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**Email:** [ddjoshi@healthnet.org.np](mailto:ddjoshi@healthnet.org.np), **Website:** [www.nzfhrc.org.np](http://www.nzfhrc.org.np)

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## **Infrastructure Facilities in Buffalo Slaughtering Places and Meat Shops of Kirtipur Municipality**

*Pabitra Muni Bajracharya, Durga Datt Joshi, Ranjana Gupta and Basanta Kumar Thapa*

### **Introduction**

Nepal is an agricultural country with poor economy. Agriculture contributes 38% of the nations GDP and livestock contributing almost 11% to GDP (World Bank, 2002). Livestock population in Nepal for 2004/2005 was estimated to be 6.99 M cattle, 4.08 M buffaloes, 7.15 M goats and 0.86 M sheep. Roughly 70% of households keep some type of livestock, including cows, buffaloes, pigs and chickens (FAO, 2005). Buffalo is one of the major livestock species for milk and meat production, which constitutes about two thirds of the meat consumption in Nepal (TLDP, 2002).

Adhikari *et al.*, (2003) found the prevalence of *Fasciola* spp. was found to be 36% in cattle and 61% in buffaloes respectively.

Meat consumption varies widely while comparing different countries as it depends on factors like socio-economic condition, religious beliefs, cultural practices, etc. In a resource poor and developing country like Nepal, natives have included meat as important part of their diet to supplement nutritional requirements. In Nepal buffaloes, contribute about 64% of meat consumed, followed by goat meat 20%, pork 7%, chicken 6% and sheep 3% (Joshi *et al.*, 2001).

### **Objectives**

The general objective of the study is the survey of buffalo slaughtering places and meat shops to observe the hygienic condition of the meat, occurring in the meat and the quality of the meat being sold.

### **Methods:**

Surveillance study was carried out during the period from Nov. 2007 to July 2008, a total of 200 buffaloes slaughtered for meat were surveyed in a total of 12 slaughtering places found over the entire Kirtipur municipality. The buffaloes were categorized as male, female, calf, adult and old, and examination was carried out.

During the survey, 28 butchers in 12 slaughtering places were asked various questions and their corresponding replies were collected. 23 of them were local residents of the area whereas 5 were outsiders.

50 meat sellers of meat 50 shops were put to various questions to know about the facilities of meat shops and the practices of meat selling.

### **Results:**

In Kirtipur area, a total of 12 slaughtering places were found. Most of them were located in Khasibazaar and Nayabazaar sites, the two main market areas. Kirtipur Municipality is divided into 19 wards.

In Kirtipur, each day, an average of 25 buffaloes was found slaughtered. However the number was found increased upto 30 to 35 during Saturdays and during festivals due to more demand of meat.

### **Animals Kept Prior to Slaughtering**

Prior to slaughtering, these buffaloes were either kept in slaughter shed, or in the ground floor of the butcher's house. In fact 50 % of the slaughtering places had separate slaughter shed and in rest 50% of the slaughtering places, buffaloes were just kept in the ground floor of the butcher's house.

In most of the slaughtering places, in fact in 66.66%, buffaloes were slaughtered along the road side and they were always found visited by dogs, while in 33.33%, they were slaughtered in the slaughter house.

66.66% of the slaughtering areas were easily accessible to dogs while in 33.33% of the slaughtering places.

The butchers were found to have no separate clothes, boots or apron for slaughtering. They used to wear the same usual clothing during slaughtering.

During survey, 14 (38.88%) of the meat sellers replied that they had got their own slaughtering places and they got meat from them. The rest 22 (61.11%) answered that they got meat from the butchers.

The waste disposal, 13 (36.11%) of the meat sellers replied that they threw the wastes into the drainage system, 16 (44.44%) of them replied that they threw the wastes in the container and 7 (19.44%) answered that they just castled away the wastes along the road side.

Though 'The Slaughter House and Meat Inspection Act 1998' has come to legislation, not a single example of its implementation has been found during the study. The butches and meat sellers said that no one has ever come for meat inspection.

## Discussion

Joshi (1991) documented the occurrence of infection with *Echinococcus* cyst in domestic livestock. It was found that the number of animals slaughtered and rates of *Echinococcus* cyst infection in different species were: water buffaloes 5% (153/3065), goats 3% (55/1783), sheep 8% (12/150) and pig 7% (10/143).

The survey of slaughtering places and meat shops revealed the poor infrastructure and facilities present in them. 66.66% of the slaughtering places lacked even the basic facilities like facilities of roof, concrete floor, good water supply and space or container for offal disposal drainage and were always found visited by dogs. 67.85% of the butchers were unaware of the meat borne diseases and 64.28% butchers didn't have any knowledge about impact on environment due to slaughtering places. During the study, 36 (72.00%) buff selling shops were found over the entire Kirtipur municipality. The facilities in these shops were also found primitive or lacking and most of the meat sellers (88.88%) had no idea about meat borne diseases as well (Bajracharya 2009).

The study found no pre and post mortem meat inspection and slaughter house examination by any authority of the government institution.

The butchers were found unaware of the meat borne diseases (67.85%) and environmental effect (64.28%) due to slaughtering places.

Both butchers and meat sellers have not obtained proper trainings in meat business. They entered into this business by learning from older persons. Most of them use primitive types of tools which damage the hides, due to poor flying and waste large part of the products like blood, bones and glands and cause loss of meat.

Lack of slaughter house, lack of proper infrastructure in the slaughtering places and meat shops, absence of knowledge about meat borne diseases, shortage of adequately trained personnel, improper slaughtering, handling and selling of meat and the most importantly the lack of meat inspection and examination which though is in the law have definitely bound to increase the prevalences of different pathogens and parasites, some of them being much zoonotically significant as well.

Higher prevalence of echinococcosis was obtained during winter (25.00%) in comparison to summer (14.00%). Higher prevalence during winter might be associated with different things.

The study found higher prevalence of fascioliasis during winter (35.00%) as compared to summer (22.00%).

Study on seasonal prevalence of *Taenia* cyst; found that the prevalence was slightly higher during summer (28.00%) in compare to the winter (27.00%).

Ghimire and Karki (1996) found higher prevalence of fascioliasis in old animals (94.30%) compared to heifers (54.16%) and calves (34.60%) in rural Kathmandu.

In Nepal buffaloes, contribute about 64% of meat consumed, followed by goat meat 20%, pork 7%, chicken 6% and sheep 3% (Joshi *et al.*, 2001).

Joshi *et al.*, (1997) carried out the epidemiological study of *Echinococcus* in Nepal. Based on the three year study (1993-1995), it has been revealed that the epidemiological cycle (indigenous) of

*Echinococcus granulosus* parasite is dog-pig-dog cycle and human acquire infection accidentally through infected dog stool.

Shrestha *et al.*, (1992) studied the prevalence of fascioliasis in cattle and buffaloes in Dhankuta. The prevalence rate was found range from 15.4% to 31.7% in the cattle and 20% to 87.5% in buffaloes

## Recommendations

1. Slaughter house, at least a mini abattoir should be established in each ward depending the consumption of the meat.
2. The Slaughter House and Meat Inspection Law which has been approved in 1998 by the then Government of Nepal should be strictly considered and enforced.

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## Synthesis Analysis Workshop

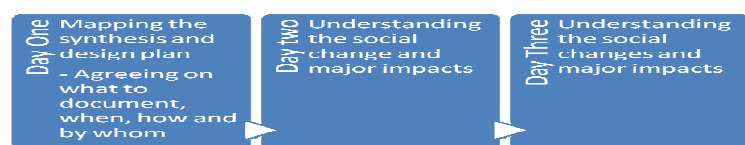
Synthesis Analysis Workshop on Urban Ecosystem Health Project Phase I, II and III was organized by NZFHRC in June 5-7, 2009. This project was supported by International Development Research Centre (IDRC), Ottawa, Canada.

### Objective of the workshop

- Designing strategy and methods for mapping, synthesizing and documenting the most relevant health, environment and community development outcomes of the urban health project
- Collaborative inquiry and social engagement of stakeholders for understanding problem, actor and option

## Design of the workshop

The workshop was designed in such a way that the strategy and methods for mapping, synthesizing and documenting the most relevant outcome of the project is well internalized and owned by the stakeholders. The preliminary drafting of the strategy and methods by the research team and consultant were kept open and flexible in order to get wider perspectives of the stakeholders and their critical input in developing roadmap for the synthesis and documentation. Day one was focused on conceptualizing the project, its contribution and major outcomes. The day was also focused in refining the strategy and methods and developing action plans. Day two was focused on social enquiry and collaborative learning. The use of various social analysis tools helped in the understanding the social changes and major impacts among stakeholders, the contributing factors and other relevant issues and opportunities. Day two did not only help stakeholders internalize the learning, but also brought all together to a shared learning dialogue with exchange of information and knowledge. It contributed in making stakeholder realize and be proud of the contribution each made in the process and outcomes.



**Fig 1. Workshop framework**

## Facilitation and workshop procedure

The workshop was conducted in a participatory way using the Social Analysis Tools. More time was spent on group exercise, discussion and sharing in plenary. The facilitator only provided tips and guidance in the beginning by introducing the event and process. Participants themselves took lead in group facilitation, discussion and presentation. Several methods were used in group formation in order to mix different groups of stakeholders to that exchange of information and knowledge will be ensured. The table 1 below summarizes the key events and the tools used.

**Table no. 1. Use of participatory tools and techniques facilitating the workshop**

| Events  | Tools                         | Mode of engagement                               |
|---|-------------------------------|--|
| Mapping the design of the synthesis and documentation process | Pile sorting and clustering   | Group discussion and presentation in the plenary |
| Finalizing work plan  | Matrix ranking                | Discussion and plenary                           |
| Historical trend analysis                                     | Time line                     | Group exercises                                  |
| Understanding stakeholder dynamics                            | Social Analysis CLIP          | Group exercise, presentation                     |
| Understanding the communication and network dynamics          | Network dynamics              | Group exercise and presentation                  |
| Understanding the problem and effectiveness of interventions  | Force Field                   | Group exercise                                   |
| Understanding the effectiveness of major impacts              | Social Domain, matrix ranking | Group exercise and presentation                  |
| Realizing the skills and competencies of stakeholders         | Skill Profile/Wheel           | Group exercise                                   |
| Sharing best practices  | Story                         | Group exercise,                                  |

|                              |                          |              |
|------------------------------|--------------------------|--------------|
| and learning                 | telling/role dynamics    | presentation |
| Knowing each other           | Face to face interaction | In pair      |
| Recalling the 3 day workshop | Fun Quiz                 | Group        |

## Major Outputs of the workshop

### a. Design framework for the synthesis work

The participants reached to the consensus on the design framework presented by the project team. Stakeholders gave more emphasis to apply participatory processes in the synthesis work and documentation. They strongly felt that the impact and changes should be well documented and shared with other stakeholders including government. They also requested to project to prepare the outcome document in Nepali, publish and have wider circulation.

Participants were divided into four groups and each group identified major changes and impacts in their surrounding, health and society. They discussed among the groups and presented their outcome in the plenary. The changes identified by all the groups were focused on: improvement in health of people and animals; ii) improvement in the environment and surrounding; iii) improvement in their social life; iv) improvement in policy making process; and v) changes in institutional development and community mobilization. The group also identified outcome indicators for each of the changes (table 2).

**Table no. 2. Major changes/impact and the indicators identified by stakeholders.**

| Major changes         | Indicators   |
|-----------------------|--|
| Health                | Development of infrastructure<br>Health consciousness among people<br>Decrease in outbreak of major diseases<br>Improvement in community sanitation<br>Improvement in food hygiene and quality<br>Decrease in child and women mortality rate |
| Environment           | Awareness on environment management<br>Improvement in waste disposals<br>Clean and green corridors<br>Establishment of biogas plant<br>Closure of open slaughter houses<br>Recycling of waste  |
| Community empowerment | Environment friendly society<br>Development of we feeling<br>Improvement in sanitation of public places<br>Healthy live  |
| Community Development | Increase in knowledge, skill and capacity of communities<br>The organizations are capacitated and functional<br>Confidence building of community members<br>Increase access to services like clinic etc.                                     |
| Social changes        | Increase in income of the targeted beneficiaries<br>The skills, knowledge and capacity of targeted beneficiaries has improved<br>People are self reliant and self dependent<br>Development of communal feeling                               |
| Policy                | Policy advocacy and influence to the government<br>Communities ownership on drafting policy and submitting to the government   |

### b. Perception on effectiveness of the project

Social analysis tool named force field was used to understand the stakeholders view on the factors that cause the problem and those that are supported by project to counteract the problems and stop it from becoming worse. It will help in assessing whether the proposed

activities are sufficient enough to address the problem or not. Group exercises were done and plenary discussion was organized to map this effectiveness of the project. The outcome shows that majority of the problems were solved by the project except the policy gaps.

### c. Perception on major outcomes of the project

Majority of the stakeholders perceive that the major outcomes of the project was on health, environment and social changes. They have rated these outcomes as high. But with regards to the outcome on policy, majority feels that the policy feedback is good, policy recommendations were drafted and provided to the government, but the implementation part has been very weak. Stakeholders strongly perceive that due to the project people's awareness, knowledge and skills have drastically improved. According to them this has raised health consciousness, improved in door and outdoor sanitation, improved waste disposal and management, improved the condition of Bishnumati river and the corridors and changes communities practice and habit in consuming food. Major changes were also reported by the group on institutional strengthening, internal governance of the group, inclusion of members, empowerment of vulnerable and marginalized groups and mainstreaming development partners for community actions.

### d. Changes in skills and competencies of stakeholders

Participants identified communication, facilitation, taking leadership, social mobilization, community development, analytical as their core competencies where the project has contributed. Individual exercise was done to map the skill and competencies of stakeholders. The individuals were then suggested to form of group of other individual who have the similar type of competencies. It provided the opportunity for all the participants on identifying their core competencies and knowing people of different competencies and level. The outcome shows that the project contributed in developing facilitation, community development, social mobilization skills of participants. With regards to communication and information analysis, participants realized that they have to improve on this. They also realized that they do not have much practice in sharing information and knowledge with each other and they should focus on this in future.

### Conclusion

The design workshop was useful in identifying framework, strategy, methodology and tools in documenting in a systematic manner the outcomes of the project and lessons in policy influence and policy implementation. It brought all together 35-40 individuals representing 18 major stakeholders and key beneficiaries together to discuss the outcome mapping and plan for future course of actions. It was also a way of fostering collaborative inquiry, social learning, and stakeholder engagement in identifying the most significant changes, exploring the indicators and recommending process led approach for synthesis and documentation.

## Population Structure of South Asian Indigenous Pigs (*Sus scrofa*) Determined by Microsatellite Markers

<sup>1,2</sup>Karma Nidup, <sup>3</sup>G.L.L.Pradeepa Silva, <sup>4</sup>D.D.Joshi, <sup>5</sup>Rinzin Pem, <sup>1</sup>Jaime Gongora, <sup>1</sup>Chris Moran

<sup>1</sup>Centre for Advanced Technologies in Animal Genetics and Reproduction (REPROGEN), Faculty of Veterinary Science, University of Sydney, Australia

<sup>2</sup>College of Natural Resources, Royal University of Bhutan, Lobesa, Punakha,

<sup>3</sup>Department of Animal Science, University of Peradeniya, Sri Lanka

<sup>4</sup>National Zoonoses and Food Hygiene Research Centre, Kathmandu, Nepal

<sup>5</sup>Regional Veterinary Laboratory, Department of Livestock, Ministry of Agriculture, Gelephu, Bhutan

### Abstract

Indigenous pigs (*Sus scrofa*) have socio-economic, cultural and traditional, and biodiversity importance in the lives of many people around the world including Bhutan, Nepal, and Sri Lanka (South Asia). Currently, there is very limited genetic information on South Asian pigs. Here, we investigate the genetic structure and diversity of both indigenous domestic and wild pigs (n=303) from South Asia as well as some Australian commercial pigs (n=15) of European origin using 21 microsatellites markers recommended by ISAG/FAO. Analysis of genetic structure reveals five different populations of pigs from Bhutan, two from Nepal, and clear segregation between village and wild pigs of Sri Lanka. Preliminary data indicates that country-wise samples deviated ( $P < 0.05$ ) from HWE at most loci. The mean expected heterozygosity ranges from 0.70 to 0.81 (SE=0.02) for Bhutanese pigs, 0.71 and 0.74 (SE = 0.01) for Nepalese pigs, 0.66 and 0.76 (SE=0.03) for Sri Lankan pigs, and 0.67 (SE=0.03) for Australian commercial pigs that are used as an out-group. Interestingly, Bhutanese and Nepalese pigs are more closely related when compared with Sri Lankan pigs. Our findings will be useful for conservation and sustainable utilization of porcine genetic resources in the region.

### NEWS:

#### Social Analysis System (SAS) Training Workshop:

Dr. Durga Datt Joshi, Executive Chairman, NZFHRC and Ms. Meena Dahal, Computer Analyst of NZFHRC participated in the Social Analysis System (SAS) Training Workshop in Pokhara from May 12-14, 2009.

#### K.D.M.A. Research Award:

K.D.M.A. Research Award for the year 2065 (2008/09) has been awarded to Dr. Yogeshwor Prasad Mishra and Rakesh Prasad Sah. Their papers titled are "Brucellosis in Milking Buffaloes of Bhaktapur Milk shed Areas" and Serological Evidence of Visceral Leishmaniasis in Human Population of Siraha District respectively.

**From: Zoonoses & Food Hygiene News, NZFHRC  
P.O. Box 1885, Chagal, Kathmandu, Nepal.**

**TO:**

**Dr/Mr/Ms .....**

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