



ESAP Newsletter

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Ethiopian Society of Animal Production

EDITORIAL

In this Issue

- *Apiary Innovation by Women (Page 1)*
- *Innovation in Livestock Systems..... (Page1)*
- *A specific type of seasonal 'pasture marketing' (Page 2)*
- *Public Private Partnership..... (Page 3)*
- *The 5th All African conference (Page 8)*

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APIARY INNOVATION BY WOMAN FARMER IN ADA WOREDA

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Modern beekeeping is not popular in Denkaka Peasant Association (PA) of Ad'a district, Oromia Region, Ethiopia until 'Improving Productivity and Market Success' (IPMS) project together with Ad'a Office of Agriculture and Rural Develop-



Courtesy: Azage Tegegne

ment (OoARD) jointly introduced it to a few farmers. The capacity building activity carried out by IPMS project was done through out the value chain. It all started by introducing selected framers about modern beekeeping through study tours and field

Continues to page 6

Innovation: The junk folder for Livestock development:

Since the last couple of decades, Innovation is one of the captivating terms used in development languages. It covers such a wide range of activities and fits perfect everywhere: policy, research institutions, and development projects and in businesses. This junk folder preaches progress and new ways of doing things in any venture including livestock development projects and programs, where it is used in a similar way or another. Giving exhaustive coverage of the junk folder requires a big resource and time, but still getting the gist of some of the contexts might not be bad. Having this in mind this issue of ESAP newsletter is dedicated to innovations in livestock agriculture and its application under different contexts in the developing world. Articles containing experiences on livestock related innovations are contributed by individuals from different institutions.

Hope time invested in reading this issue should be quality time!

INNOVATION IN LIVESTOCK SYSTEMS

Ranjitha Puskur, Innovation in Livestock Systems, ILRI

Seventy percent of the world's poor rely on livestock for their livelihoods. Of the 600 million poor livestock keepers in the world, two-thirds are women. The livestock sector in the developing world is characterised by rapid change in response to several

Continues to page 4

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A SPECIFIC TYPE OF SEASONAL 'PASTURE MARKETING' IN TIYO DISTRICT OF ARSI ZONE

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Tiyo district is situated at about 175 km South East of Addis Ababa. It is characterized by crop-livestock mixed farming system. Crop production is carried out in both 'Belg' and 'Meher' seasons. 'Meher', the main rainy season, covers the period from the beginning of June to end of September, while 'Belg' the short rainy season runs from March to May. Barley, wheat, teff, maize, bean, field peas, lentil and linseed are the major annual crops grown in the district. Its rainfall is characterized by a bimodal pattern. The livestock population of Tiyo is estimated at 96,966 cattle,

grown on non-arable natural grazing lands. Other resources of livestock feed include grazing on fallow lands between croppings and crop residues. According to earlier reports natural grazing, crop residues and improved forage crops account respectively for about 73, 14 and 0.2% of livestock feed resources as a basal diet.

Although the highlands in general and some other areas in mid altitude have a reasonable potential for the cultivation of food crops and to grow good quality pasture grasses, large areas including very sloppy ones are under cultivation and those which have not



*Transhumance in the Arsi Zone
Photo : Zelalem Yilma.*

33,817 sheep, 16,121 goats, 6,913 horses, 1,358 mules, 8,109 donkeys, and 24,439 poultry. There are some 9,600 crossbred cattle ($\geq 50\%$ exotic blood level mainly Friesian) with about 31% of them being found in Harobilalo Peasant Association (PA). Harobilalo is one of the 18 Kebeles (lower administrative classification, Peasant Association - PA in rural areas) of Tiyo district.

Livestock in Ethiopia mostly depend on pasture

been cultivated have degenerated and become bare due mainly to overgrazing. Seasonal shortfalls in feed availability on pastures, especially during the dry season are the major constraint to livestock production. Animals may have relatively abundant and good quality forage during the rainy periods. In many parts of the Ethiopian highlands, feed deficits start in December-January as natural pastures are at their lowest quality and quantity. During this period, even the supplies of stored crop residues are begin-

Continues to page 8

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PUBLIC PRIVATE PARTNERSHIP (PPP) – A TOOL TO BRIDGE THE MISMATCH BETWEEN DEMAND AND SUPPLY OF MILK IN ETHIOPIA

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Ethiopia has a potential for livestock development due to the large livestock population and the relatively favorable environment for livestock production. Milk represents an important livestock product and makes a significant contribution to the nutrition as well as income of the livestock owners. However, the dairy sector didn't develop to its potential due to several factors such as shortage of crossbred dairy cows; lack of capital by dairy producers, inadequate animal feed resources both in terms of quality and quantity; unimproved animal husbandry system; inefficient and inadequate milk processing materials and methods; that resulted in low milk production and supply to milk processing plants and poor marketing system followed. The major species used for milk production in Ethiopia are cattle, camel and goats. Cattle produce 83% of the total milk and 97 % of the cow milk comes from indigenous cattle breeds. The total population of animals used for milk production is 13,632,161 TLU. Although milk production is increasing by 1.2% per annum that falls behind the human population growth of 3.4% per year, the demand-supply variance for fresh milk is ever widening and the per capita consumption diminishing. The key development issues in dairy are low milk production complicated by widespread food insecurity, growing gap between supply and demand in urban areas, and low average milk productivity.

The current rapid growth and expansion of urban farming in Africa is a response to market demands arising from rapid urbanization. Sub-Saharan Africa as a whole is experiencing fairly high rates of urbanization. Currently, 30% of the population lives in urban areas, a figure that may reach over 50% by the year 2025. Such rapid urbanization has, in many countries, led to a rapid increase in demand for food in general, and milk and milk products in particular.

Given the considerable potential for smallholder

income and employment generation opportunities from high-value dairy products, development of the dairy sector in Ethiopia can contribute significantly to poverty alleviation and food self sufficiency in the country. With the present trend characterized by the transition towards market-oriented economy, the dairy sector appears to be moving towards a takeoff stage. Liberalized markets and private sector investment and promotion of smallholder dairy are the main features of this stage. Existing initiatives by both international cooperation and the private sector are worth mentioning.

International Cooperation

Land O'Lakes International Development: Land O'Lakes, a cooperative agribusiness in the US, provides technical assistance to dairy farmers, producer groups and cooperatives, input suppliers, and processors to have a competitive Ethiopian dairy industry built upon private investment that generates employment and income to smallholder families and provides for Ethiopian consumers. The key components of the technical assistance include: milk shed development; stimulate business development; strengthen market linkages among stakeholders; and advance the dairy industry.

Netherlands Development Organization (SNV): SNV provides advisory services to public and private organizations in reducing poverty, amongst others through private sector development and support to the development of value chains through its program - Support to Business Organizations and their Access to Markets (BOAM). In Ethiopia SNV is supporting, among others, the dairy value chain by establishing market linkages, bringing value chain actors together, developing agricultural agro-processing activities, linking private sector to public sector initiatives and where possible working with the Dutch business community, from producer organizations and processing companies to multinationals. The overall aim is to increase the access to markets by Ethiopian companies. The three strategic intervention areas of the dairy component include: milk collection centers and linkage to farmers; milk packaging and quality management.

Continues to page 4

PPP

Crop Diversification and Marketing Project (FOA): The major objective of this project being promoting economic growth in rural areas of the Arsi zone of the Oromia region in Ethiopia, livestock development is one of the identified intervention areas of the project that comprises dairy production; intensive livestock finishing (fattening); and processing and marketing of skins and hides. The main objective of the dairy production program is to raise subsistence smallholder dairy farmers to commercial level. The designed activities to achieve this objective include: distribution of crossbred heifers to increase milk production thereby increasing the amount of milk delivered to milk collection, processing and marketing cooperative centers; establishment of new cooperatives and up-grading the existing ones; improving the marketing channel through improving quality of the products, the marketing system and identifying linkages between producers and consumers.

Public sector

The Ethiopian Ministry of Agriculture and Rural Development (MoARD) is the lead institute when it comes to dairy development in particular and agricultural development in general. According to the master plan which was released in June 2004, enhancing market oriented production system, development of appropriate technology packages and extension, training of farmers through the ATVET and FTC programs, integrating dairy development with promotion of dairy markets and concentrating development efforts in identified milk sheds are the major areas of engagement. Technology packages have been prepared in 2002 to encompass the extensive, semi-intensive and intensive dairy production systems.

The goals of the development plan include increasing milk production from indigenous cows by 100% and that of the crossbred by 25%, increasing milk processing industries by similar orders of magnitude, increasing milk processing plants by three-fold, improving quality of the milk produced by 50%, increasing per capita milk consumption by 6 litres and increasing farmer's income from dairy by 50%. In achieving this the roles of the private sector was given the attention it deserves and Public Private Partnership (PPP) is mentioned as the key for success.

Continues to page 5

INNOVATION IN LIVESTOCK.....

Continued from page 1

driving forces such as population growth, urbanisation, economic growth (the current economic down-turn can be regarded as a temporary blip in this long-term trend), globalisation, increased concern about the environmental impacts of livestock and, emerging and re-emerging diseases etc. These drivers

have brought about changes in the livestock sector like: a rapid growing demand for livestock products, changing food processing and retailing among others. These driving forces and changes pose new challenges and opportunities for the poor and therefore to research and development organizations aiming to improve their livelihoods. It is appreciated that new knowledge and technologies need to be generated and applied to respond to these opportunities and challenges.

With growing economic inequity between urban and rural areas, governments are facing difficult challenges of providing livelihood options for rural populations, especially in marginalised areas. Opportunities to reduce extreme poverty through livestock development are significant. To escape poverty, however, livestock-dependent poor need mechanisms to enhance their ability to respond through innovation.

The panorama of driving forces and changes mentioned above provides both daunting challenges and unprecedented opportunities for livestock research. Under this landscape, livestock research has to be designed in a way that will allow the translation of scientific outputs into useable products through strategic partnerships and collaboration with other non-research actors, with the goal of reducing poverty while ensuring sustainability. Without this, we argue, livestock research will continue to be perceived, by many, as having limited impact; either due to the complex nature of the livestock systems or the inability to comprehensively track impacts due to the multiple objectives that livestock are reared to fulfil (Tarawali and Wright 2009). Therefore, research efforts should focus on strengthening links between research outputs and development outcomes; focus not just on technology but also institutional and organizational options that are likely to produce

Continues to page 5

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INNOVATION IN LIVESTOCK.....

Continued from page 3

pro-poor outcomes. It is not just the research topic that is being addressed which is important, but also how research is carried out.

The drivers, coupled with changes in climate, force livestock dependant poor people to adapt to new settings and adopt new options (management practices, services and/or technologies). This involves application of new ideas or knowledge and/or reapplication or recombination of old ideas in new ways and new contexts. Innovation is defined as a process where knowledge is created and used in new ways, in different contexts, to enhance the lives and livelihoods of livestock dependant poor. Innovation in the livestock sector is conceptualized as occurring in a system mediated by the actors and their interactions, facilitated (or constrained) by institutions and policies.

Several factors can trigger innovation. Deliberate effort to innovate can stem from a wish to seize opportunities and/or it can represent a response to challenges relating to changing market, natural resource base, technology, policy and institutions. Unlike the Green Revolution in crop production, which was primarily supply-driven, the expected 'Livestock Revolution' in developing economies would be demand-driven (Delgado et al, 1999; 2002).

An innovation system is the group of organizations and individuals involved in the generation, diffusion, adaptation and use of new knowledge and the context that governs the way these interactions and processes take place. In its simplest, an innovation system has three elements: the organization and individuals involved in generating, diffusing, adapting and using new knowledge; the interactive learning that occurs when organizations engage in these processes and the way this leads to new products and processes (innovation); and the institutions (rules, norms and conventions) that govern how these interactions and processes take place (Horton, 1990). A collaborative arrangement bringing together several organizations working towards technical change in agriculture can be called "Agricultural Innovation System". Such a system may include the traditional sources of innovations

Continues to page 7

PPP... *Continued from page 4*

The private sector

Demand for milk and milk products have never been satisfied in Ethiopia except during fasting periods. Results of different survey studies carried out in and around Addis Ababa indicate that there is an excess demand that amounts to about 46 million liters/year (DDE). Hence, dairy development project with improved dairy cows could have an immense contribution to respond to the ever-growing demand of dairy products in Addis Ababa and its surroundings. The average annual consumption of milk and milk products in Addis Ababa is estimated to be 207 kg/household per annum (DDE). This is on higher side compared with the national average consumption of 19 kg of milk and milk products. Therefore the national figure of the gap between demand and supply for milk and milk products should definitely be substantial alerting all the concerned to work hard as we have a long way to go.

The efforts being made by the private sector to narrow the gap should be encouraged. Sebeta Agro-industry (mama), Lame (previously Sholla), Lema milk, Family milk, Fasil milk (Gonder), and Milk Collection, Processing and Marketing Cooperatives currently operating in different parts of the country are private endeavors worth mentioning. However, so far apart from their professional role, the direct involvement of professionals in the development of the livestock sector in Ethiopia has been very much limited. Currently certain PLCs composed of professionals in different areas of livestock production are appearing to contribute their part for the improvement of the country's livestock sector. One such cases in point worth mentioning is 'Addis Livestock Production and Productivity Improvement Service' (ALPPIS), which is composed of individuals interested in promoting livestock and livestock related development and Public Private Partnership (PPP).

APIARY INNOVATION BY.....

Continued from page 1

visits. Participant farmers that developed interest in modern apiary then requested for technical training. Accordingly they were given theoretical as well as practical training on areas of bee forage, bee management, cleaning hives and it's surrounding, and honey harvesting. Credit was arranged to acquire transitional beehives through linking farmers to private beehive manufacturer. Elfinesh Dermeji, a woman farmer living in Denkaka PA, is one of the IPMS's apiary intervention beneficiary farmers in Ad'a.

She has planted bee forages such as sunflower and different bee preyed flowers with seeds obtained from friends and development agents. During off-season she also supplement bees with sugar, roasted pea flour ('shiro' in Amharic), roasted barley flour ('Besso' in Amharic) and water. She has built a house with shelves to put the beehives in a good arrangement, which makes management of bees, and cleaning of beehives and the surrounding easier. During the dry season beekeeping faces multiple challenges including enemies such as birds, reptiles, ants and other insects. Indiscriminate application of pesticides and herbicides can also attack bees and bee flowers, respectively. Due to poor beehive construction, Elfinesh reported to have a bee colony absconded once. According to Elfinesh, beehives should be professionally designed and well constructed.

Elfinesh owns 2 local, 10 transitional and 2 modern hives in 2008 and she harvested 5 kg, 209 kg and 22 kg honey from the respective hives. She reported to have generated 110, 14660 and 880 Birr from local, transitional and modern beehives, respectively. According to Elfinesh's experience, transitional beehives yielded the best honey in terms of both quantity and quality as compared to local and modern beehives.

Elfinesh said that she had never thought that bees need clean living place, food and water

prior to the IPMS apiary intervention. She also didn't know that bees have enemies and require protection.

She said that bees are hard workers; once established they don't require much labor and perform independently without any further assistance. Elfinesh remarked that bees are neither like farm animals such as cows that need daily follow-ups for feed, water, health care and guarding, nor crop farming that requires oxen for plowing, fertilizer, seed, irrigation and spraying. She is recommending apiary for poor and disadvantaged women farmers.

In the past, community considers beekeeping as men dominated activity, because men climb tree to hang local hives and harvest honey. While transitional and modern hives are placed close to ground on a shelf, make them simple to be managed by women. There are also issues related to culture and tradition such as bias in asset ownership as beehives belong to men in the community. However, Elfinesh has broken these attitudes with hard work. Now, Elfinesh is one of the most respected model farmers in her village.

Though women have critical roles to play at the production stage, they are less in charge of marketing the products and controlling the incomes, which tends to be exclusively men's duty. In some communities it can be a taboo for women to sell honey in any market place. Literatures reveal that most of the income controlled by women is spent on family welfare. This notion has been positively proved by Elfinesh, who controls the income from honey that brought a significant change in family livelihood. The family constructed a house in Debre Zeit, have accessed to clean tap water, use biogas as household energy source, educated children, furnished home with modern furniture and above all family is better nourished. The success story of Elfinesh indicates that major gender issues should be addressed effectively in rural development programs. Creating an enabling environment to women to participate and benefit from the value chain of beekeeping operations empowers women, improves family livelihood and contributes to the development of a given community.

INNOVATION IN LIVESTOCK.....

Continued from page 5

(indigenous technical knowledge); modern actors (NARIs, IARCs, Advanced research institutions); private sectors including agro-industrial firms and entrepreneurs (local, national and multinationals); civil society organizations (NGOs, farmers and consumer organizations, pressure groups); and those institutions (laws, regulations, beliefs, customs and norms) that affect the process by which innovations are developed and delivered.

Innovation systems do not occur automatically, it is the problem situation that defines a particular innovation opportunity. Hence, innovation systems are created for a purpose, they will change in content and patterns of interaction as the problem situation evolves and they are constructed at micro-and macro levels. Thus, although the innovation systems can be defined at different levels (national, sectoral, commodity and problem/intervention), the most relevant innovation system is the one that is constructed to address a particular problem. As Antonelli (2001) argues, innovation systems are constructed to solve "local" innovation problems and they are constructed around a market problems (along the value chain) that shape innovation and not problems that shape the growth of science and technology. Undertaking livestock research focused on promoting innovation is not without it's challenges. There are intricacies and challenges involved in each step, especially in action research for piloting interventions.

- Change is incremental and a set of changes are needed to bring about the desired change in the issue being addressed. Given the dynamic nature of drivers and other factors, one needs to the response to be timely and appropriate. Therefore, projects have to be flexible and agile in finance and management. The application should be adapted based on the context and the set of actors in question. Recipes or manuals are not useful!
- Inter-disciplinary teams are needed to lead these projects. There is no gainsaying the use of appropriate and robust research methods; if we want to use the localised experiences to draw general and higher level principles. The project teams need skills in reflection, process monitoring, and

learning to be able to draw lessons and distil principles.

- Aligning actors will not be automatic, it needs facilitation. Who plays the role of the innovation intermediary and what would make it sustainable is an important issue to contend with in this process.
- Appropriate targeting of interventions to have pro-poor outcomes and avoid elite capture is critical.

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PICTURE OF THE MONTH



Courtesy: Getachew Gebru

Makaya Aden-a is pastoral woman that has led the process of change from charcoal selling to the establishment of a vibrant Saving and Credit and Livestock Marketing Cooperative in Moyale area. Her cooperative won a Regional and Federal award for innovativeness, ability to mobilise and sustain savings, and promote livestock marketing. Cell phone is integral part of the routine activity and is being increasingly used to connect pastoral communities cross border, and facilitate information exchange in livestock marketing.

A SPECIFIC TYPE OF SEASONAL.... *Continued from page 2*

ning to diminish.

However, many farmers in Harobilalo PA face feed shortages even during the wet season - the main cropping period of the year. Most of the highlands of the PA are suitable for cropping. The major crops cultivated include barley, wheat and pulses. During this season, the only space left for grazing is limited to enclosures around the homestead, boundaries between crop fields and some hilly sites that are not suitable for cropping. In Harobilalo PA, grazing land is owned individually and there is no communal grazing land available. Average land holding in the PA is 3.85ha per household (range 0.5 to 8ha). Though individual farmers possess a small grazing land, which is usually enclosed, it is not sufficient to support their livestock through out the rainy season.

Smallholder farmers in the lowlands of the PA also cultivate similar types of crops. Charelle is one of the lowland villages of the PA. In this village there is a large water logging area, which is not suitable for the cultivation of food crops with the present farming technique prevailing in the area. Farmers in this village therefore use this individually owned water logging land for grazing. Each of these individually owned grazing lands can sometimes be enclosed or fenced. The size of this land, for most of the farmers, is larger than the cultivable land that they have in other areas.

Smallholder livestock keepers from the surrounding highlands that are facing serious feed shortages during 'Meher' have to look for a remedy to their problem. The water logging grazing land in Charelle is therefore the right temporal and special solution of choice. Obviously, the farmers from both sides need each other for their mutual benefit. These farmers have a special agreement that helps to make best use of the pastureland. They use a written document duly signed by both parties so that any feature conflicts of interest that might arise can be avoided.

As per their agreement, the livestock owners move their herds to the individually owned grazing land. The owners of the grazing land in Charelle village are responsible of caring the livestock they received. The livestock stay at the hands of the care-takers for three to three and half months (from mid to end of July

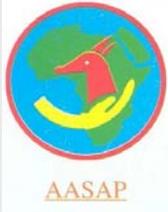
to end of November).

This period corresponds to the time where arable and drained areas are occupied by major food crops. The care-takers are expected to manage (feed, herd and house) the animals in the same manner as that of their own. Preventing the livestock from any kind of theft and predators is also in the agreement to be the responsibility of care-takers. Care-takers are also supposed to report to livestock owners immediately if any symptoms of diseases are observed on the animal. However, they are not expected to cover treatment costs or provide supplementary feed to the animals.

Price is fixed by both parties based on livestock species and groups within the same species. Cattle are the species the most involved in the system. Lactating cows, dams at late pregnancy, calves, sheep and equines are mostly not involved in this system of animal movement. Their importance in milk production, their occasional importance for packing and travel purpose, and the level of management the specific animal requires are some of the major reasons for keeping these animals around the homestead. Reputation of the care-taker (previous management experience, condition of the pasture land, faithfulness) is also used to fix prices. More money is paid for oxen, followed by dry cows, bulls and heifers. Generally the price ranges from 120 to 450 Ethiopian Birr per animal per season. The agreement and transaction is usually facilitated by selected farmers in the community. The money is paid to the care-taker at the occasion of entering into agreement. As is the case in many parts of the rural Ethiopia during cattle transaction, the agreement is celebrated by drinking 'Arekie' - local alcoholic beverage purchased with the money contributed by both parties.

In this specific type of pastureland marketing system, a grazing land owner can take up to a maximum of eight cattle in a given season. The livestock owners usually visit and supervise their animals once every week, two weeks or even month based on time available to them. In this system livestock keepers can travel as far as 7 km.

THE FIRST ANNOUNCEMENT OF 5TH ALL AFRICAN CONFERENCE ON ANIMAL AGRICULTURE



The first announcement on the 5th all African Conference on Animal agriculture was made on June 2009. This conference is being organized by the All Africa Society for Animal Production in association with the Ethiopian Society of Animal Production (ESAP).

The theme of the conference is Commercialisation of Livestock Agriculture in Africa: Challenges and opportunities. It is scheduled to be held from October 25 to 28, 2010 in the United Nations conference centre, Addis Ababa Ethiopia.

The overall objective of the conference is; to provide an opportunity for African scientists and the broader stakeholder groups in the livestock sector, to discuss the potential role of animal agriculture to contribute to food security and national economy, and to improve the livelihoods of African people. The broader objective of the conference will be met by attempting, through discussions of a series of papers, to answer the above questions. It is hoped that, at the end of the conference, there will be specific recommendations around the above questions.

The theme of the conference, 'Commercialisation of Livestock Agriculture in Africa: Challenges and opportunities' is planned to be addressed in several sessions. The sessions:

- Livestock trade and markets: levelling the national, regional and international policy playing fields for poverty impact
- Animal feeds and feed markets: what are the opportunities for poverty impact?
- Emerging animal health issues: implications for African livestock keepers and priority interventions in a globalizing world
- Animal genetics and poverty alleviation in Africa: Leveraging new technologies to make old technologies work for the poor
- Value addition in livestock products and by-products
- Making livestock services accessible to the poor: roles of the private sector and opportunities for innovative public-private partnerships
- Information and knowledge management technology and tools to improve smallholder competitiveness and market access

A special symposium as part of the conference on: *Climate Change and Livestock Production: Plausible scenarios for Africa and possible implications for poverty* is also being considered

Individuals interested to convene the above sessions are encouraged to contact the organizing committee. Convenors will be session chairs and are expected to identify key speakers and topics and to take leadership in organizing the sessions. Key speakers have to be individuals with track record and excellent standing among peers in the topics chosen. They should ideally be able to sponsor themselves to the conference, although their registration may be waived.

Anyone interested to convene the above or propose another session is advised to send a one page outline covering: title, three keynote topics of the session (with speakers if already identified), an outline of the objectives of the session and expected outcomes.

Contact persons for any Information and enquiries are:

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