

Chapter 4

Action Plan

Chapter 4 Action Plans

4.1 Ways to Achieve the Ultimate Goals

In order to achieve the ultimate goal, increase of farmers' income, and the long- and the mid-term goals shown in Figure 4-1-1, the five basic strategies described in Chapter 3 shall be applied. In line with these basic strategies and their importance, the priority actions are identified for the implementation from 2012 to 2020, and are accordingly formulated as the action plans. An action plan is regarded as an aggregation of one or more programs consisting of a group of the priority projects selected from the recommended projects shown in Appendix A.

There are 10 action plans, all of which aim to create the “development foundation for future” necessary to achieve the ultimate and long-term goals. Thus, the implementation of the action plans should be prioritized. Figure 4-1-1 shows such relationship.

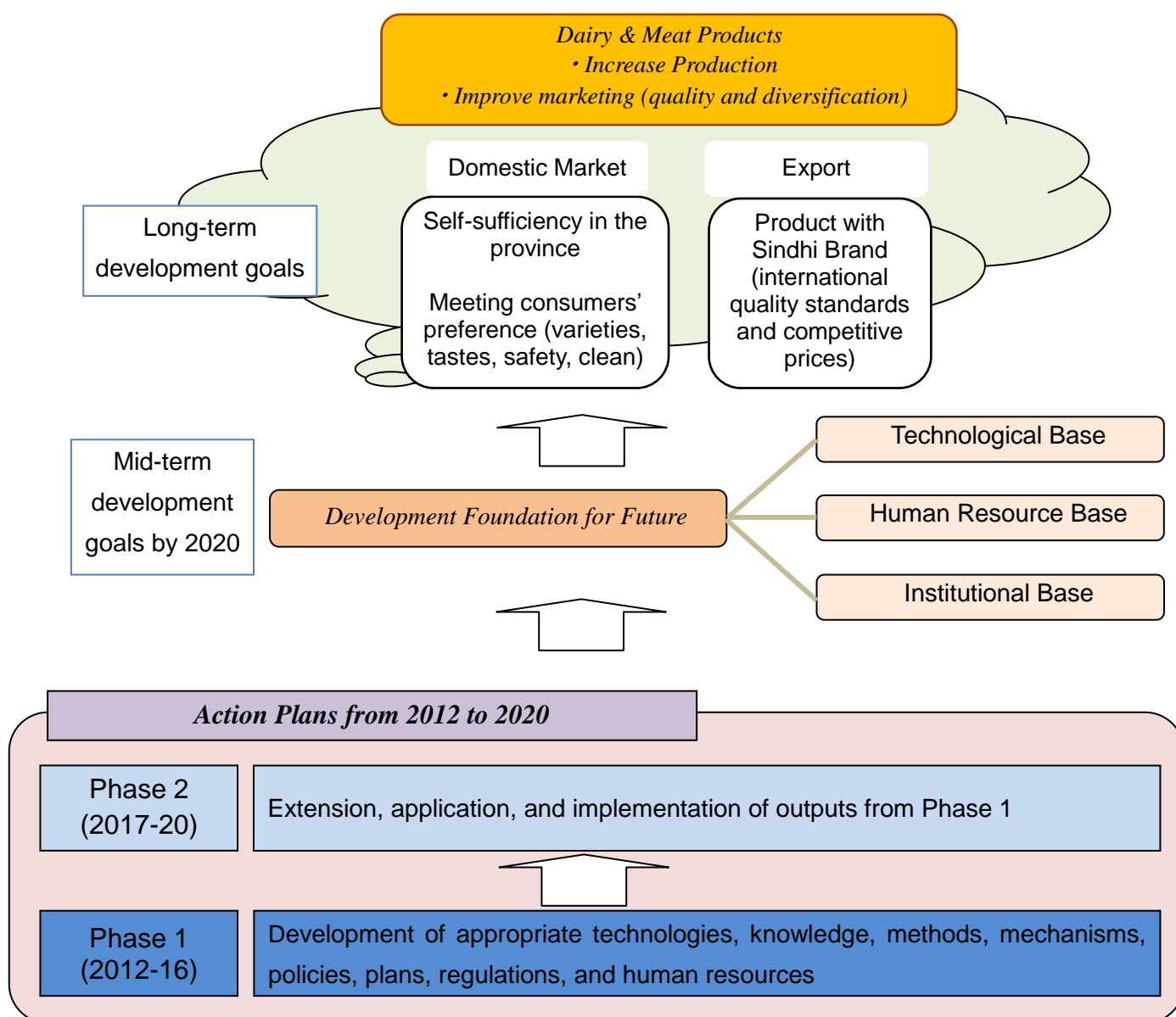


Figure 4-1-1 Way to Achieve the Ultimate Goals

4.2 Vision for 2020

In the process of preparing the master plan on Livestock, Meat and Dairy Development in Sindh Province, it is important to share a common vision among various stakeholders as a mid-term development goal. Without a common vision, the master plan can be neither finalized nor utilized as the basis for a policy guideline after its preparation. The target year of the master plan is set at 2020 for the mid-term development goals. This Vision for 2020 has been prepared through a series of meetings and discussions with the relevant agencies, and the other stakeholders related to Sindh livestock development Sectors.

Sindh province aims at the establishment of the foundations by 2020 for modernizing the livestock sector through the development and extension of appropriate technologies, and through the promotion of public and private partnership.

4.3 Outline of the Action Plans

4.3.1 Basic Strategies and Action Plans

The action plans are formulated in line with the five basic strategies as shown in Table 4-3-1, and No.10 was specifically designed as an integrated livestock development plan.

Table 4-3-1 Basic Strategies and Action Plans

Basic Strategies	Action Plans	
1. Livestock Technology Development	1. Development and Extension of Appropriate Dairy and Fattening Technologies in the Irrigated Areas 2. Development and Extension of Appropriate Fattening Technologies in the Non-irrigated Areas 3. Improvement of Animal Feeds 4. Elimination of Brucellosis and Tuberculosis, and Control of Mastitis and Other Important Animal Diseases 5. Genetic Improvement of Local Breeds	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">Inter-strategic action plan</div> 10. Future-oriented Cattle Colony Production System
2. Quality and Marketing Improvement	6. Marketing Improvement for Export	
3. Entrepreneurship Development	7. Entrepreneurship Development	
4. Strengthening of the Department	8. Strengthening of the Department	
5. Extension System Development	9. Extension System Development	

4.3.2 Phasing of the Implementation Periods

The action plans shall be implemented for nine years from 2012 to 2020. This nine-year period is sub-divided into two phases, the first five years and latter four years. The phase 1 should be devoted to create the core of livestock development, specifically, appropriate technologies, knowledge, methods, mechanisms, policies, plans, regulations, and human resources. The results of the phase 1 shall be extended, applied, and implemented during the phase 2. By scaling up of activities from the phase 1 to 2, target areas and beneficiaries shall also be expanded as the phases progress. Sequence of activities, target areas, and beneficiaries from the phase 1 to 2 is shown in Figure 4-3-1.

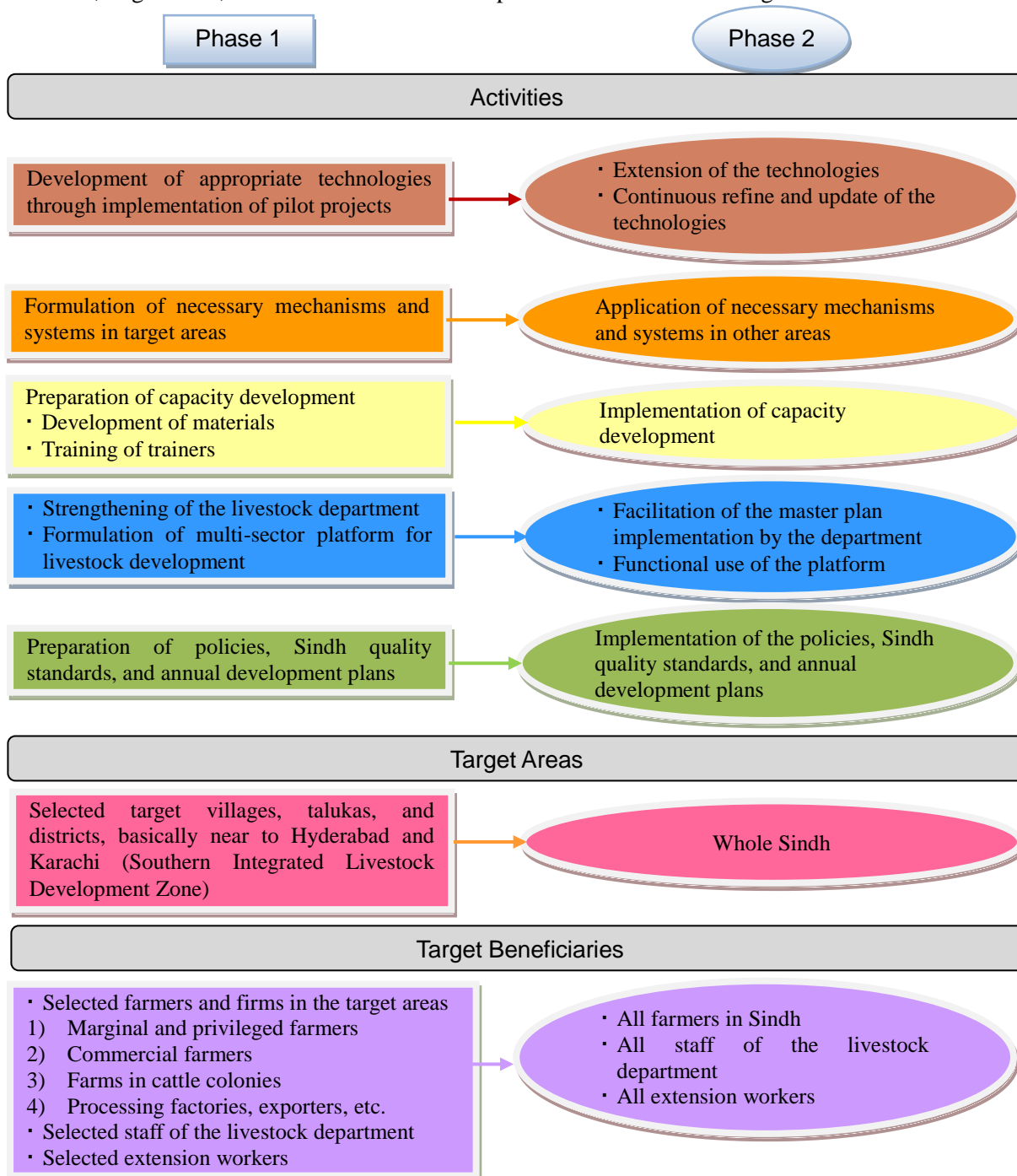


Figure 4-3-1 Development Sequence from the Phase 1 to 2

4.3.3 Outline of the Action Plans

In this section, each action plan is outlined by brief describing its objective, goal of each phase, operating costs, relevant donor and federal projects.

(1) Action Plan 1: Development and Extension of Appropriate Dairy and Fattening Technologies in the Irrigated Areas

This action plan aims at the development of appropriate dairy technologies for increasing the volume and improving the quality of dairy products, and fattening technologies for improving its production efficiency. Those technologies shall be extended to livestock farmers throughout the irrigated areas and cattle colonies under Action Plan 8: Extension System Development. The programs, goals of each phase, and operating costs of this action plan are shown in Table 4-3-2.



Table 4-3-2 Programs, Goals, and Operating Costs of Action Plan 1

Programs	Goals	
	Phase 1 (2012-16)	Phase 2 (2017-20)
• Program for developing the appropriate technologies	Appropriate dairy and fattening technologies are developed.	-
• Program for preparing the extension manuals	Extension manuals are prepared.	-
Operating costs ¹	140 million Rs.	

(2) Action Plan 2: Development and Extension of Appropriate Fattening Technologies in the Non-irrigated Areas

This action plan's objectives are the development of appropriate fattening technologies for non-irrigated areas to increase animal productivity in the dry season and the sustainable utilization of rangeland by planting fodder trees as supplemental feed. Developed technologies will be disseminated to all livestock farmers in the non-irrigated areas under the action plan 8: Extension System Development. The programs, goals of each phase, and operating costs of this action plan are shown in Table 4-3-3.



¹ Operating costs of the ten action plans are separately estimated. Therefore, a certain kind of overhead expenses can be saved, if multiple action plans are conducted simultaneously. The costs are estimated assuming the action plans will be operated with assistance of foreign donors. Costs are only based on operations in Pakistan, and do not include employment costs of foreign experts and international flight charges.

Table 4-3-3 Programs, Goals, and Operating Costs of Action Plan 2

Programs	Goals	
	Phase 1 (2012-16)	Phase 2 (2017-20)
• Program for developing the appropriate fattening technologies for non-irrigated area	-	Appropriate fattening technologies and skills for non-irrigated areas are developed.
• Program for preparing the extension manuals	-	Extension manuals are prepared.
Operating costs	64 million Rs.	

(3) Action Plan 3: Improvement of Animal Feeds

It is an action plan aimed at developing the appropriate feeding technologies and increasing the available fodder for increasing the production volume and improving the quality of meat and dairy products. The developed technologies are expected to be widely used by all livestock farmers in Sindh under the action plan 8: Extension System Development. The programs, goals of each phase, and operating costs of this action plan are shown in Table 4-3-4.



Table 4-3-4 Programs, Goals, and Operating Costs of Action Plan 3

Programs	Goals	
	Phase 1 (2012-16)	Phase 2 (2017-20)
• Program for developing the appropriate feeding technologies	Appropriate feeding technologies are developed.	-
• Program for preparing the extension manuals	Extension manuals are prepared.	-
Operating costs	99 million Rs.	

(4) Action Plan 4: Elimination of Brucellosis and Tuberculosis, and Control of Mastitis and Other Important Animal Diseases

This plan aims at the reinforcement of the system for diagnosing livestock diseases and demonstration of animal transboundary diseases quarantine model until 2020 so as to ultimately eliminate brucellosis and tuberculosis. Through this action plan, the same system and its model required for mastitis and other important diseases such as FMD, PPP, and other non-transboundary diseases will also be demonstrated so that



these diseases will be controlled. The programs, goals of each phase, and operating costs of this action plan are shown in Table 4-3-5.

Table 4-3-5 Programs, Goals, and Operating Costs of Action Plan 4

Programs	Goals	
	Phase 1 (2012-16)	Phase 2 (2017-20)
• Elimination of Brucellosis and Tuberculosis, and Control of Mastitis and Other Important Animal Diseases	The central veterinary diagnostic laboratory, Tando Jam is strengthened.	Trans-boundary diseases quarantine model is demonstrated.
Operating costs	160 million Rs.	

As a relevant federal activity, a project to control FMD is on-going with the assistance of USAID. The project targets throughout Pakistan, and its implementation period is three years from January 2011 until January 2014. The objective of the project is that FMD in Pakistan can be progressively and effectively controlled. For this to happen the project is being implemented to come up with the following three outcomes; i) improvement of capacity to diagnose FMD, ii) improvement of FMD surveillance and response to the outbreak, iii) development of effective vaccination strategy for disease control.

(5) Action Plan 5: Genetic Improvement of Local Breeds

The objective of the plan is to improve the production capability of Red Sindhi cattle breed and Kundhi buffalo breed by genetic improvement. Other breeds such as Thari will be targeted once the appropriate technology is developed and the system is established. The programs, goals of each phase, and operating costs of this action plan are shown in Table 4-3-6.



Table 4-3-6 Programs, Goals, and Operating Costs of Action Plan 5

Programs	Goals	
	Phase 1 (2012-16)	Phase 2 (2017-20)
• Genetic Improvement of Local Breeds	Genetic improvement plans for Red Sindhi cattle breed and Kundhi buffalo breed are prepared.	The Genetic improvement plans are implemented.
Operating costs	35 million Rs.	

(6) Action Plan 6: Marketing Improvement for Export

This plan aims at i) sales and distributed volume of dairy and meat products are increased, ii) quality of products are improved and their values are added so that the price may reflect quality, and iii) export of dairy and meat products is promoted. The programs, goals of each phase, and operating costs of this action plan are shown in Table 4-3-7.

Table 4-3-7 Programs, Goals, and Operating Costs of Action Plan 6

Programs	Goals	
	Phase 1 (2012-16)	Phase 2 (2017-20)
• Improving distribution channel	<ul style="list-style-type: none"> • Marketing skill development method is development. • Models to improve distribution channel is demonstrated. 	Models to improve distribution channel is applied in other areas.
• Establishing foundation to promote value-added products	Models and standards for increasing product's quality and adding value of products are prepared.	Models and regulations are practiced as a trial.
• Promoting export	-	Export promotion institution is established.
Operating costs	50 million Rs.	



(7) Action Plan 7: Entrepreneurship Development

It aims to increase in income of individual livestock farmers, including small farmers, and communities as well. One of two methodologies is to strengthen business mind and skills of farmers. Another one is to create mechanisms for enhancing farmers' opportunities to enter into and expand livestock farming. Once the contents of business training and the mechanisms for farmers' support are established, the training will be conducted throughout Sindh as a part of the action plan 8: Extension System Development. The programs, goals of each phase, and operating costs of this action plan are shown in Table 4-3-8.

Table 4-3-8 Programs, Goals, and Operating Costs of Action Plan 7

Programs	Goals	
	Phase 1 (2012-16)	Phase 2 (2017-20)
• Strengthening business mind and skills of farmers	• Business mind & skills development methods are development.	• Mechanisms and methods of organizing farmers, livestock revolving are developed.
• Formulating mechanisms to provide opportunity of livestock farming and to effective use of waste livestock	• Mechanisms for calves salvation, dry animal recycling, and livestock sharing are developed.	• Mechanisms for calves salvation, dry animal recycling, and livestock sharing are applied.
• Preparing the extension manuals	Extension manuals are prepared.	Extension manuals are prepared.
Operating costs	52 million Rs.	



A donor's trans-provincial project in this field, Pakistan ENTREPRENEURS Project is starting with the assistance of USAID. It is implemented with Engro Foods, for the capacity building of rural milk producers, particularly women. It targets 600 potential women entrepreneurs, including women village milk collectors (VMS), female livestock extension workers (FLEW), for the training of collecting milk, diagnosing animal diseases, feeding management, etc., and the provision of 60 chillers to those producers. Medical shops will be provided to FLEW for them to start small business.

(8) Action Plan 8: Strengthening of the Department

It aims at strengthening the livestock department so as to appropriately implement the development plans. Thus, the plan contains comprehensive actions necessary for institutional reform and vitalization. The programs, goals of each phase, and operating costs of this action plan are shown in Table 4-3-9.



Table 4-3-9 Programs, Goals, and Operating Costs of Action Plan 8

Programs	Goals	
	Phase 1 (2012-16)	Phase 2 (2017-20)
• Strengthening of the Department	<ul style="list-style-type: none"> • The policy, strategy, and 5 year action plan are formulated. • Public relation is strengthened. • Each directorate is strengthened in line with its TOR to be prepared. 	<ul style="list-style-type: none"> • Human resources of the livestock department are improved and strengthened. • Project management capacity of the livestock department is strengthened.
Operating costs	34 million Rs.	

(9) Action Plan 9: Extension System Development

The objectives of this plan are that i) organizations related to extension activities/services are established and strengthened, ii) human resources are developed for providing extension services, and iii) developed technologies are adopted by farmers in whole Sindh. The programs, goals of each phase, and operating costs of this action plan are shown in Table 4-3-10.

Table 4-3-10 Programs, Goals, and Operating Costs of Action Plan 9

Programs	Goals	
	Phase 1 (2012-16)	Phase 2 (2017-20)
• Establishing and strengthening of organizations related to extension activities/services	• The Directorate of Extension is established, and an extension personnel in each DO Office is allocated. • Platform is established.	• The organizations and platform related to extension activities/services are strengthened.
• Capacity building of extension workers	• Capacity of RTI, LLWs/FCREWs is developed.	• Capacity of the livestock department's staff is developed.
• Implementation of extension services	• Extension manuals are prepared. • Developed technologies are extended.	• Extension manuals are prepared. • Developed technologies are extended.
Operating costs	104 million Rs.	



One relevant project, the Social Research to Foster Effective Collaboration and Strengthen Pro-Poor Value Chains, is starting supported by AusAID. It is implemented by the University of Canberra and targets 28 villages in Thatta and Badin. One of its research agendas is to understand how livestock extension should be implemented for enhancing the adoption of the technologies. Another one is the Benazir Bhutto Shaheed Youth Development Programme Phase 2, government of Sindh to train 1,540 unemployed educated youth in livestock, 890 in fisheries, and 40 in poultry sector.

(10) Action Plan 10: Future-oriented Cattle Colony Production System

This is an inter-strategic action plan, which is formulated based on futuristic views and integrated development concept. It includes the issues on environment protection, better rearing condition for livestock, and milk quality improvement, and also intends to tap unused livestock resources. It targets the urban areas, particularly cattle colonies. The programs, goals of each phase, and operating costs of this action plan are shown in Table 4-3-11.

Table 4-3-11 Programs, Goals, and Operating Costs of Action Plan 10

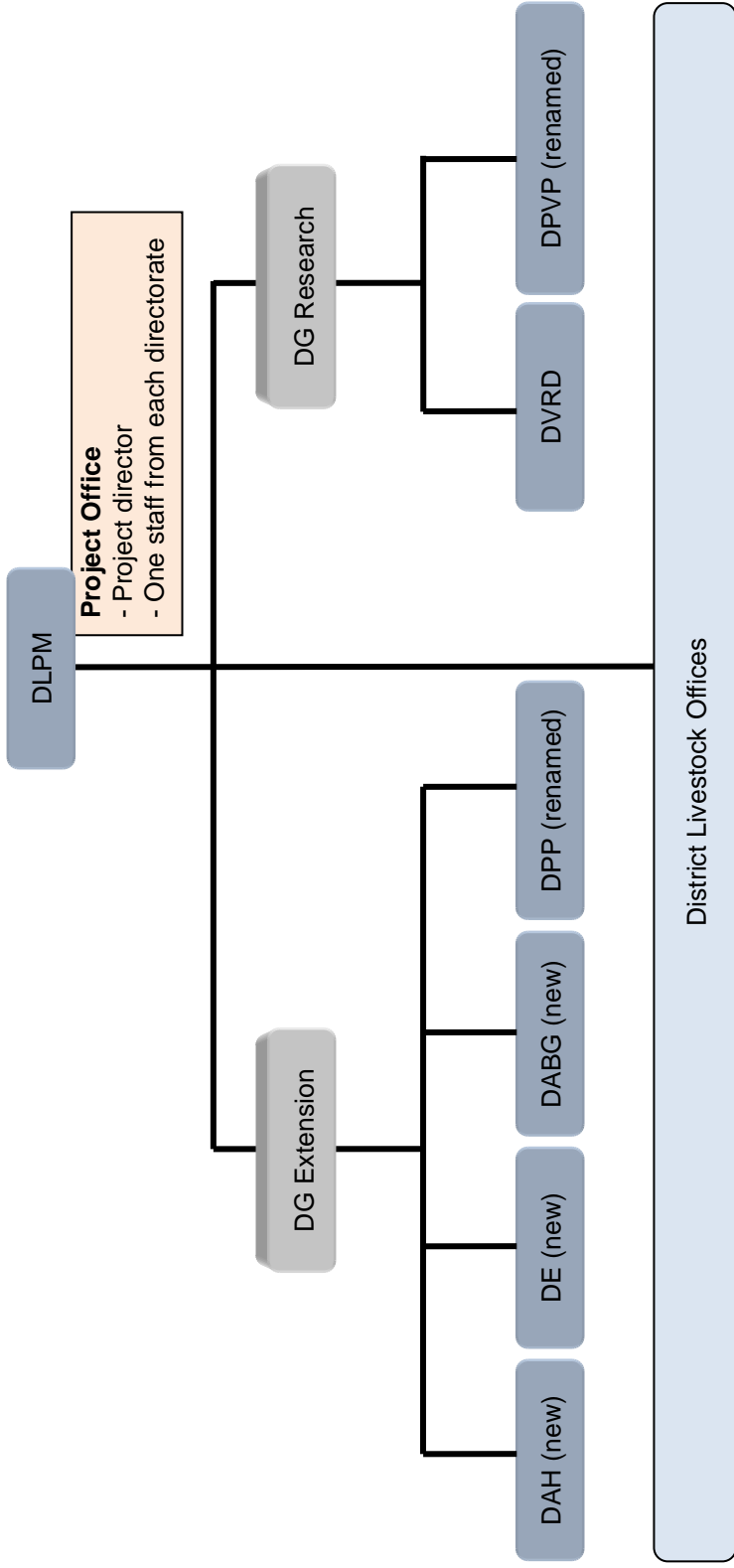
Programs	Goals	
	Phase 1 (2012-16)	Phase 2 (2017-20)
<ul style="list-style-type: none"> Formulating future-oriented cattle colony production system 	<ul style="list-style-type: none"> Mechanisms for calves salvation and dry animal recycling are developed. Treatment plant of cow dung and effluent from cattle colonies is constructed. 	<ul style="list-style-type: none"> Mechanisms for calves salvation and dry animal recycling livestock sharing are applied. The treatment plant is appropriately operated sustainably. Improved plots for milking animals are designed, demonstrated, and applied in cattle colonies.
Operating costs	To be estimated	

4.3.4 Implementation and Monitoring Structure of the Action Plans

In relation to the basic strategy for Strengthening of the Department, the implementation and monitoring structure should be established based on the proposed strengthening, as shown in Figure 4-3-2. The following is the major points:

- a) For the implementation of the action plans, the project office shall be established within the DLPM. The project office shall be responsible for the overall implementation and the supervision of the project activities of the DG's offices, the concerned directorates, including the district offices. The project director (PD) shall be assigned, and under the PD, one staff shall be allocated from each directorate. One of their tasks shall be the coordination among the department.
- b) The project office shall be the core for the strengthening of the department, including the capacity building of the DLPM, particularly for project and organizational management capacity.
- c) In principle, the district livestock offices shall be administered by the DG's offices, and the activities specifically related to each directorate shall be supervised by the responsible directorates.





DG: Director General
 DLPM: Directorate of Livestock Planning and Management
 DAH: Directorate of Animal Health (proposed)
 DE: Directorate of Extension (proposed)
 DABG: Directorate of Animal Breeding and Genetics (proposed)
 DPP: Directorate of Poultry Production (renamed)
 DVRD: Directorate of Veterinary Research and Diagnosis
 DPVP: Directorate of Poultry Vaccine Production (renamed)

Figure 4-3-2 Proposed Implementation and Monitoring Structure

4.4 Details of Action Plans

As mentioned above, an action plan is comprised of one or more programs, and each program consists of one or more projects. The details of an action plan are listed in the box below.

<p><u>Action Plan</u> Name of the program Purpose of the program Expected projects (from the list in Appendix A) Contents of the projects Expected outcome Implementation zone Target beneficiaries Organization in charge Main stakeholders Indicators of outcome Implementation period</p>

The implementation schedules of the action plans are illustrated in Figure 4-4-1, and the detailed action plans (programs and projects) are shown in Table 4-4-1.

4.4.1 Implementation Schedule

Action Plans	Programs	No	Projects	Fiscal Year																		
				1 2012	2 2013	3 2014	4 2015	5 2016	6 2017	7 2018	8 2019	9 2020										
1. Development and Extension of Appropriate Dairy and Fattening Technologies in the Irrigated Areas	(1) Program for developing the appropriate technologies	11	The project for developing appropriate technologies for small and medium scale dairy farmers																			
		12	The project for developing appropriate fattening technologies																			
	(2) Program for preparing the extension manuals	11	The project for developing appropriate technologies for small and medium scale dairy farmers																			
		12	The project for developing appropriate fattening technologies																			
	78	The Project for enhancing the extension service provision																				
2. Development and Extension of Appropriate Fattening Technologies in the Non-irrigated Areas	(1) Program for developing the appropriate technologies for non-irrigated area	17	The project for livestock promotion in the non-irrigated areas																			
		18	The project for water supply for livestock																			
	19	The project for the feed production in salty land																				
	20	The project for maintaining pastureland																				
	(2) Program for preparing the extension manuals	17	The project for livestock promotion in the non-irrigated areas																			
78	The Project for enhancing the extension service provision																					
3. Improvement of Animal Feeds	(1) Program for developing the appropriate feeding technologies	22	The project for feeding improvement																			
		23	The project for developing feed ingredient list																			
	(2) Program for preparing the extension manuals	11	The project for developing appropriate technologies for small and medium scale dairy farmers																			
		12	The project for developing appropriate fattening technologies																			
	11	The project for developing appropriate technologies for small and medium scale dairy farmers																				
	12	The project for developing appropriate fattening technologies																				
	22	The project for feeding improvement																				
78	The Project for enhancing the extension service provision																					

Figure 4-4-1 Implementation Schedule

Action Plans	Programs	No	Projects	Fiscal Year																				
				1 2012	2 2013	3 2014	4 2015	5 2016	6 2017	7 2018	8 2019	9 2020												
4. Elimination of Brucellosis and Tuberculosis, and Control of Mastitis and Other Important Animal Diseases	(1) Program for Elimination of Brucellosis and Tuberculosis, and Control of Mastitis and Other Important Animal Diseases	26	The project for strengthening the animal health central research center, Tando Jam																					
			27	The project for demonstrating the trans-boundary diseases quarantine model																				
5. Genetic Improvement of Local Breeds	(1) Program for Genetic Improvement of Local Breeds	30	The project for improving cow and buffaloes breeds in Sindh province (Phase 1)																					
			30	The project for improving cow and buffaloes breeds in Sindh province (Phase 2)																				
6. Marketing Improvement for Export	(1) Program for improving distribution channel	31	The project for developing marketing skill of farmers																					
			32	The project for fostering the public and private partnership (Phase 1)																				
			32	The project for fostering the public and private partnership (Phase 2)																				
			33	The project for promotion of cold chain																				
			34	The project for improving livestock market																				
			35	The project for rehabilitation of slaughterhouse																				
			36	The project for improvement of milk quality																				
			37	The project on meat grading system																				
			38	The project for the study on formulation of local specialties and brands																				
			39	The project for promoting local specialties and brands																				
	(2) Program for establishing foundation to promote value-added products	40	The project for market information system																					
			41	The project for establishment of export promotion institution																				
	(3) Program for promoting export																							

Figure 4-4-1 Implementation Schedule

Action Plans	Programs	No	Projects	Fiscal Year																
				1	2	3	4	5	6	7	8	9								
				2012	2013	2014	2015	2016	2017	2018	2019	2020								
7. Entrepreneurship Development	(1) Program for strengthening business mind and skills	50	The project for strengthening business mind of farmers																	
		51	The project for fostering livestock entrepreneurs																	
		52	The project for strengthening farmer organizations																	
	(2) Program for formulating mechanisms to provide opportunity of livestock farming and to effective use of waste livestock	55	The project for establishing a mechanism for calf salvation (Phase 1)																	
		55	The project for establishing a mechanism for calf salvation (Phase 2)																	
		56	The project for developing livestock revolving systems																	
		57	The project for promoting livestock sharing (Phase 1)																	
		57	The project for promoting livestock sharing (Phase 2)																	
		58	The project for establishing a mechanism for dry animal recycling (Phase 1)																	
		58	The project for establishing a mechanism for dry animal recycling (Phase 2)																	
50		The project for strengthening business mind of farmers																		
8. Strengthening of the Department	(3) Program for preparing the extension manuals	51	The project for fostering livestock entrepreneurs																	
		52	The project for strengthening farmer organizations																	
		78	The Project for enhancing the extension service provision																	
	(1) Strengthening of the Department	66	The project for formulating livestock development policy and strategy																	
		67	The project for publicity																	
		68	The project for strengthening implementation structure																	
		69	The project for formulating human resource management and development plans																	
		70	The project for strengthening project management capacity																	

Figure 4-4-1 Implementation Schedule

Action Plans	Programs	No	Projects	Fiscal Year									
				1	2	3	4	5	6	7	8	9	
				2012	2013	2014	2015	2016	2017	2018	2019	2020	
9. Extension System Development	(1) Program for strengthening of organizations related to extension activities/services	71	The project for establishing livestock extension system (Phase 1)										
		71	The project for establishing livestock extension system (Phase 2)										
		71	The project for establishing livestock extension system (Phase 3)										
		73	The project for formulating the public and private platform										
		72	The project for capacity development of RTI										
		11	The project for developing appropriate technologies										
		74	The project for establishing the grading system of extension workers										
		72	The project for capacity development of RTI										
		75	The project for training of the department technicians										
		76	The project for developing capacity of LLWs/FCLEWs										
		77	The project for follow-up training of LLWs/FCLEWs										
		(3) Program for implementation of extension services	11	The project for developing appropriate technologies									
			12	The project for developing appropriate fattening technologies									
17	The project for livestock promotion in the non-irrigated areas												
22	The project for feeding improvement												
31	The project for developing marketing skill of farmers												
50	The project for strengthening business mind of farmers												
78	The Project for enhancing the extension service provision												
10. Future-oriented Cattle Colony Production System	(1) Program for Formulating future-oriented and integrated livestock development in urban areas		48	The project for promoting dry cow recycling (Phase 1 & 2)									
		33	The project for promoting calve rearing (Phase 1 & 2)										
		52	The project for improvement of milk quality										
		78	The project for treatment of cow dung and effluent from cattle colonies										
		13	The project for appropriate dairy farming in cattle colonies										

Figure 4-4-1 Implementation Schedule

4.4.2 Programs and Projects in the Action Plans

Table 4-4-1 Action Plans

1. Development and Extension of Appropriate Dairy and Fattening Technologies in the Irrigated areas

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
(1) Program for developing the appropriate technologies	(1-1) Identifying appropriate technologies for increasing the volume and improving the quality of dairy products	11. The project for developing appropriate technologies for small and medium scale dairy farmers	<ul style="list-style-type: none"> - Selecting demonstration areas and farmers - Developing an implementation plan for the demonstration - Demonstrating improvements of productivity and fertility by appropriate techniques 	Milk production of target farmers is increased.	Integrated livestock development zone	<ul style="list-style-type: none"> - Small and medium scale dairy farmers - Extension workers (including female), veterinarian, officials of the livestock department 	The livestock department	<ul style="list-style-type: none"> - Milk processing companies - NGOs - Universities 	Activities are understood and continued by counterparts.	2012-2016 (5years)
	(1-1) Building a model for improving fattening efficiency	12. The project for developing appropriate fattening technologies	<ul style="list-style-type: none"> - Conducting survey and measuring fattening efficiency, carcass yield and meat quality by livestock species - Building feeding management technologies for fattening animals by livestock species and farm management system - Formulating rations for fattening animals based on feed resources in each area - Demonstrating the fattening technologies and rations 	<ul style="list-style-type: none"> - The improvement model of fattening efficiency is demonstrated through development of fattening technologies by size of animal keeping and farm management system - The livestock income of farmers is increased - Farm management is become diverse to be established fattening technologies for 	Intensive meat and milk production zone	Small, medium, and large livestock farmers	-do-	<ul style="list-style-type: none"> - Related government agencies at district and taluka levels (Agriculture office, Irrigation office, etc.) - NGOs - Universities 	<ul style="list-style-type: none"> - The fattening characteristics of cattle and goats by breed is demonstrated. - The fattening interval is shortened through increasing fattening efficiency (live weight gain). - A model of fattening management system is demonstrated. 	2013-2016 (4 years)

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
(2) Program for preparing the extension manuals	(2-1) Preparation of extension manuals for the technology transfer via extension services to farmers.	11. The project for developing appropriate technologies for small and medium scale dairy farmers 12. The project for developing appropriate fattening technologies 78. The Project for enhancing the extension service provision	- Selecting and summarize of appropriate techniques - Prioritizing techniques based on the output - Developing simple and practical manuals and teaching materials for farmers and technicians - Experimenting the manuals and teaching materials (trainings, seminars, workshops, and so on) - Developing appropriate teaching materials and manuals such as text documents, picture-story board, card system, and digital materials	small scale farmer to large scale farmer Extension workers adopt the technologies and expand to other area	- Integrated livestock development zone - Intensive meat and milk production zone	- All livestock farmers - All extension agents (including female); private veterinarian, officials of the livestock department	-do-	- Milk processing companies - Related government agencies at district and taluka levels (Agriculture office, Irrigation office, etc.) - NGOs - Universities	Activities are understood and continued by counterparts.	2014-2016 (3 years)

Table 4-4-1 Action Plans

2. Development and Extension of Appropriate Fattening Technologies in the Non-irrigated Areas

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
(1) Program for developing the appropriate fattening technologies for non-irrigated area	(1-1) Developing technologies on improvement of supplemental feeding during the dry season for increasing animal productivity (1-2) Developing management skills for sustainable utilization of rangeland as grazing land of animals	17. The project for livestock promotion in the non-irrigated areas 18. The project for water supply for livestock 19. The project for the feed production in salty land 20. The project for maintaining pastureland	- Training on rearing and selling techniques in non-irrigated area and trial of farming models - Investigation of ground water, preparation of a plan, well sinker and set-up of water supply facility, and organizing management groups - A study on salinity tolerance plants and salty lands, a plan development and demonstration of a utilization of salty lands - A study on the standing crop, management of pastureland, development of crop rotation, improvement of soil conservation, evaluation of agro-forestry, and evaluation of drought resistant plant	-A growth of small ruminants is stabilized during the dry season through diversification of good quality supplemental feeds - Milk product supply become stable through increase of milk production during the dry season - Farmers can compatibly use and preserve the resources of the rangeland.	- Eastern extensive meat production zone - Western extensive meat production zone	All livestock farmers	The livestock department	- Related government agencies at district and taluka levels (Agriculture office, etc.) - NGOs - Universities	- Improvement model of milk production is demonstrated. - Calving rate (two calve per year) of goats and sheep is improved through improvement of nutrition during the dry season. - Improvement model of live weight gain of goats and sheep are demonstrated.	2017-2020 (4 years)
(2) Program for preparing the extension manuals	(2-1) Preparation of extension manuals for the technology transfer via extension services to farmers.	17. The project for livestock promotion in non-irrigated area 78. The Project for enhancing the extension service provision	Same as Action Plan 1 (2)	Same as Action Plan 1 (2)	-do-	- All livestock farmers - All extension agents (including female); private veterinarian, officials of the livestock department	-do-	-do-	Activities are understood and continued by counterparts.	2019-2020 (2 years)

Table 4-4-1 Action Plans

3. Improvement of Animal Feeds

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
(1) Program for developing the appropriate feeding technologies	(1-1) Improving feeding technologies based on appropriate formulations for increasing the volume and improving the quality of meat and dairy products	22. The project for feeding improvement 23. The project for developing feed ingredient list 11. The project for developing appropriate technologies for small and medium scale dairy farmers	<ul style="list-style-type: none"> - Analyzing nutrients and digestibility of all feedstuffs - Understanding nutritive value of basal rations in each area - Understanding relation between nutrients intake and animal production in each area - Formulating plans for improvement of forage production and feeding techniques due to increasing productivity of animal - Demonstration model of formulating rations by farming size and the real situation in each area 	<ul style="list-style-type: none"> - It is carried out a formulating rations and feeding evaluation through understanding the nutrient composition and the nutrients required by animals - Farmers are enhanced to concern over the animal nutrition and to become actively work toward increasing animal productivity - Technologies for forage production and feeding are built 	Whole Sindh (all 5 zones)	All livestock farmers	The livestock department	<ul style="list-style-type: none"> - Related government agencies at district and taluka levels (Agriculture office, etc.) - NGOs - Universities 	<ul style="list-style-type: none"> - The table of feed composition is developed. - The means for improving the nutritive value of roughage are built. 	2012-2016 (5 years)
(2) Program for preparing the extension manuals	(2-1) Preparation of extension manuals for the technology transfer via extension services to farmers.	11. The project for developing appropriate technologies for small and medium scale dairy farmers 78. The Project for enhancing the extension service provision	Same as Action Plan 1 (2)	Same as Action Plan 1 (2)	-do-	<ul style="list-style-type: none"> - All livestock farmers - All extension agents (including female); private veterinarian, officials of the livestock department 	-do-	-do-	<ul style="list-style-type: none"> - Models of stable feeding are demonstrated mainly in roughage. 	2012-2016 (5 years)

Table 4-4-1 Action Plans
4. Elimination of Brucellosis and Tuberculosis, and Control of Mastitis and Other Important Animal Diseases

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
(1) Program for Elimination of Brucellosis and Tuberculosis, and Control of Mastitis and Other Important Animal Diseases	(1-1) Reinforcement of the system for diagnosing livestock diseases (1-2) Demonstrating trans-boundary diseases quarantine model	26. The project for strengthening the animal health central research center, Tando Jam	<ul style="list-style-type: none"> - Implementation of epidemic survey and identification of important diseases - Reinforcement of the diagnosis ability of CVDL - Reinforcement of the system for collecting samples, diagnosis, and feed back 	<ul style="list-style-type: none"> - Productivities are increased and export of livestock products is increased - Infection risk to human through infected livestock products is reduced 	Whole Sindh (all 5 zones)	<ul style="list-style-type: none"> - All livestock farmers - Workers and staff of the livestock industry 	The livestock department CVDL	<ul style="list-style-type: none"> - The Department - The DO Offices - NGOs 	The number of livestock infected by brucellosis and tuberculosis is decreased, and the eradication system is established in the livestock department.	2012-2016 (5 years)
		27. The project for demonstrating the trans-boundary diseases quarantine model	<ul style="list-style-type: none"> - Training and awareness creation for dairy farmers (disease reporting and culling infected animals) - Monitoring of diseases - Prohibition of transportation and trading infected animals, and promotion of culling infected animals 	-do-	do	-do-	-do-	-do-	-do-	2016-2020 (5 years)

Table 4-4-1 Action Plans

5. Genetic Improvement of Local Breeds

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
(1) Program for Genetic Improvement of Local Breeds	(1-1) Improving production capability of Red Sindh cattle breed and Kundhi buffaloes breed.	29. The project for improving cow and buffaloes breeds in Sindh province (Phase 1 & 2)	(Phase 1) - Basic survey and analysis - Preparation of draft genetic improvement plan - Training on institutes which implement genetic improvement - Preparation of the list of breeders who participate to the plan - Preparation of list of an individual animal - Selection of elite milking animals through milk inspection (rapid herd testing) - Commencement of pedigree registration - Survey on AI to buffalo - Setting genetic improvement objectives and commencement of planned mating - Selection of elite bulls and cows based on the data of their daughters (Phase 2) - Implementation of Genetic improvement plans for Red Sindh cattle breed and Kundhi buffalo breed	Applied to other livestock species	Whole Sindh (all 5 zones)	Breeders of Red Sindh cattle breed and Kundhi buffalo breed	The livestock department	- Sindh livestock breeders' association - Buffalo research center in Sukkur - Buffalo research center in Patoki (Province of Punjab)	Genetic improvement activities are expanded by the independent efforts of Sindh livestock breeders association.	2012-2016 (Phase 1, 5 years), 2017-2020 (Phase 2, 4 years)

Table 4-4-1 Action Plans

6. Marketing Improvement for Export

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
(1) Program for improving distribution channel	Presenting model cases to improve distribution channel of dairy and meat products	31. The project for developing marketing skill of farmers	<ol style="list-style-type: none"> Supporting the farmers' marketing activities to develop their distribution channel Developing model cases preparing extension manuals for the technology transfer via extension services to farmers 	Increasing sales amount and volume of farmers in targeted area	<ul style="list-style-type: none"> Northern milk production zone Integrated livestock development zone (Surrounding area of cities in particular) 	Micro, small, and medium scale livestock farmers	The livestock department		<ol style="list-style-type: none"> Sales amount of targeted farmers Development of useful and widely applicable model cases 	2014-2016 (3 years)
		32. The project for fostering the public and private partnership	<p>(Phase 1)</p> <ol style="list-style-type: none"> Regular workshop/meeting on appropriate technologies etc with private sector Collaborating with milk processing companies to support their milk collection network Board for the collaboration is established/rehabilitated Developing action plan together with private sector <p>(Phase 2)</p> <ol style="list-style-type: none"> Collaboration with private sector is extended to other sub-sectors such as meat and pharmaceutical companies 	Milk collection network of milk processing companies is expanded	-do-	Dairy farmers in the rural areas	-do-	Milk processing companies	<ol style="list-style-type: none"> Development of model cases to collect milk Systematizing for livestock development by public and private partnership 	2012-2016 (Phase 1: 5 years) 2017-2020 (Phase 2: 4 years)
		33. The project for promotion of cold chain	<ol style="list-style-type: none"> Implementing pilot projects to install chiller facility Developing model cases 	Cold chain and farmers' management capacity is expanded	-do-	Dairy farmers and distributors	-do-		Development of profitable model case with cost-benefit analysis	2014-2016 (3 years)
		34. The project for improving livestock market	<ol style="list-style-type: none"> Identifying necessary facilities and function of livestock market Developing the guidelines for 	Facilities and function of livestock market	Whole Sindh (all 5 zones)	Stakeholders who use livestock market	- The livestock department		Development of a guideline	2013-2016 (4 years)

			management of livestock markets 3. Application of the guideline to selected markets	is improved					- District offices			
	35. The project for rehabilitation of slaughterhouse		1. Establishing model of slaughterhouse 2. Developing the guidelines for management of slaughterhouse 3. Application of the guideline to selected slaughterhouses	Facilities and function of slaughterhouse is improved	- Northern milk production zone - Integrated livestock development zone	Stakeholders who use slaughterhouse	- do-		- do-	Development of a guideline		2017-2020 (4 years)
	36. The project for improvement of milk quality	Establishing the foundation to improve quality and promote verification of products	1. Studying current situation of quality in the distribution channel 2. Studying relationship between quality and consumer preference 3. Developing the guideline of quality control and sharing it widely among stakeholders 4. Proposing the draft agricultural standard of milk and possibility of branding of milk products 5. Ratification of the standard and promotion of branded products.	The volume of qualified dairy products is increased	-do-	Dairy farmers, distributors, retailers, and consumers	The livestock department			Development of a guideline		2012-2016 (5 years)
	37. The project on the meat grading system		1. Studying current situation of quality in distribution channel 2. Clarifying relationship between market price and quality based on consumer survey 3. Developing draft grading system 4. Providing necessary techniques for grading system 5. Proposing the draft agricultural standard of meat and possibility of branding of meat products 6. Ratification of the standard and promotion of branded products.	It is followed the grading system by stakeholders in distribution channel of meat products	Whole Sindh (all 5 zones)	All livestock farmers who sell livestock for meat	-do-			1. Development of a guideline 2. Development of a draft grading system for meat		2012-2016 (5 years)
(2) Program for establishing foundation to promote value-added products	38. The project for the study on formulation of local specialty and brand		Studying potential of local specialty	Potential local specialty is selected	-do-	All livestock farmers	- The livestock department - District office	Local government, Private Sector		Selection of the potential local specialty		2015-2017 (3 years)

			<p>39. The project for promoting local specialties and brands</p> <p>40. The project for market information system</p> <p>41. The project for establishment of export promotion institution</p>	<p>Establishing the promotion system</p> <p>Identifying necessary information. Establishing and demonstrating the pilot information system</p> <p>1. Establishing the export promotion institution (or board) in collaboration with other agencies and private sector 2. Clarifying roles of the department and others 3. Developing the action plan to promote export</p>	<p>Local specialty is promoted</p> <p>Sales amount and volume of farmers or retailers in pilot area is increased</p> <p>Institution is established and it develops the action plan to promote export of livestock and livestock products sector</p>	<p>-do-</p> <p>-do-</p> <p>- Northern milk production zone - Intensive meat and milk production zone - Integrated livestock development zone</p>	<p>All livestock farmers</p> <p>All stakeholders of milk and meat sector</p> <p>All stakeholders who are involved in export of livestock and livestock products</p>	<p>-do-</p> <p>-do-</p> <p>- The livestock department - Other agencies</p>	<p>Local government , Private Sector</p> <p>Local government , Private Sector</p> <p>Private sector</p>	<p>Developing the institution and the system to promote the local specialty</p> <p>Demonstrating the pilot information system</p> <p>Developing the export promoting institution and the action plan</p>	<p>2018-2020 (3 years)</p> <p>2017-2020 (4 years)</p> <p>2018-2020 (3 years)</p>
<p>(3) Program for promoting export</p>	<p>Promoting dairy and meat products for export</p>										

Table 4-4-1 Action Plans

7. Entrepreneurship Development

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
(1) Program for strengthening business mind and skills	- Livestock income of livestock farmers is increased. - Rate of return of livestock farmers is improved	50. The project for strengthening business mind of farmers	1. Target farmers have proactive business mind. 2. Basic business skills and knowledge are provided. 3. Livestock farming plans of target farmers are designed and conducted. 4. A model for creating entrepreneurs in the basic stage is formulated.	Livestock income of target farmers is increased	Whole Sindh (all 5 zones)	-Micro, small, and medium scale livestock farmers - Female farmers	The livestock department	NGOs	Livestock farmer sensitization models are formulated.	2012-2016 (5 years)
	- Livestock income of community is increased.	51. The project for fostering livestock entrepreneurs	1. Business skills and knowledge are provided to target farmers. 3. Farm administration plans of the target farmers are prepared and conducted. 4. A model for creating entrepreneurs in the intermediate stage is formulated.	Livestock income of target farmers is increased	-do-	- Small and medium non-commercialized livestock farmers who have motivation and resources (budget, land, location) for commercialization	-do-	-do-	Farm management training models are formulated.	2017-2020 (4 years)
(2) Program for formulating mechanisms to provide opportunity of livestock farming and to effective use of waste livestock		52. The project for strengthening farmer organizations	1. Farmers' groups are established. 2. Their action plans are prepared by the groups and implemented continuously and independently. 3. A model for farmers group formulation is established.	Livestock income of target farmers is increased	-do-	-All livestock farmers - Female farmers	-do-	-do-	Formulation farmers' group models are formulated.	2017-2020 (4 years)
		55. The project for establishing a mechanism for calf salvation (Phase 1 & 2)	(Phase 1) 1. Current situation of calves generated from cattle colonies is clarified. 2. Mechanism for efficient use of calves designed. 3. The mechanism is operated as a trial in a target cattle colony. 4. The mechanism is finalized based on the trial. (Phase 2) 5. The mechanism is applied to other cattle colonies.	- Livestock income of target farmers is increased - Meat production is increased	- Northern milk production zone - Integrated livestock development zone	-All livestock farmers - NGO, cattle colonies, livestock markets -Female farmers	-do-	-do-	Models to salvage and effectively use young calves are formulated.	2012-2016 (Phase 1, 5 years), 2017-2020 (Phase 2, 4 years)

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
		56. The project for developing livestock revolving system	<p>1. A system of livestock revolving is designed.</p> <p>2. The system of livestock revolving is implemented through trial</p> <p>3. The system of livestock revolving turns into a model.</p>	<p>- Livestock income of target farmers is increased</p> <p>- Milk production is increased</p> <p>- Meat production is increased</p>	Whole Sindh (all 5 zones)	<p>- Landless and micro scale livestock farmers</p> <p>- Female farmers</p>	-do-	-do-	Livestock revolving models are formulated.	2017-2020 (4 years)
		57. The project for promoting livestock sharing (Phase 1 & 2)	<p>(Phase 1)</p> <p>1. A current situation of livestock sharing system is understood.</p> <p>2. Tentative models of livestock sharing system are designed.</p> <p>3. The tentative livestock sharing system are attempted in a target area.</p> <p>4. Models of livestock sharing system are developed.</p> <p>(Phase 2)</p> <p>5. Livestock sharing is promoted at non-target areas.</p>	<p>- Livestock income of target farmers is increased</p> <p>- Milk production is increased</p> <p>- Meat production is increased</p>	-do-	<p>-All livestock farmers</p> <p>- Female farmers</p>	-do-	-do-	Livestock sharing models, that are beneficial for both owners and sharefarmers, are formulated.	2012-2016 (Phase 1, 5 years), 2017-2020 (Phase 2, 4 years)
		58. The project for promoting dry animal recycling (Phase 1 & 2)	<p>(Phase 1)</p> <p>1. Current stakeholders and issues are clarified.</p> <p>2. Tentative model for recycling dry cow is prepared.</p> <p>3. The model is operated as a trial in a target area.</p> <p>Pilot projects are implemented.</p> <p>4. The model is finalized and an action plan to promote dry cow recycling.</p> <p>(Phase 2)</p> <p>5. Dry cow recycling is promoted in non-target area according to the action plan.</p>	<p>- Dry animal recycling is promoted.</p>	<p>- Northern milk production zone</p> <p>- Integrated livestock development zone</p>	-Dairy farmers	-do-	-do-	Feasibility of livestock compensation mechanisms is examined.	2012-2016 (Phase 1, 5 years), 2017-2020 (Phase 2, 4 years)
(3) Program for preparing	(2-1) Preparation of	50. The project for	Same as Action Plan 1 (2)	Same as Action Plan 1 (2)	Whole Sindh (all 5 zones)	- All livestock farmers	-do-	-do-	Activities are understood	2014-2016 (3 years)

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
the extension manuals	extension manuals for the technology transfer via extension services to farmers.	strengthening business mind of farmers 51. The project for fostering livestock entrepreneurs 52. The project for strengthening farmer organizations				- All extension agents (including female); private veterinarian, officials of the livestock department			and continued by counterparts.	

Table 4-4-1 Action Plans

8. Strengthening of the Department

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
Strengthening of the Department	(1-1) Formulation of the policy, strategy, and 5 year action plan (1-2) Publicity (2) Implementati on of the annual plans (3) Staff Recruitment, allocation, training, and management (4-1) Monitoring the progress of the activities and the expenditures (4-2) Evaluation of the activities. (4-3) Budget allocation	66. The project for formulating livestock development policy and strategy	<ul style="list-style-type: none"> - Review of related policies and formulation of Sindh livestock development policy - Review and finalization of the livestock development strategy proposed by the JICA Project Team - Formulation of the 5 year action plan - Publicity (preparation of web page, pamphlet, booklet, use of radio and newspaper, opening of development forum and seminars, cattle show, etc. 	<ul style="list-style-type: none"> - The TORs for the department becomes clear - The department receives cooperation from various stakeholders for the development of livestock sector 	NA	The livestock department	The livestock department	- Sindh government, related departments (agriculture, etc.) - Universities in Sindh	Formulation of Sindh Livestock Development Policy, review and finalization of Sindh Livestock Development Strategy, formulation of the 5 year action plan, publicity of these plans	2012-2014 (3 years)
		67. The project for publicity	<ul style="list-style-type: none"> - Strengthening or establishment of the directorates based on the department's TOR - Preparation of TORs for each directorate 	<ul style="list-style-type: none"> - The department becomes capable for implementing the development strategy and plans 	NA	-do-	Sindh government	Sindh government, related departments (agriculture, etc.) - Universities in Sindh	Restructuring of the department, preparation of the TORs for each directorate	2013-2015 (3 years)
		68. The project for strengthening human resource management and development plans	<ul style="list-style-type: none"> - Formulation of human resource allocation plan and human management development plan - Formulation of recruitment plan - Formulation of human resource development plan - Recruitment, allocation, and training of the staff 	<ul style="list-style-type: none"> - The expertise of the staff is strengthened. - The motivation of the staff is enhanced. 	NA	-do-	-do-	- Sindh government, related departments (agriculture, etc.) - Universities in Sindh	-do-	Formulation of human resource management plan, recruitment plan, human resource development plan Recruitment, allocation, and training, and management of the staff
		70. The project for strengthening project management	<ul style="list-style-type: none"> - Preparation of operation guidelines and manuals. - Formulation of annual action 	<ul style="list-style-type: none"> - Various opinions including the ones from the field are 	NA	-do-	-do-	-do-	Preparation of operation guidelines and	2015-2020 (6 years)

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
		capacity	<ul style="list-style-type: none"> plans - Preparation of annual evaluation reports. - Establishment of information system in the department 	<ul style="list-style-type: none"> reflected to the plans. - Cooperation and collaboration within the department is facilitated. - The consolidated and united plans of the department are formulated. - The achievements of the regular activities and development schemes are enhanced. 					<ul style="list-style-type: none"> manuals, the annual action plans and evaluation reports for the department as well as the directorates, establishment of information system within the department. 	

Table 4-4-1 Action Plans

9. Extension System Development

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
(1) Program for strengthening of organizations related to extension activities/ services	(1-1) Establishing the Directorate of Extension and an extension section in DO Office	71. The project for establishing livestock extension system (phase1)	1. Establishment of the Directorate of Extension in Province level and the extension section in the district level 2. Preparation for establishing of Platform as the secretariat	The Directorate of Extension is established at the provincial level and the extension section (person in charge) is established at the district level	Whole Sindh (all 5 zones)	All livestock farmers	- The livestock department - District offices	- Government of Sindh - The District Governments	Establishment of the Directorate of Extension	2012-2013 (Phase 1: 2 years)
		71. The project for establishing livestock extension system (phase2-3)	1. Formulation of strategies and plans 2. Establishment of monitoring and evaluation mechanism 3. Strengthening the management capacity of the Directorate as the secretariat	The basic management framework of extension system is established	-do-	All livestock farmers	- The Directorate of Extension - The Extension Section at district offices	The Directorate of Extension	The functional Directorate of Extension	2014-2017 (Phase2: 4 years) 2018-2020 (Phase3: 3 years)
		72. The project for capacity development of RTI	1. Strengthening of the management capacity of the RTI 2. Formulation of strategies and plans 3. Setting-up of an evaluation mechanism	Management of RTI is improved	NA	All livestock farmers	RTI	- The Directorate of Extension, - Concerned Directorates - SAU - ATI	Fulfillment of the quantity and quality of human resources along with the annual action plan for extension	2013-2016 (4 years)
(1-3) Establishing laws and institutions for providing extension services	11. The project for developing appropriate technologies	Refer Action Plan 1 and 4	The appropriate technologies are developed.	Whole Sindh (all 5 zones)	All livestock farmers	The Directorate of Animal Husbandry	- Directorate of Extension, - The District Government	Refer Action Plan 1 and 4	Refer Action Plan 1 and 4	
	71. The project for establishing livestock extension system phase 1-3 73. The project for formulating	1. Establishment of a "Platform for extension" 2. Management of the Platform 3. Enhancement of information collection and sharing	- Realistic plans are made - The sector wide cooperation is strengthened. - Information and data is centralized.	NA	All livestock farmers	- The Directorate of Extension - The Extension Section at district offices	- The Department of Agriculture - Private Sector - SAU - ATI - NGO	The number of beneficiaries of newly developed technologies	2012-2013 (Phase1: 2 years) 2014-2017 (Phase2: 4 years)	

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
(2) Program for capacity building of extension workers	(2) Producing better human resources for providing extension services	the public and private platform								2018-2020 (Phase3: 3 years)
		74. The project for establishing of grading system of extension workers	1. Regulating of the qualification of each grade 2. Regulating of an approval process of grading (who, when, what, how to)	- The confident of extension workers is strengthened - The extension workers' motivation to work is studied	NA	All extension agents	- The Directorate of Extension, - The Directorate of Animal Husbandly - RTI	- District Governments - NGOs	Increase in the motivation of extension workers	2016-2018 (3 years)
(3) Program for implementation of extension	(3) Utilizing developed technologies	72. The project for capacity development of RTI	1. Implementing the trainings according planned schedule 2. Converting developed technologies to training course, teaching materials, and extension materials 3. Building of trainers' teaching skills	Basic curriculums (schedule/length, textbook, teaching methods, etc.) of all training courses are organized	NA	RTI staff	RTI	- RTI, - The Directorate of Extension	The number of developed curriculums, teaching materials, extension materials etc.	2013-2016 (4 years)
		75. The project for training of the department technicians	Trainings for DVM	Capacity of DVM is built	Whole Sindh (all 5 zones)	DVM of the livestock department	- The Directorate of Extension - The Directorate of Animal Husbandly - RTI	- District Governments - NGOs	Fulfillment of the planned number of the DVM level extension workers	2015-2020 (6 years)
		76. The project for developing capacity of LLWs/FCLEWs 77. The project for follow-up training of LLWs/FCLEWs	Trainings for SA Trainings for LLW and CLEW	Capacity of SA is built Capacity of LLW and CLEW is built	-do- -do-	SA of the livestock department LLWs/FCLEWs	-do- -do-	-do- -do-	-do- -do-	Fulfillment of the planned number Fulfillment of the planned number
(3) Program for implementation of extension	(3) Utilizing developed technologies	11. The project for developing appropriate	Refer Action Plan 1 and 4	- It is conducted the Study(testing) on developed	-do-	All livestock farmers	The Directorate of Animal Husbandly	- The Directorate of Extension,	Refer Action Plan 1 and 4	Refer Action Plan 1 and 4

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
services	properly in whole area of Sindh	<p>technologies</p> <p>12. The project for developing appropriate fattening technologies</p> <p>17. The project for livestock promotion in non-irrigated area</p> <p>22. The project for feeding improvement</p> <p>31. The project for developing marketing skill of farmers</p> <p>50. The project for strengthening business mind of farmers</p> <p>78. The Project for enhancing the extension service provision</p>		<p>technologies</p> <p>- The extension manuals of developed technologies are developed</p>				- District Governments		
			<p>Providing technical extension services with taking the various differences into account.</p>	<p>The developed appropriate technologies are diffused to farmers (adoption).</p>	-do-	All livestock farmers	<p>- all extension agents,</p> <p>- District offices</p> <p>- The Directorate of Extension</p>		<p>Increase in the productivity of model farmers</p>	2015-2020 (6 years)

Table 4-4-1 Action Plans

10. Future-oriented Cattle Colony Production System

Program	Purpose of Program	Expected Projects	Contents of Project(s)	Expected Outcome	Implementation Zone	Target Beneficiaries	Organization in Charge	Main Stakeholders	Indicators of outcome	Implementation Period
(1) Program for formulating future-oriented production system centered on cattle colonies	(1) to create a future-oriented development model for cattle colonies	48. The project for promoting dry cow recycling (Phase 1 & 2)	Refer Action Plan 6	Better image of cattle colonies are created.	- Integrated livestock development zone - Northern milk production zone	- Cattle colonies - Residents around cattle colonies	-do-	Environmenta 1 & Alternate Energy Department	- Effluents from cattle colonies become harmless. - Cow dung generated from cattle colonies are treated and give no harmful impacts. - Produced biogas and manure create benefit.	2014-2016 (3 years)
		33. The project for promoting calve rearing (Phase 1 & 2)	Refer Action Plan 6	Income of dairy farmers in cattle colonies is increased.	-do-	- Cattle colonies	-do-	Karachi dairy farmers association	Productivity of milking animals in cattle colonies is improved.	2017-2020 (4 years)
		52. The project for improvement of milk quality	Refer Action Plan 7	1. The current situation is clarified. 2. The treatment facility is designed, and marketing plan for manure and biogas is prepared. 3. The facility is constructed. 4. The facility and marketing are operated sustainably.	1. The current situation is clarified. 2. Training of farming, feeding management, fodder, reproduction, animal health, and breeding are conducted. 3. Rearing condition of target plots is improved, e.g. installation of ventilation and lowering rearing density.					
		79. The project for treatment of cow dung and effluent from cattle colonies								
		13. The project for appropriate dairy farming in cattle colonies								

4.5 Sindh Specialty Projects

The action plans are comprised of a number of the priority projects to comprehensively achieve the medium-term livestock development goals by 2020. Some of the projects are shown in the following box to be highlighted because of their uniqueness, potentials, and specialty to Sindh. The outline of the projects is shown in Table 4-5-1.

Box 4.1 Sindh Specialty Projects

1. Establishment of a Platform for Livestock Development

Project No. 32 in Action Plan 6 and No. 73 in Action Plan 9

2. Formulation of the Policy Paper for Sindh Livestock Development

Project No. 66 in Action Plan 8

3. Development and Extension of Appropriate Dairy Technologies

Project No. 11 in Action Plan 1 and Project No. 78 in Action Plan 9

4. Livestock Development in the Non-Irrigated Areas

Action Plan 2

5. Development of Feed Formulation and Improvement of Fodder Production

Action Plan 3

6. Elimination of Important Animal Diseases

Action Plan 4

7. Formulation of Sindh Quality Standard for Milk and Meat and Export Promotion

Project No. 36, 37 and 47 in Action Plan 6

8. Entrepreneurship Development

Project No. 50, 51, and 52 in Action Plan 7

9. Promotion of the Recycling Livestock for Milk and Salvation of Calves

Project No. 55 and 58 in Action Plan 7

10. Improvement of Cattle Colonies

Project No. 79 in Action Plan 10 and No.13 in Appendix A

Table 4-5-1 Outline of the Sindh Specialty Projects

1. Establishment of a Platform for Livestock Development

Overall goal	Livestock development become more efficient and effective based on the multi stakeholder platform.
Project purpose	Collaborative actions are briskly taken by various stakeholders such as government institutions, universities, companies, NGOs, etc. for livestock development in Sindh.
Outputs	1. A working group is set up by stakeholders. 2. Mission, principles, and action plan are prepared by the working group. 3. A platform is launched and operated sustainably.
Activities	1-1. Identify stakeholders 1-2. Start regular meeting with stakeholders 1-3. Establish a secretariat office in the livestock department 2-1. Draft the mission, principles, and 5 year action plan for a multi stakeholder livestock development platform 2-2. Finalize the mission, principles, and plan 3-1. Launch the platform according to the plan 3-2. Operate the platform and implement the action plan
Target livestock or products	All
Target zone	All
Target beneficiaries	All
Organization in charge	The Sindh Livestock Department
Major stakeholders	Related government agencies at district and taluka levels (Agriculture office, Irrigation office, etc.), NGOs, Universities
Project period	2012-2020 (9 years)

2. Formulation of the Policy Paper for Sindh Livestock Development

Overall goal	Livestock sector is developed as planned in collaboration with multi stakeholders
Project purpose	The livestock development policy is formulated and acknowledged by the stakeholders.
Outputs	<ol style="list-style-type: none"> 1. Sindh livestock development policy 2. Livestock development strategy 3. 5 year action plan 4. Tools and materials for public relations
Activities	<ol style="list-style-type: none"> 1. Review the related policies and formulate Sindh livestock development policy based on the master plan 2. Review and finalize the livestock development strategy based on the master plan 3. Formulate the 5 year action plan 4. Conduct public relations with various tools and materials for better understandings and recognition on the policy, strategy and plan by the stakeholders
Target livestock or products	NA
Target zone	NA
Target beneficiaries	Livestock department
Organization in charge	Livestock department
Major stakeholders	Government of Sindh, related departments (agriculture, etc.)
Project period	2012-2014 (3 years)

3. Development and Extension of Appropriate Dairy Technologies

Overall goal	Milk productivity is improved.
Project purpose	Farmers practice the appropriate dairy technologies.
Outputs	<ol style="list-style-type: none"> 1. Appropriate dairy technologies are verified. *Appropriate technology: small input, high output, simple, and low risk 2. Manuals and teaching materials for farmers and technicians are developed based on the result of the demonstrations. 3. Appropriate dairy technologies are widely disseminated in the irrigated areas.
Activities	<ol style="list-style-type: none"> 1-1. Select demonstration areas and farmers. 1-2. Develop an implementation plan for the demonstration. 1-3. Demonstrate improvements of productivity and fertility by appropriate technologies. 2-1. Select and summarize of appropriate technologies. 2-2. Prioritize techniques based on the output. 2-3. Develop manuals and teaching materials such as text documents, picture-story board, card system, and digital materials for farmers and technicians. 3-1. Experiment the manuals and teaching materials (trainings, seminars, workshops, and so on). 3-2. Finalize the teaching materials and manuals. 3-3. Conduct extension activities using the materials and manuals
Target livestock or products	Dairy animals (buffalo and cow)
Target zone	Milk production zone, integrated livestock development zone
Target beneficiaries	All dairy farmers
Organization in charge	Livestock department
Major stakeholders	Department of Agriculture, Sindh Agricultural University, NGOs, private sectors
Project period	2012-2020 (9 years)

4. Livestock Development in the Non-Irrigated Areas

Overall goal	Livelihood of farmers is stabilized.
Project purpose	Farmers in the non-irrigated areas practice the appropriate livestock technologies.
Outputs	<ol style="list-style-type: none"> 1. Appropriate livestock technologies for non-irrigated areas are verified. *Appropriate technology: small input, high output, simple, and low risk 2. Manuals and teaching materials for farmers and technicians are developed based on the result of the demonstrations. 3. Appropriate livestock technologies are widely disseminated in the non-irrigated areas.
Activities	<ol style="list-style-type: none"> 1-1. Select demonstration areas and farmers 1-2. Develop an implementation plan for the demonstration 1-3. Demonstrate improvements of productivity and fertility by appropriate livestock technology 2-1. Select and summarize of appropriate livestock technology 2-2. Prioritize techniques based on the output 2-3. Develop manuals and teaching materials such as text documents, picture-story board, card system, and digital materials for farmers and technicians 3-1. Experiment the manuals and teaching materials (trainings, seminars, workshops, and so on) 3-2. Finalize the teaching materials and manuals 3-3. Conduct extension activities using the materials and manuals
Target livestock or products	Camel, goat, sheep, and ostrich
Target zone	Eastern extensive meat producing zone, Western extensive meat producing zone
Target beneficiaries	All category of farmers
Organization in charge	Livestock department
Major stakeholders	Department of Agriculture, Sindh Agricultural University, NGOs, private sectors
Project period	2012-2020 (9 years)

5. Development of Feed Formulation and Improvement of Fodder Production

Overall goal	Livestock productivity is increased.
Project purpose	Farmers practice appropriate feeding management according to nutritionally adequate rations.
Outputs	<ol style="list-style-type: none"> 1. The list of the nutrient composition of feed ingredients is developed. 2. The proper rations which respond to a particular stage and level of production are developed and adopted. 3. High yielding varieties of fodder, salinity and draught tolerant plants are identified and adopted.
Activities	<ol style="list-style-type: none"> 1-1. Establish an analytical laboratory. 1-2. Analyze nutrient composition and digestibility of all feedstuffs. 2-1. Clarify a relation between nutrients intake and animal production in each area. 2-2. Prepare and demonstrate a model of rations by livestock, farming size, and the real situation in each area. 2-3. Finalize the rations and disseminate through extension activities. 3-1. Conduct a study on the adaptability of high yielding varieties of fodder, salinity and draught tolerance plants. 3-2. Prepare a plan of development and utilization. 3-3. Conduct the demonstration of the high yielding varieties of fodder and plants. 3-4. Develop a manual to popularize and utilize the forage. 3-5. Conduct extension activities using the manual.
Target livestock or products	All types of livestock
Target zone	All zones
Target beneficiaries	All category of farmers
Organization in charge	Livestock department
Major stakeholders	Department of Agriculture, Sindh Agricultural University, NGOs, private sectors
Project period	2012-2020 (9 years)

6. Elimination of Important Animal Diseases

Overall goal	Brucellosis and tuberculosis are eradicated, and mastitis and other important animal diseases are controlled.
Project purpose	1. The number of livestock infected by brucellosis, tuberculosis and Mastitis is decreased. 2. The eradication system is established in the livestock department.
Outputs	1. The animal health central research center, Tando Jam is strengthened. 2. The trans-boundary diseases quarantine model is established.
Activities	1-1. Implement epidemic survey and identification of important diseases 1-2. Reinforce the diagnosis ability of CVDL 1-3. Reinforce the system for collecting samples, diagnosis, and feed back 2-1. Train and create awareness for dairy farmers (disease reporting and culling infected animals) 2-2. Conduct monitoring of diseases 2-3. Prohibit transportation and trading infected animals, and promotion of culling infected animals
Target livestock or products	All types of livestock
Target zone	All
Target beneficiaries	All livestock farmers
Organization in charge	Livestock department
Major stakeholders	Sindh Agricultural University, NGOs, private sectors
Project period	2012-2020 (9 years)

7. Formulation of Sindh Quality Standard for Milk and Meat and Export Promotion

Overall goal	Interprovincial and international competitiveness of Sindh livestock products is strengthened.
Project purpose	Production and sales of quality livestock products are increased.
Outputs	<ol style="list-style-type: none"> 1. Quality standard for milk and meat is formulated. 2. Production and sales of quality milk and meat are promoted. 3. Export of livestock products is promoted.
Activities	<ol style="list-style-type: none"> 1-1. Conduct a basic study on a product standard 1-2. Draft the product standard through public private partnership (PPP) 1-3. Introduce the draft product standard in a selected area as a trial 1-4. Finalize the product standard and institutionalize it 2-1. Select target farmers 2-2. Conduct technology transfer for the farmers to produce quality products 2-3. Promote marketing on the quality products 3-1. Establish the export promotion institution (or board) in collaboration with other agencies and private sector 3-2. Clarify the roles of the department and others 3-3. Develop the action plan to promote export 3-4. Implement the action plan
Target livestock or products	All types of livestock
Target zone	All zones
Target beneficiaries	Medium and large scale farmers
Organization in charge	Livestock department
Major stakeholders	Other government agencies, Private sector, Universities, NGOs
Project period	2012-2020 (9 years)

8. Entrepreneurship Development

Overall goal	Livelihood of livestock farmers is enhanced and stabilized.
Project purpose	Livestock income of target farmers is increased and become stable.
Outputs	<ol style="list-style-type: none"> 1. Livestock farmer sensitization models are formulated. 2. Farm management training models are formulated. 3. Formulation farmers' group models are formulated. 4. The formulated models are widely extended and applied throughout Sindh.
Activities	<ol style="list-style-type: none"> 1-1. Create proactive business mind in target vulnerable farmers 1-2. Provide the farmers with basic business skills and knowledge. 1-3. Assist the target farmers in preparing and conducting farm administration plan. 1-4. Formulate a model for creating entrepreneurs in the basic stage 2-1. Provide the target privileged farmers with necessary business skills and knowledge. 2-2. Assist the target farmers in preparing and conducting farm administration plan. 2-3. Formulate a model for creating entrepreneurs in the intermediate stage 3-1. Formulate farmers groups in target areas 3-2. Assist the target farmers groups in preparing and conducting their activity plan. 3-3. Formulate a model for farmers group formulation. 4. Conduct extension and application activities of the models.
Target livestock or products	All types of livestock
Target zone	All
Target beneficiaries	All livestock farmers
Organization in charge	Livestock department
Major stakeholders	NGOs, private sectors
Project period	2012-2020 (9 years)

9. Promotion of the Recycling Livestock for Milk and Salvation of Calves

Overall goal	Efficient and harmonious livestock development of the urban and rural areas
Project purpose	Unused livestock resources are utilized.
Outputs	<ol style="list-style-type: none"> 1. Mechanism for recycling livestock for milk is established. 2. More livestock for milk is recycled. 3. Mechanism for salvaging calves born in cattle colonies is established. 4. More calves are salvaged.
Activities	<ol style="list-style-type: none"> 1-1. Conduct a basic study on livestock recycling 1-2. Draft the mechanism for the recycling 1-3. Operate the mechanism in a selected area as a trial 1-4. Finalize the mechanism 2-1. Apply the mechanism and promote the recycling in the southern integrated livestock development zone 3-1. Conduct a basic study on calf salvation 3-2. Draft the mechanism for the salvation 3-3. Operate the mechanism in a selected area as a trial 3-4. Finalize the mechanism 4-1. Apply the mechanism and promote the salvation in the southern integrated livestock development zone and central intensive meat production zone
Target livestock or products	Dairy animals (Buffalo and cattle)
Target zone	Integrated livestock development zone, central intensive meat production zone
Target beneficiaries	Dairy farmers, recycling farmers, fattening farmers
Organization in charge	Livestock department
Major stakeholders	Private sector
Project period	2012-2020 (9 years)

10. Improvement of Cattle Colonies

Overall goal	Cattle colonies continue to play an important role in livestock development.
Project purpose	1. Negative environmental effects from cattle colonies are alleviated. 2. Productivity of milking animals reared in the target plots is improved.
Outputs	1. Effluent and cow dung are treated and create value. 2. A model plot which provides better rearing condition for livestock in cattle colonies is established and applied.
Activities	1-1. Conduct basic study on the current situation of effluent and cow dung from cattle colonies. 1-2. Design the treatment facility, and prepare marketing plan for manure and biogas. 1-3. Construct the facility. 1-4. Operate the facility and conduct the marketing plan sustainably. 2-1. Conduct a basic study on rearing condition for livestock in cattle colonies. 2-2. Design a model plot which provide a better rearing environment to livestock, i.e. appropriate rearing density and ventilation system. 2-3. Demonstrate the model in cattle colonies. 2-4. Facilitate application of the model in cattle colonies.
Target livestock or products	Dairy animals (Buffalo and cattle)
Target zone	Integrated livestock development zone
Target beneficiaries	Dairy farmers
Organization in charge	Livestock department
Major stakeholders	Private sector, Environmental & Alternate Energy Department
Project period	2012-2020 (9 years)