also improved.

*The proposed group will generate 10.95 tonnes per year enriched manure spent slurry from the biogas plant which will cut down the expenditure on chemical fertilizers by 50 percent per annum.*

### **4.3 Production of Panchgavya and Its Products**

The cow is the representative of the world, which is full of goodness, affection, attitude, mercy and sacrifice. It also gives its five products. But, for petty economical and tangible gains of little number of people, it has resulted in cruelty, exploitation and massacre of useful animal. All of these are going to slaughterhouses. It is therefore necessary to blend science and tradition and place the facts before the people and save this precious species for the welfare and survival of the human beings. Once the scientific and economic importance is realized, people will automatically take care of national economy, cow breed. Hence, *panchgavya* and its products have a great potential to form sustainable entrepreneurship, which thereby leads to form sustainable economy.

As the world is becoming sensitive towards issues of environment, ecology and chemical in agriculture, the new era has come to think the alternative for chemical fertilizers, pesticides, petroleum products and environment destruction parameters. Rural areas development and sustainable agriculture can take place based on “Goshala” (cowherd) centre based biogas electricity generating system, rural industrial complex, bio-fertilizers, bio-pesticides using cow-dung and cow-urine (Vijay 2002).

The average production of cow urine/day/cow is 5-6 litres. In total approximately 95-102 Crore litres of cow urine is produced everyday. Proper management of cow dung and cow urine can save precious foreign exchange and provide with pollution free energy and thereby maintaining ecological balance. Cow urine has been described to be the most effective substance or secretion of animal origin with innumerable therapeutic values.

In ayurveda cow urine is suggested for improving general health. It was found that “cow urine distillate fraction” enhanced the potency of taxol (pactitaxel) against MCF-7 a human breast cancer cell line in in-vitro assays(US patent No. 6410059). (Central Institute of Medicinal and Aromatic Plants, 2002). Many research institutions are concerned with carrying out the examinations related to medicinal medicinal and chemical properties of *panchgavya*. Some of the important properties recognized by Go-Vidhyan Anusandhan Kendra, Devalapur are as follows(, but the research is still going on).

*A total of 50-60 litre cow urine will be produced daily in every dairy which has to be utilized for*

*cow urine distillate and making pesticides and medicines.*

#### **4.4 Production of Cow Milk and Its Products**

Milk is always considered ideal food for infants and children and a good supplementary food for adults as it supplies good quality protein, calcium and vitamins particularly vitamin A, riboflavin, niacin, and folic acid. In addition, milk contains several bio-protective molecules that secure health security to humans. There seems to be no adequate substitute of milk. The cow milk is the most important of all these animals as supplier of food nutrients (Chakravarty I. and Ghosh K., 2002).

##### *Nutrients content per 100 gm Cow's Milk*

Protein(3.2 gms), Fat (4.1 gms), Carbohydrates(4.4 gms), Calcium(120 mg), Phosphorous(90 mg), Iron(0.2 mg), Carotene(53 mg), Thiamine(0.05 mg), Riboflavin(0.19 mg), Niacin(0.10 mg), Folic acid(8.5 mg), Vitamin C(2 mg ), Energy: 67 Kcal

Milk has a very good quality protein and the biological value is over 90. Though milk contains only 3-4 % protein, due to the rich quality of protein and the amount that can be ingested and the presence of other nutrients, makes it indispensable. Lysine is one of the essential amino acid, which is abundant in milk protein. Cheese, khoa and dehydrated milk powders are concentrated forms hence contain high amount of nutrients per unit.

The fat of milk is easily digestible. It contains linolenic acid (0.5%) and arachidonic acid (0.12%). Dairy foods are a major source of calcium because of significant amount of minerals present. The calcium: phosphorous ratio (1.2:1) in milk is regarded as most favourable for bone development. In addition dairy products contain other nutrients such as vitamin D and lactose, which favour calcium absorption. Milk is not only used as such but many products, fermented and non-fermented are used in cookery. Various forms in which milk can be consumed are:

##### **4.4.1 Unfermented products**

*Skimmed milk* is deficient in fat and fat-soluble vitamins but the protein, sugar, minerals and vitamin B factors (except pyridoxine) are well preserved. If skimmed milk powder is supplemented with vitamin A, D and pyridoxine, it is a comparatively cheap food of high nutritive value. It is helpful for the treatment of malnutrition, the nephritic syndrome and the cirrhosis of liver. The addition of about 6 tablespoons of skimmed milk powder during the preparation of chapattis, custard, curd, etc will supply an additional 35 gms of protein. *Toned milk* is prepared by mixing equal parts of fresh buffalo milk (rich in fat) and reconstituted skimmed milk powder. The fat, protein, carbohydrate, vitamin and mineral contents – and thus the nutritive value – are the same as fresh cow's milk. It is a useful source of proteins for malnourished children and pregnant women.

*Khoa*(Mava) is milk in which the water content is reduced to between 20% and 25%. It is prepared by vigorously boiling milk and stirring it continuously to avoid burning at the bottom or overflowing at the top. When cooled, khoa forms a uniform mass, containing fats, heat-coagulated proteins and lactose. Khoa supplies 82 Kcal per tablespoon.

*Chhana*(cottage cheese) is prepared by adding lemon juice to boiling milk; this precipitates casein, lactalbumin and fat. The liquid part (whey) is strained through cloth and chhana is collected.

Whey is a byproduct of butter and cheese production and is frequently discarded. However, when dried it can be preserved, and forms a good source of nutrition in poorer countries.

#### **4.4.2 Fermented Products**

*Dahi*(Curd): The mode of preparation of dahi varies considerably, as does its flavour. The flavour depends upon the type of lactic acid organisms predominant in the starter. It has same calorie value as that of milk from which it has been prepared.

*Yoghurt* is the name given to milk cuddled by a specific type of lactic acid bacillus called *Lactobacillus bulgaricus*.

*Lassi*(Butter Milk): When dahi is churned with water and fat is removed, the residual acid buttermilk is called lassi. Dahi and lassi can be prepared from whole or skimmed milk.

*Ghee* (Clarified butter: Butter-fat): The composition of cow and buffalo ghee is similar: 99% fat, mostly saturated; about 1114 µgm vitamin A per 100 gms, varying with cattle feed and the freshness; and about 30 µgm vitamin D per 100 gms, varying with the exposure of cattle to the sunshine.

*Cheese Cottage*: Cheese is an unfermented milk product, but cheese produced commercially in the west is fermented product. There are over 400 varieties of cheese.

*Total milk production from a single group of cow herd (5cows) will be 25 litre per day. This will put for either selling in near by market @ Rs. 12/litre or can be value added product for further selling at higher price than raw milk.*

*The daily income generation from 25 litre milk by selling @ Rs. 14 per litre will be Rs. 350 per day and thus total per annum Rs. 1, 27,750.*

#### **4.5 Production of Daily/Domestic Use Products**

Everyone uses the wide range of domestic/daily use products. These products consume a lot of energy and money for its manufacture and the process also pollutes the environment. They are all chemical based and has long term negative side effects. Cow dung and cow urine can be used for the manufacture of wide range of domestic products mainly phenyl, mosquito repellent coil, agarbatti (fuming stick), distemper, dental powder, bathing soap, cleansing powder, shampoo, face pack etc. These can go a long way towards sustainable entrepreneurship having high market value returns.

### **5. ORGANIC FARMING, CULTIVATION OF HERBS & MEDICINAL PLANTS AND RURAL HEALTH CARE**

New activities like Alge bio-fertilizer, compost and vermin-compost manure, natural pesticide (Bio-mass), vermin-culture and some agro processing units should be harnessed so as to reduce dependency on the organized sectors of chemical fertilizers and pesticides etc. Income accruing from these activities does not get transferred to the urban areas but remain available with in rural communities.

India is a land of species and country is blessed with appropriate soil and climatic condition for various type of aromatic and medicinal plants, i.e., rose, tube rose, jasmine, germanium lavender guggual, peri winckle, etc., while species constitute and important group of agricultural

commodities and play significant role in our national economy.

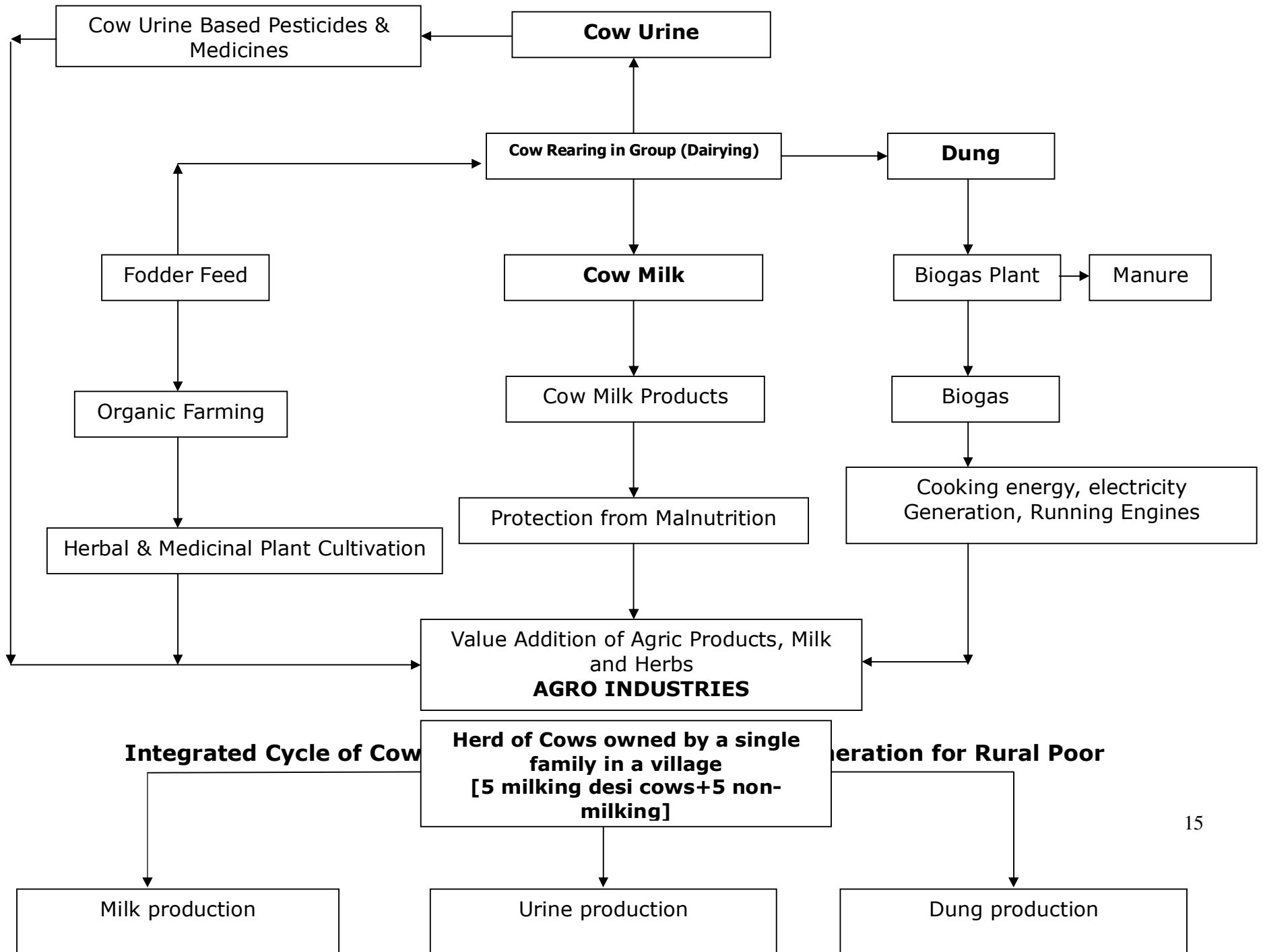
Seventy percent of India's population lives in villages. With the production of consumer articles passing on more and more to organized sectors, because of our age old traditional techniques of production which are now no more remunerative and do not fulfill the present need of local area and outside market demand resulting many of the village industries and handicrafts works have been hit severely, throwing a large number of people out of livelihood. More and more people are being forced to abandon their ancestral agro and other occupation. There are mainly artisans (landless) and small and marginal farm holdings. Through the importance of entrepreneurship for economic development has been recognized long back but systematic efforts were not made to check whatever the uneven pace of economic growth in different sector. Agriculture and various activities related to it were given employment to 68.8% of the Indian population. It is also well known that the non-agricultural income in rural areas is negligible. Some pertinent agriculture related basic facts at all India level are as follows:

1. There is not more than 0.33 hectare of gross agricultural area per rural person.
2. Income generated per hectare is only Rs. 7000-8000/-. This figure reflects the low productivity of land.

Hence income per rural person is Rs. 2334-2667/- per year.

The net result has been the break down of the village economy forcing migration to the cities creating the series of problems. Hence, it is necessary to take up new income generating activities to check the large scale and to minimize the migration to cities.

Therefore, to create employment opportunity and to maintain better livelihood in rural areas, integrated cycle of cow is a fit answer. Based on the cycle income level of a family can be raised to a satisfactory level.



## 6. ADVANTAGES OF THE PROJECT

Sl. No.	Particulars	Advantages									
1	Beneficiaries groups – SC/ST/landless labours, small and marginal farmers, women, Unemployed rural youth	Weaker section of the society will be benefited for their livelihood.									
2.	Employment generation, poverty alleviation	The proposed model of cow based rural economic project will provide employment to all 5 members of the family. In addition many indirect employments will be generated in village.									
3.	Protection against malnutrition	Though the milk production capacity of Indian cow is low but in the view of its quality and nutrient it stands at first number from any other source of milk. The milk can be easily value added in rural area by using conventional practices into curd, ghee, lassi, mava etc. that can be sold at good price thus improves economy of rural people.									
4.	Sustainable bio Energy	Cow dung has potential of 1m <sup>3</sup> biogas production from 25 kg fresh dung. The generated biogas with investment of little money can reduce the energy requirement of rural people involved in cooking food, lighting, heating water and stationary engine applications.									
5.	Digested slurry organic	The digested slurry from biogas plant after biomethanation has very good fertilizer value in comparison to direct application in the field. Biogas generation is surplus. <u>Benefits of digested slurry to soil quality and fertility</u> <table border="1"> <thead> <tr> <th><u>Primary effect</u></th> <th><u>Secondary effect</u></th> <th><u>Tertiary effect</u></th> </tr> </thead> <tbody> <tr> <td>Organic matter</td> <td>Improves physico-chemical &amp; biological properties</td> <td>Increases yield and yield sustainability</td> </tr> <tr> <td>Physical buffer</td> <td>Reduces raindrop impact &amp; wind shear</td> <td>Reduces erosion</td> </tr> </tbody> </table> Various applications such as organic composting and biofertilizer for growing quality field crops and cultivation of various medicinal plants. Medicinal plants are getting popularity at the present pace of time in regard of herbal medicines	<u>Primary effect</u>	<u>Secondary effect</u>	<u>Tertiary effect</u>	Organic matter	Improves physico-chemical & biological properties	Increases yield and yield sustainability	Physical buffer	Reduces raindrop impact & wind shear	Reduces erosion
<u>Primary effect</u>	<u>Secondary effect</u>	<u>Tertiary effect</u>									
Organic matter	Improves physico-chemical & biological properties	Increases yield and yield sustainability									
Physical buffer	Reduces raindrop impact & wind shear	Reduces erosion									
6	Protection of environment, rural sanitation and rural energy security	Clean renewable biogas reduces emission, burns smokeless, application reduces methane emission into environment. Methane emission is 21 times more harmful gas than carbon dioxide in the regard of Green House Gases. Along with protection of environment from various inbuilt hazards its use secures village energy requirement up to great extent via utilization of animal generated wastes									
7.	Conservation of indigenous beeds	Saving the desi breed of Indian cows which are highly valuable for agricultural point of view, are source of production of draught oxes for agricultural tillage and other applications such as animal power generation.									



## 7. MANAGEMENT AND RISK INVOLVED

The project will be managed by group of families, whom the basic needed infrastructure is provided. Initially the fund will be provided by involved funding agency for creating all the facility. After that the responsible group will start earning from these cows and returns the capital investment on the basis of installment.

The risk factor here is cow diseases, though diseases in Indian breed of cows are very less. However, cows are to be insured by some agencies to reduce the incorporated risk.

## 8. ECONOMY OF THE PROJECT

<b>Cost involved for setting a single small dairy of 10 cows</b>	
<b>Item</b>	<b>Approximate cost, Rs.</b>
<b>Capital cost</b>	
Construction of shed	1, 000, 00/-
Cost of cows (Cow milching @ Rs. 8,000/- and non milching @ Rs. 6000/-)	70,000/-
<b>Total fixed cost</b>	<b>1, 70,000/-</b>
<b>Total for 5 group</b>	<b>8, 50, 000/-</b>

<b>Cost involved in installation of biogas plant for cooking and lighting</b>		
<b>Item</b>	<b>Approximate cost (Rs.)</b>	<b>For 5 group</b>
Biogas plant of 4cubic metre	25, 000/-	1,25, 000/-
Other accessories such as lighting lamp and cooking stoves and piping and fittings	5, 000/-	25,000/-
<b>Total</b>		<b>1, 50, 000/-</b>

<b>Cost involved in setting up panchgavya and cow urine based products</b>		
<b>Item</b>	<b>Approximate cost (Rs.)</b>	<b>For 5 group</b>
Distillation plant and others requirements	20, 000/-	<b>1, 00, 000/-</b>

<b>Total daily feeding cost per group</b>	<b>350/-</b>
<b>Total daily feeding cost for 5 group</b>	<b>1750/-</b>
<b>Total annual feeding cost</b>	<b>6,38,750/-</b>

**Total cost for setting up five groups of 10 cow herd based model project for rural development: (Fixed Cost)**

Item	Rs.
Cost involved for setting five small dairy each having 10 cows	8,50,000/-
Cost involved in installation of biogas plant for cooking and lighting	1, 50, 000/-
Cost involved in setting up panchgavya and cow urine based products	1, 00, 000/-
<b>Total investment</b>	<b>11,00,000/-</b>

**Annual operating cost:**

Items	Rs.
Yearly feeding and rearing cost	<b>6,38,750/-</b>
Other maintenance cost	<b>1, 00, 000/-</b>
Total (Rs.)	<b>7,38, 750/-</b>

**Yearly Income generation:**

Items	One single group	Five group
Selling milk and milk products	1, 27,750/-	6,38,750/-
Organic Manure	80, 000/-	4, 00, 000/-
Panchgavya and cow urine based products	40, 000/-	2, 00, 000/-
Medicinal plant	36, 000/-	1, 80, 000/-
<b>Total (Rs.)</b>	<b>2, 83, 750/-</b>	<b>14, 18, 750/-</b>

**Annualized cost**

<b>Fixed Cost</b>	
Depreciation on Capital cost	10, 000/-
Interest @ 8 % per year	88, 000/-
Total	<b>98, 000/-</b>
<b>Operating cost</b>	
Yearly operating cost	<b>7,38,750/-</b>
<b>Total (Rs.)</b>	<b>8,36,750/-</b>
<b>Annualized Benefit</b>	
<b>14,18,750 – 8,36,750 = Rs. 5,82,000/-</b>	
<b>Approximately Rs. 1, 16, 400/- per family</b>	

There will be direct employment to 10 persons and indirect employment to 30 persons. These costs have been taken as if all goods and services will be purchased. However in the village most of the beneficiaries will have access to free fodder from the fields and pasture land and this will reduce the cost of feeding to about 50- 70 percent. This center will also promote breed improvement of indigenous cows in the area. It will further provide them additional income by selling improved breed from the second year itself.

## **9. CONCLUSIONS**

To provide sustainable employment and better livelihood in rural areas are the major thrust areas in the country today. To achieve these goals, there is need to develop a holistic approach in which local resources are utilized efficiently by rural masses for the benefit of weaker sections of the society i.e small and marginal farmers, women, SC/ST and unemployed youth. With little training and efforts the proposed project of integrated cycle of cow raises per capita income of rural families and able to generate enough employment to stop migration. Indigenous cow is the focal point of the project with all backward forward linkages. With the implementation of the project, a family is able to earn around Rs. 1.15 lakh per year and a total of more than 10 persons will get direct employment and around 30 persons will get indirect employment in a village. This project fits in the rural employment guarantee scheme launched by the Govt. of India in February 2006.

## **ACKNOWLEDGEMENT**

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## APPENDIX-I

Loan and Grants are available from various agencies for setting up such type of model projects for livelihood development in rural areas. Some of the possible schemes/ agencies are mentioned here:

**(I) NABARD (National Bank for Agriculture and Rural Development): It offers following for rural sector.**

- Facilitating credit flow for agriculture and rural development.
- Promoting and supporting policies, practices and innovations conducive to rural development.
- Strengthening rural credit delivery system through institutional development.
- Supervising rural financial institutions (Co-operative Banks and Regional Rural Banks).
- Refinancing Rural Financial Institutions (RFIs) for their financing for investment and production purposes in rural areas.
- Loans to State Governments for strengthening cooperatives, developing rural infrastructure, health and education facilities in rural areas through Rural Infrastructure Development Fund (RIDF).
- Support for micro-credit innovations of Non-Governmental Organisations (NGOs) and other non-formal agencies.
- Monitoring and Evaluation of financed projects.

**(a) Kisan Credit Card Scheme**

As a pioneering credit delivery innovation, KCC Scheme aims at provision of adequate and timely support from the banking system to the farmers for their cultivation needs including purchase of inputs in a flexible and cost effective manner. Personal Accident Insurance Scheme formulated for KCC holders to cover them against accidental death/permanent disability.

**(b) Swarojgar Credit Card Scheme**

The normal limit under the scheme is Rs. 25,000/ per borrower. However, in deserving cases, banks may consider even higher limits. The initial investment in fixed assets and/or working capital requirement/ recurring expenditure of the borrower are to be taken as the base for fixing the limit. The total limit would have a relationship with the projected net earning and the repayment capacity of the borrower.

Term loan will be provided for meeting the investment requirements and it will be repaid within five years in suitable installments. Working capital/ recurring expenditure limit may be in the form of a revolving cash credit. A component for consumption credit could be built in, keeping in view the value of the family labour in the productive activity. Under the scheme, the banks will have absolute freedom to select the clients for the card. The focus of the scheme is small borrowers Banks may sanction Term Loan (TL) and Working Capital Loan (WCL) as a single Composite Loan or may sanction TL and WCL separately depending on the need/ convenience of the borrowers or nature of the activities. If the WCL is sanctioned as Cash Credit, the normal banking practice followed by banks for sanction/renewal of CC limits may be adopted . In order to make the transactions in the SCC a/c more realistic and regular, it is desirable to follow credit discipline. Accordingly repayment schedule may be drawn. While sanctioning loans to SHGs,

the limit may be fixed depending on the group activity and its viability.

**(c) Rural Entrepreneurship Development Programmes (REDP)**

NABARD extends grant assistance to agencies with professional competence for conducting entrepreneurship development programmes for unemployed rural youth. A comprehensive strategy has been adopted to cover one lakh potential entrepreneurs under REDP over a period of 5 years (1999-2000 to 2003-04) through institutionalization of REDP. The target has already been achieved.

**(d) Assistance for Marketing of Non Farm Products of Rural Women (MAHIMA)**

Recognizing the importance of marketing as a crucial link for women entrepreneurs the scheme 'MAHIMA' was introduced. It aims at supporting various initiatives for promoting marketing of items produced by women. Assistance is available for various aspects related to marketing like, market survey, capacity building, technology upgradation, branding, labeling, packaging, publicity, setting up of showrooms/sale outlets etc. NABARD provides 100% refinance to banks under the scheme.

## **(II) Ministry of Rural Development**

Various schemes by the Ministry of Rural Development, Government of India has been operating at district levels by the District Rural Development Agency. From these schemes fund can be collected.

### **(a) Swarnjayanti Gram Swarozgar Yojana**

The objective of Swarnjayanti Gram Swarozgar Yojana (SGSY) is to provide sustainable income to the rural poor. The program aims at establishing a large number of micro- enterprises in the rural areas, building upon the potential of the rural poor. It is envisaged that every family assisted under SGSY will be brought above the poverty line in a period of Integrated Rural Development Program (IRDP), Training of Rural Youth for Self Employment (TRYSEM), Development of Woman and Children in Rural Areas (DWCRA), Supply of Integrated Tool-kit for Rural Artisans (SITRA), Ganga Kalyan Yojana (GKY) and Million Well Scheme (MWS), which are no longer in operation. The program covers families below poverty line in rural areas of the country. Within this target group, reserving 50 percent of benefits for SCs/STs, 40 percent for women and three percent for physically handicapped persons has provided special safeguards. Subject to availability of funds, It is proposed to cover 30 percent of the rural poor in each block in the next 5 years.

### **(b) Integrated Wastelands Development Program**

The Integrated Wasteland Development Project Scheme strives to develop non-forest wasteland on village/micro watershed basis. The scheme also generate employment in rural areas besides, enhancing people's participation in wasteland development leading to equitable sharing of benefits ad sustainable development.

### **(c) Jawahar Gram Samridhi Yojana**

- Gram Panchayat with Gram Sabha's approval will execute the construction work of Rs. 50000/-.
- The work/scheme costing more than Rs. 50000/- is required by the approval of authority concerned.
- 22.5 percent of annual allocation funds are earmarked for SCs/STs individual beneficiary scheme.

Block Development and Panchayat officer can be contacted for details of the scheme.

### **(d) Employment Assurance Scheme**

The objective of the scheme is to create economic infrastructure and community assets for sustained employment and development

The employment Assurance Scheme is being restructured on the following lines:

- The funds to the state will be allocated in accordance with the criteria to be decided by the Government / National Development Council from time to time and also to the districts on the index of backwardness evolved at the centre.
- 70 % of funds flowing to the districts would be allocated to the blocks and 30% reserved

at the district level to be utilized in the areas of districts.

- The selection of works would be decided by Zila Parishads after due consultations with MPs of the area.

#### **(e) Integrated Rural Energy Programme (IREP)**

Energy is an essential component of the wheels of progress and it is the constant endeavor of the government to exploit all sources of energy. In this direction the rural areas offer immense scope to tap the non-conventional sources of energy including solar energy, wind energy and bio-mass based energy. Proper utilisation of these sources through better and improved devices will not only be economical but also ensure a better environment and good health. As part of the programme, usage of devices and accessories like solar water heater, solar cooker, street lighting equipment through solar energy, solar lanterns, solar water lifting pumps, wind mills, improved Kerosene stoves and solar pressure cookers are promoted among the rural people especially women.

#### **(III) Ministry of Agriculture**

Some schemes of the Agricultural Ministry can be used to get financial support for rural development programmes.