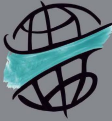




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Agricultural development within the rural-urban continuum

International Research on Food Security,  
Natural Resource Management and  
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**Tropentag 2013**

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## Agriculture under Urban Stress

PAY DRECHSEL

*International Water Management Institute (IWMI), Water Quality, Health and Environment, Sri Lanka*

Hungry cities. Thirsty cities. Urbanisation is challenging traditional food production and resource flows. Cities are becoming sinks for nutrients exported from rural and peri-urban areas and sponges for freshwater, using formal and informal channels to address urban thirst, while releasing a highly polluted return flow. Common loops of resource recovery and reuse are getting increasingly difficult as stretched over the rural-urban continuum, with growing opportunities for peri-urban areas but also pressure from inter-sectoral competition for freshwater and urban pollution. In this complex spatial interface, urban and peri-urban agriculture appear to be at the wrong place at wrong time. And in fact, no other form of agriculture receives such a mixed reaction and limited support: in many parts of the world, urban farming is considered an oxymoron, often criticised, sometimes banned, more often ignored or neglected, but in other places also cherished, not only as a possible solution in times of political or food crisis. In such a bizarre and fragile situation, how competitive and sustainable is urban farming? Are there more pros or cons, and how significant are they? What do we know given the different forms of this ‘phenomenon’, starting with different definitions of both urban and peri-urban, or open-space versus backyard farming, crops versus livestock, etc. Is urban farming actually an area worth more research or is it already over-researched? How much is myth, how much reality? And if we agree to support it, do we have solutions to address urban farming challenges in view of poor sanitation, like wastewater use and food safety or safe and viable nutrient recovery from waste? And do we have uptake channels to allow those solutions to have impact?

The presentation will try to provide some initial and certainly biased answers to these questions using examples from the South, but it aims even more at the stimulation of an interesting discussion during the coming days.

**Keywords:** Institutional support, nutrient loop, peri-urban agriculture, research gaps, urban agriculture, water competition

## Agriculture and Agricultural Research in the Rural-Urban Continuum

GORDON PRAIN

*International Potato Center (CIP), Global Program, Social and Health Sciences, Peru*

The presentation discusses the way most agricultural researchers are urban-bred or at least urban based and we have a tendency to mythologize the rural character of small-scale agriculture and the low-income rural households at whom our research is aimed. The rural-urban divide we set up has its roots in history, colonial politics and development thinking and practice and brief examples are provided of these divisions. This is contrasted with the opposite tendency in the livelihoods of many urban and rural families in the developing world, especially with structural adjustment during the 1980s and globalisation since the 1990s. For them rural and urban are points on a continuum of opportunity and struggle. This includes rural agricultural households seeking non-agricultural rural income sources to supplement their livelihoods, temporary migration, co-management of rural and urban plots and multi-locational households.

The presentation examines the reality of the rural-urban continuum in the livelihoods of low-income households in different parts of the Global South, especially Sub-Saharan Africa and Latin America. Rapid growth in urban food markets has clearly offered opportunities to farming households, especially those in peri-urban and urban areas able to access those markets. Urban growth has also offered employment in urban areas, leading to changing social and especially gender dynamics in peri-urban and rural agriculture. There have been health effects of these changes, which have not always been positive. There are also policy and institutional issues which often impact negatively on families trying to manage these changes. Finally, the presentation offers some suggestions about policy changes which could support the provision of healthy food for urban populations by households which are engaged in different points along the rural-urban continuum.

**Keywords:** Health effects, low-income households, social and gender dynamics, urban food markets

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## Societal Challenges Along the Rural-Urban Continuum

FELIX EKARDT

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Up to now, global, European and German sustainability policy has radically failed. With regard to climate policy, worldwide emissions have increased since 1990 by 40 %. Even in the industrialised countries they are relatively stable only because of the collapse of Eastern European industry, the financial crisis and the shift in production capacities into transition economies. Yet, these emissions still remain on a high level: at present, the average American emits 20 tons, a German about 10 tons (if calculation tricks are removed), and an average Chinese person emits 5 metric tons of carbon dioxide per year. Climate scientists demand a global reduction by about minus 80 % up to the year 2050, and possibly 95 % in the western countries. So far, scenario-based climate projections have been too optimistic. Climate change occurs faster than anticipated. Thus, radical measures are needed to avoid resource-related wars and millions of dead – plus gigantic economic losses that would exceed the costs of an effective climate policy by a factor of 5 to 10. Radical measures are often economically profitable – even on a short time-scale – as they trigger technological innovations, *e.g.*, with energy efficiency and renewable energies. And yes, policy approaches can be named in how the European Union could effectively avert sustainability-related challenges such as climate change. At the same time, the EU could take other countries along on this necessary journey and attempt – for the first time – a true position of leadership in the international sustainability challenge along the rural-urban continuum. But instruments and principles of justice might be slightly different from what is usually debated in the mainstream discussions.

**Keywords:** Climate change, climate projections, policies

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## **Do Shocks Affect Men’s and Women’s Assets Differently? Evidence from Bangladesh and Uganda**

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This paper attempts to expand our understanding of the gender-differentiated impact of shocks on assets through an analysis of new panel data from Uganda and Bangladesh looking at the impact of negative shocks and positive events on men’s and women’s assets. We take advantage of detailed assets and shocks modules to distinguish covariate and types of idiosyncratic shocks and types of assets according to ownership (joint, husband’s, and wife’s assets). These two countries were chosen because of the existence of data prior to the global food price increases in mid-2007–2008, and the opportunity to field a follow-up survey shortly afterward, in 2009 and 2010, which enables us to examine the gendered impact of the food price shock, and because they represent societies with very different social and cultural institutions, household structures, and gender norms. We pay special attention to the possible differential impact of climate related shocks, such as drought and rainfall shocks, on men’s, women’s, and joint assets. We also consider the impact of life-cycle events such as dowry payments and receipts, and inheritance. Estimation of an asset accumulation regression as a function of covariate and idiosyncratic shocks, with controls for baseline characteristics and asset stocks, finds that although many shocks are similar in both countries, commonly experienced shocks do not necessarily have the same effects across countries and on men’s, women’s, and jointly owned assets within countries. Land and assets in general were relatively well insured against food price increases in Bangladesh, but jointly held assets and wives’ assets in Uganda were negatively affected. Weather shocks negatively impact husbands’ assets and wives’ assets in Bangladesh and Uganda, respectively. Reflecting differences in country and context, dowry and wedding expenses took their toll on wives’ land in Bangladesh, and illness shocks also had a large detrimental impact on wives’ assets in Bangladesh, while death negatively affected wives’ assets in Uganda. Within households, however, it appears that in Bangladesh, husbands’ land and assets were more negatively affected by covariate shocks relative to wives’ assets, whereas in Uganda, husbands’ assets were relatively protected against covariate shocks relative to wives’ assets.

**Keywords:** Assets, Bangladesh, gender, shocks, Uganda

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## **Gendered Differences in Climate Change Adaptation: Implications for Rural Agricultural Systems**

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Research has shown that women in the developing world are likely to bear a disproportionate burden of the adverse impacts of climate change. Not only are women more likely to be more vulnerable, and thus more affected by natural disasters, but they are also more likely to work in and depend on natural resources that are heavily affected by climate change. However, little quantitative work has been done to analyse the ways in which women and men experience climate change differently and the implications this difference has for farm-level adaptation strategies. This paper reports on a Climate Change, Agriculture, and Food Security (CCAFS) project, which developed a two round intra-household survey tool. The first round gathers plot-level production and labour information, divided by production system, while the second round collects gender disaggregated information on agricultural and livestock decision-making, use and perception of climate-smart technologies, access to credit, access to and use of climate and weather information, adaptation strategies, climate risk perceptions and management, and cognitive processes and human values. Together, the two sets of data show gendered differences in adaptation strategies, perceptions of climate risk, and constraints faced by men and women within the same rural household. The paper summarises lessons learned from field-testing the survey tool and presents the initial analysis of the data collected from the Nyando Basin in Kenya. The paper concludes by discussing the policy insights from collecting gender disaggregated data, such as an improved understanding of gender differentiated preferences for adaptation strategies and how biophysical, regional, and social contexts influence these preferences. It is expected that this new survey tool will be implemented in several CCAFS sites world-wide.

**Keywords:** Adaptation, climate change, gender, information, sustainability

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## Measurement of Farm and Non-Farm Employment Linkages: Empirical Insights from Three Villages in Bangladesh

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The widening of the rural-urban continuum has accelerated the transformation of agriculture in Bangladesh from subsistence towards commercialisation. This has been accompanied by improved employment and income options in the farm and non-farm sector. Modern rice and non-rice crop production together with livestock, poultry and fishery enterprises contribute to employment generation through backward and forward linkages.

This field study at three locations – (i) the peri-urban fringe, (ii) near a rural town and (iii) near a rural market place – measured farm to non-farm employment linkages for two major rice crops – Aman (wet season) and irrigated Boro (dry season). The concepts and estimates of linkages are discussed and their magnitudes are determined using year-round household survey data on detailed, activity-wise labour inputs into diverse farm and non-farm segments of employment. Since Boro rice, compared to Aman rice, gives higher yields but also requires higher application of improved technology, the employment linkages were found to be stronger for Boro than for Aman rice. The estimated backward, forward and total linkages were calculated at 0.18, 0.43 and 0.61 for Boro rice and 0.14, 0.39 and 0.53 for Aman rice. For these two crops as a whole, the farm to non-farm total employment linkage coefficient was 0.58, which means that a total of 100 man days of farm employment in production activities generates 58 man days of non-farm employment in various support services, processing and marketing activities.

The main conclusion is that the green revolution driven production systems, especially rice, lead to a vibrant non-farm development in a dynamic setting. The findings imply that more investment in the intensification of rice-based production system would not only lead to food security at the farm level but it would also significantly increase productive non-farm employment opportunities. From a national policy perspective, more research and development efforts should go into accelerating potential rural growth and non-farm sector development such as input delivery, marketing, farm mechanisation, rural transport, and supply chain development.

**Keywords:** Backward and forward linkages, employment generation, farm and non-farm activities, farm mechanisation, green revolution, rural growth, supply chain

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## **Determinants of Non-Agricultural Activities for Return Migrants in Rural China**

XI ZHAO, BEATRICE KNERR

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China's agriculture is characterised by small-scale, low-income farming. At the same time, the opportunities for earning off-farm incomes are quite limited in rural China. Therefore, in order to overcome poverty, large numbers of workers have left the rural areas over the last few decades to look for jobs in the booming urban centres. However, since the onset of the global economic crisis in the late 2000s, a significant share of these migrant workers returned to their home towns and villages in rural China, and many of them were not successful in finding a productive and sufficiently profitable work at their home region. Those who remain unemployed become an economic burden to the rural regions and to those who sustain them as they increase the dependency ratio. At the same time they constitute a waste of human capital resources because their skills and competencies remain idle. Under these conditions, it is essential that regional and local governments in China apply appropriate policies for promotion of rural non-agricultural activities and optimal labour allocations, and there is also an increasing awareness about the necessity for policy action among these institutions. As a solid basis for appropriate policy design, information about the composition, personal plans, resources, and competencies of the returnees is indispensable. This, however, is still scarce, as hardly any research has been done on return migrants, their economic activities after return, and the determinants of non-agricultural activities. Our research contributes to fill this gap. It is based on a field survey implemented in Hunan Province to obtain information about the employment status and economic activities of the returnees; the major determinants of their non-agricultural accomplishments, with a special focus on the roles of their human, financial and social capital. From Probit regression, our results demonstrate that younger returnees, people with membership in cooperatives, and those without house ownership are more likely to do non-agricultural activity, while having a child reduces it. Based on the data analysis, policy recommendations are put forward which may contribute to improve the employment situation in rural China.

**Keywords:** Employment, non-agricultural activity, return migrants

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## Strategies for Urban Agriculture in Bhaktapur, Nepal: Two Studies - One Topic

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Two autonomously written master thesis were combined to link pedological findings with a design approach of Urban Agriculture (UA) as a current tool of open space planning and as a contribution to a sustainable form of agriculture in Bhaktapur/Nepal. The combination of the two studies made it possible to get a profound knowledge of the prevailing urban development processes as well as of the nutrient management of urban farmers in the investigation area. Through the final work, the design of a “Agri-Cultural-Forum” (ACF), the discussion moved from a theoretic and abstract planning level to a site specific and spatial solution.

The pedological thesis investigated the nutrient management of small urban vegetable farms via questionnaires and soil analyses. The study determined that fertiliser input (>70 % chemical) greatly exceeds the demand of the crops and leads to high N ( $\text{Ø} = 380 \text{ kg ha}^{-1} \text{ a}^{-1}$ ) and P ( $\text{Ø} = 290 \text{ kg ha}^{-1} \text{ a}^{-1}$ ) surpluses. In contrast, potassium shows a balance deficit of  $-90 \text{ kg K ha}^{-1} \text{ a}^{-1}$ . Soil analyses confirmed the interview results and found an excessive P supply and a K deficiency of the soils. An acidification, due to high nitrification rates, is indicated by very low pH (3.9–6.2;  $\text{Ø} = 5.0$ ). The excessive chemical fertiliser usage can result in a degradation of the soils and could be explained by a lack of agricultural advisory services for urban farmers in Nepal.

Therefore the second thesis developed a design strategy for the investigation area with the “Agri-Cultural-Forum” as a spatial component of it. The strategy “Design for Rurban Interaction” outlined UA as a tool for the urban-rural linkages, the “rurban” sphere, by unleashing socio-economic and cultural growth. In that context the ACF was designed as a multifunctional space, that is a part of a bigger “rurban” network, where free and independent training facilities, the conservation of traditional knowledge, the support of organic nutrient management and the exchange of knowledge and experiences between the farmers and other professionals will be organised.

**Keywords:** Bhaktapur, landscape architecture, Nepal, open space planning, soil science, urban agriculture

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## Working Conditions for Hired Labor at Peri-Urban Dairy Farms in Pakistan: Comparing Lahore and Faisalabad

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In Pakistan, peri-urban milk production is an important economic activity in all major cities. The market-oriented dairy farms are very labour intensive; they employ large numbers of uneducated and unskilled laborers from the fragmented and informal labour market. Laborers are often exposed to conditions below standards formulated by the International Labor Organisation (ILO). To evaluate the discrepancy between ILO standards and dairy workers' reality, we analysed the working conditions for hired laborers on 107 peri-urban farms in Lahore and Faisalabad. Laborers were asked about their work tasks, working hours, wages, and rights at work in semi-structured face to face interviews conducted during 08/2012–01/2013.

Results show that work at dairy farms is precarious due to the handling of heavy cattle and buffaloes (risk of injury), unhygienic conditions, lack of health protection and lack of job security. Rights such as wage negotiations, granted holidays, fixed working hours and health insurance are lacking and even not stipulated by law. Such issues therefore depend on informal agreements between employer and worker, and are limited to the fixation of wages in cash or kind. The average monthly wage in Lahore and Faisalabad, respectively, was 5,500 Pakistani Rupees (PKR) and 5,000 PKR, which is less than the official national minimum wage (8,000 PKR per month  $\approx$  58.40 €). In Lahore, workers at 79 % farms reported to receive in-kind benefits such as daily meals, milk or dung cakes; in Faisalabad this applied to 54 % of the farms only. Female workers were hired only part-time for cleaning at 7 % of the farms in Lahore and 32 % in Faisalabad. In case of sickness, workers on 7 % and 13 % of the farms in Faisalabad and Lahore, respectively, received financial and social support from the employer. In both cities no employer offered fixed working hours, a weekly day off or paid holidays.

From our insights we conclude that working conditions for dairy workers are similar in major cities of Pakistan and the precariousness of farm work is structural rather than individual. To ensure workers' rights and improve their working conditions, regulations at national level are required.

**Keywords:** International labour standards, social security, wages, working hours

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## **Impact of International Migration and Remittances on Agricultural Development: A Study in the Rural Areas of District Toba Tek Singh, Punjab, Pakistan**

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Agriculture is the key to rural development in Pakistan and the agriculture sector continues to be an essential backbone of the country's economy, contributing 21 % to GDP in 2012. It plays a vital role in ensuring food security, generating economic growth and reducing poverty. However, in many regions where smallholder farming dominates, a large share of the families are not in a position to sustain their livelihoods by agricultural activities alone, and as a result a common strategy of income generation is the overseas migration of one or more family members who provide remittances for supporting the household. Still, the question if these remittances are also used for purposes which enhance the development of the migrant families' farms, and hence contribute to the country's food production is debated. Associated with that are questions about the appropriate policy towards migration, remittances and support of migrants' households. Acknowledging that there is a close linkage between migration and agricultural development in Pakistan, the main objectives of our study were to examine role of remittances in agricultural development, as well as in the up-grading of the livelihoods of the families left behind. The study was conducted in the rural areas of District Toba Tek Singh, an area with a high rate of rural out-migration to the Middle East. The data were collected by multistage sampling. Tehsil Toba out of three District Tehsils was selected through simple random sampling technique. Four out of 32 union councils were selected randomly, and from each of them 30 respondents, *i.e.* altogether 120 respondents were picked by convenient sampling. The results reveal a strong relationship between international migration and agricultural development as most of the migrants' families invested part of the remittances in the farm sector. In particular there was an increasing trend in purchasing agricultural land, livestock, farm machinery and other inputs. International migration has a positive impact on the livelihood security of the families left behind.

**Keywords:** Agricultural development, international migration, livelihoods, remittances investment

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## Urbanity and Rurality in Forced Migration

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The paper aims to contribute to the identification of better programming approaches for areas affected by forced migration by analysing the role of refugee/IDP (internally displaced persons) camps in their hosting areas from the perspective a rural-urban continuum. This approach makes it possible to harness the knowledge gained on rural-urban relations for developing better targeted programs for such areas. The paper develops an analytical framework, which distinguishes different types of rural-urban relations, depending on the type of camp, and the factors that influence possible livelihood strategies, such as the agro-ecological potential of the region. Empirical case studies from refugee/IDP camps in Kenya, Uganda, Congo, Chad, Pakistan and Nepal are used to apply the framework.

According to the analytical framework, large refugee camps constitute quasi-urban settings by the sheer number of inhabitants and the density of the population. Considering the low housing standards and the absence of services such as electricity, sanitation and higher education, they resemble urban slums. The surroundings of the refugee/IDP camps are typically rural, poor and sparsely populated, since host governments rarely place refugee or IDP camps in densely populated and affluent areas. The rural-urban setting constitutes both an opportunity and a challenge, which adds to the challenges arising from different language, culture, religion, and socio-economic background. The case studies show that the origin of the migrants has an important influence on the livelihood strategies that can be designed for the refugees/IDPs and their host populations. Marginal-urban migrants can make use of their “slum know-how” and engage in activities such as handicrafts and urban gardening as a basis of trade with the host population. However, violence and mafia-like structures may be a challenge in such situations. Rural migrants may have better prospects for engaging in agricultural activities in the surrounding areas of the camps, which requires, however, land use planning and other strategies to avoid conflicts over land and other natural resources. The paper provides examples of how the two groups can have different but complementing roles while at the same time pursuing one common set of livelihood objectives.

**Keywords:** Forced migration, livelihoods, refugees, rural-urban continuum

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## Analysis of Problems with Family Biogas Plants in Central Vietnam

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The resource limitations of fossil fuels and problems coming from their combustion have led to widespread renewable energy resources. Anaerobic digestion is considered one of the most significant environmental improving technology, as it is solving waste management problems and producing biogas and at the same time is producing digestate as fertiliser for agricultural use. Where there is a big amount of biogas plants (BGP) in developing countries, there is as well a significant number of their problems and complications with them. This study aims at finding problems with this technology at the level of owners of BGP (n=100) and local facilitators (n=9) in the area of districts Huong Tra and Phong Dien (central Vietnam). The survey was carried out from July to August 2012. Methods of data collection included focus group discussions, semi-structured personal interviews and questionnaires. Collected data were processed with Statistica 10. Our findings show that average size of field of farms with BGP is larger than 2800 m<sup>2</sup>, with almost 2000 m<sup>2</sup>-share of rice, which is above the average of the whole country. This fact could be explained by lower density of population in the area. The survey revealed that 29 % BGP-owners have experienced problem with this technology. The main problem is connected to leakages in reactor (35 %), leading to undesired CH<sub>4</sub> emissions and even stopping the functionality of BGP. This was reported by 20 % of respondents within the first year of use of BGP. Further mentioned problems deal with biogas cooker (15 %) and solid digestate floating in a main tank decreasing the production of biogas (14 %). The respondents ask for better skills of masons, who are often not able to solve occurred difficulties with BGP. The study also involved the calculation of return on investment (ROI). Our findings revealed linear relations between ROI and satisfaction with BGP technology, biogas and biogas programme. In addition the study suggests improvement of skills of facilitators as principle mediators between BGP-owners and implementers, because they have a direct impact on quality of trainings of BGP-owners and masons as well.

**Keywords:** Analysis of problems, central Vietnam, family biogas plant, payback period of investment

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## **Urban Needs and Protected Areas: Interfaces between Arba Minch Town and Nech Sar National Park in Southern Ethiopia**

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In 1974, Nech Sar National Park was established in close vicinity of Arba Minch town, a then-regional capital in Southern Ethiopia. To understand the multi-dimensional interfaces and dependencies between the park and the town, empirical data was collected in 2010 through interviews, focus group discussions and participatory observation. Data was analysed by using the Social-Ecological Systems (SES) framework. Arba Minch inhabitants directly depend on the park in multiple ways. The ground water springs in the park are the major sources of water for Arba Minch. The park is also the most important tourist attraction in the area. Arba Minch inhabitants depend on the park to fulfil their demands for wood, construction material and fish. The park is the main source of wood supply in the area. Poor urban households gather wood from the forests in the park primarily for income generation. Farmers from the surrounding areas also collect wood in the park to sell it to town dwellers. The two large lakes in the park are used by fishermen who sell their catch in Arba Minch town. All these activities in the park are illegal and contribute to its ecological depletion and destruction. Consequently, ever since the park's establishment, there are severe conflicts between the park authorities who strive to maintain the park as a biodiversity hotspot and town dwellers who directly or indirectly depend on its resources. In more than three decades, however, the stakeholders were unable to develop and implement sustainable resource use concepts for the park. The situation calls for working beyond the limits of defending "conservation boundaries". The livelihood needs of the urban and rural people need to be integrated into biodiversity conservation activities. National conservation policies need to recognise local realities and develop and incorporate sustainable use strategies on the scale of integrated landscapes rather than dealing with protected areas as isolated units.

**Keywords:** Biodiversity governance, Ethiopia, national parks, protected areas

## **Urban Household Food Insecurity Amidst Price Shock: Empirical Evidence from Gulele, Addis Ababa, Ethiopia**

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Food security has become one of the top priorities placed in the forefront of global development endeavours since a couple of decades. However, studies reveal that the number of globally undernourished people is significantly mounting. The situation has been fueled by dozens of factors including the food price crisis though not yet well and systematically studied, particularly in urban Ethiopia. Knowing such fact, this study tries to examine households' food security situation with the currently ignited food price crises in Addis Ababa. To this effect, mixed quantitative and qualitative research approach was used and data were collected from primary and secondary sources through a household survey among 206 households, key informant interviews and document analysis. Pertinent data on food security pillars, household food access and consumption were analysed first via HHS (household hunger scale) and FCS (food consumption score), respectively. Then, the resultant square matrix was constructed by combining the two dimensions to determine the current food security situation of households in the study area. The result of the resultant food security matrix indicated that more than half of the sample households fall either in the severely or moderately food insecure groups. During price spikes, it has been learned that consumption of inferior, lower quantity foods and increasing of work hours were common coping responses of majority of households, though the first two can potentially obstruct human development. Therefore, the problem of urban food insecurity is not a hit and run kind of event as it questions future survival and paralyse human development unless urban agriculture has been strengthened and integrated with urban development programs, credit facilities are expanded and social protection schemes in general are put in place to protect the most vulnerable and pro poor.

**Keywords:** Coping responses, food security, urban, urban agriculture

## **Urban-Rural Pattern of Remittances and Effects on Food Security of Rural Households in Nigeria**

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Remittances form a large part of the income sources of households in Africa, and especially in Nigeria. Relatives from abroad and in other urban areas serve as sources of formal, and informal, regular and occasional sources of extra income for the rural households. Thus, such incomes could be a substantial part of the family decision making matrix. The study identified the pattern of remittances that come from the urban areas in terms of cash transfers, food transfers and other forms of transfers. The study examined the extent to which such remittances determine the food security status of rural households, in terms of the food poverty line and their expenditure on basic food groups. Using the Nigerian Harmonized National Living Standard Survey, (HNLSS), 2009/2010 as the data source, the study revealed that remittances flow more from the urban to the rural areas. However, with the increased urbanisation process and the line between urban and rural being blurred, the study showed that certain parts of the urban areas also receive remittances with implication for their wellbeing. The results also show that these remittances are highly correlated with dimensions of well being, such as food security. With food poverty line of N44347 ( $\approx$  €217), from the data, it is seen that rural areas have more households below this line. The presence of remittances as additional income or food sources was found to raise rural households above the food poverty. The study provides policy relevance in terms of the need for development of more structured means of flow of funds from urban to rural areas, especially in the provision of infrastructures that could also aid economic development in the rural areas.

**Keywords:** Food security, nigeria, remittances, rural, urban

## **Socio-Economic Resilience of Poor Households in Rwanda: VUP 2020 and Girinka Program**

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Rwanda is a landlocked country, situated in central and east Africa. It is one of the poorest countries in world, 166th in 186 classified. The poor households' poverty has decreased from 58.9 % in 2000/01 to 44.9 % in 2010/11. At the same period, extreme poverty showed similar patterns: on national level it fell from 40 % in 2000/01 to 24.1 % in 2010/11. This paper analyses the contribution of the social protection programs to poverty reduction of household beneficiaries: (1) The Vision 2020 Umurenge Programme (VUP), an integrated local development program which has three components: (i) Direct support for the poorest people who are not able to work; (ii) Public works, this component promotes rural employment on productive community development projects; and (iii) Financial services, which increase the access to financial services for the poor by providing loan at low interest rate. (2) The Girinka Programme known as "one cow per one poor family". This programme aims at enabling poor households to own and manage an improved dairy cow which should help the family to better their livelihood through increased milk and meat production and to improve soil fertility of their land by using the available manure.

After presenting briefly the achievements, we will compare the socio-economic conditions of genocide windows before and after launching these programs in Munyiginya Sector in Rwamagana Districts.

**Keywords:** Poor households, Rwanda, social economic resilience, VUP and Girinka programs



## **Integrating Peri-Urban Farmers into Regional Planning: Case Study of the Oued el Maleh Valley, Morocco**

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The PhD research has been realised in the framework of the project “Urban Agriculture, Casablanca” which is a German-Moroccan research project financed by the German Federal Ministry of Education and Research (BMBF) within the megacity research programme Research for the Sustainable Development of Megacities of Tomorrow”. The objective of the research was to better define possibilities to integrate peri-urban small-scale farmers into the regional planning through the study of four peri-urban aspects: planning system, farm viability, public policies and management of urban-rural dynamics.

The Oued el Maleh valley situated in the periphery of Casablanca, was selected to study the direct relations between urbanisation and peri-urban farmers. This agricultural valley counts many small-scale mixed-farming family farms that are in relation with urban dwellers visiting the valley during the week-ends. Farmers are selling their products and the urban visitors enjoy a still conserved rural space. But the rapid urbanisation of Casablanca and Mohammedia means that the valley will probably change in the near future.

To understand the urban and agricultural dynamics within this valley, prospective scenarios for were developed. Variables were selected to take into account urban and rural dynamics as well as public policy aspects of the territory’s development. These scenarios were not based on quantitative variables but on a qualitative approach to look at what influenced the development of peri-urban spaces and particularly peri-urban agriculture. A simple model for a simulation of farm systems and territory results was also created to better approach and quantify peri-urban agricultural situation within the scenarios.

These scenarios enable us to better understand the impacts of urbanisation on agriculture and to determine which type of urbanisation will lead to which type of urbanised agriculture. The scenarios highlight possible evolutions of peri-urban agriculture and emphasise at the same time the possible urban-rural synergies which could exist according to the type of urbanisation of agriculture. The scenarios also help us understand the role that agriculture could play in the identification of a peri-urban territory often considered as a space without identity.

**Keywords:** Peri-urban farmers, regional planning, scenario

## Livelihood Analysis and Transformation Dynamics in Farmer Households in Northern Benin

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Family farmers and herders in Western Africa are often poor or vulnerable and have to struggle in order to secure their livelihood. The objective of this study is to investigate the strategies and dynamics of smallholder farmers to improve agricultural production in the communes of N'Dali and Banikoara in Benin. The Systemic Approach to Rural Development (SARD) with a focus on the Sustainable Livelihood Approach (SLA) is an appropriate method for this livelihood analysis. The study investigates three principal topics: the current situation, the actual changes and their causes and the vision.

The famers of N'Dali and Banikoara can be divided into three types. Type II concentrates mainly on crop production, Type III focuses on animal husbandry, while Type I owns large areas of arable land and many animals. Farmers of each type have different assets at their disposal and choose a corresponding strategy. Many changes can be observed, which influence closely linked transformations. Population growth, the lack of arable land, the emancipation of women, etc. influence actually the farmers. Family members, powerful individuals and various organisations, have direct impact on farmers' livelihoods.

In some years, the farmer can afford to buy cattle for draft work but sometimes the cattle die or the farmer has to sell them. Communication tools, particularly radio and cell phones, are widespread. Human capital is developing positively as shown by the level of parents' education compared to their children. Natural capital reveals some problems, mainly in relation to the scarcity of arable land. Hence the farmers try to compensate for it with human capital. Social capital is characterised by extensive solidarity, which is indispensable during crises such as a scarcity of food. But there are as well some frictions between farmers and herders. Financial capital is progressing positively, but the need for money is increasing as well.

In the future, the farmers want to diversify their production. They fear both human and animal diseases. The omnipresent and most important point that the farmers mention as an essential condition for sustainable production is peace.

**Keywords:** Benin, household typology, livelihood analysis, smallholder farmers, transformation processes

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## Urbanisation Shapes the Vulnerability of Farmers in the Decentralised Benin

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This paper offers an assessment of farmers' vulnerability to climate risks in relation to the location of farms from farmers' ordinary dwelling place in rural communities of northern Benin. The ongoing urbanisation processes in the district of Banikoara, main cotton production area of Benin and one of the biggest producers of different food crops, is considered to be responsible for the exacerbation of the existing land access problems. Sixty farmers of  $40 \pm 9$  years old, cultivating  $8.4 \pm 6.02$  ha and producing about  $7.3 \pm 6.65$  tonnes per year, supplied empirical data in four different villages: Gomparou, Alibori, Somperékou and Godokpagounou. The key respondents were selected through purposive sampling during fieldworks. At the end of the data collection period, a half-day participatory workshop was organized for all interviewees, including some local stakeholders, in order to draw a jointly validated Sensitivity Matrix and Vulnerability Profile of farmers. Plausible exposure and impact indexes were calculated. The results show that: (i) The urbanisation process has resulted in the geographical remoteness of farms by preventing local farmers from cultivating more land. 85 % of farmers move about 10 km up and down to perform farm works, 12 % commute daily over 45 km to reach their farms and only 3 % live on or closely to their farms. (ii) Five major climate risks with highly sensitive impact indexes affect agricultural production: drought (73 %), floods (66 %), fires (60 %), lack of rainfall (60 %) and high winds (46 %); and three resources having high exposure indexes are most damaged: soil (76 %), water (68 %) and vegetation (64 %). (iii) The distance from farms to residence is a factor of vulnerability to the various climate risks leading to three categories of farmers: "Waterist Farmers" (Agri-BF) shrieved up in valley bottoms and most vulnerable to floods regardless of their residence, "Nearist Farmers" most vulnerable to droughts (Agri-CP) and at last "Farist Farmers" (Agri-CE) most vulnerable to wildfires. This vulnerability is likely to affect the national economy which is dependent on agriculture and especially on Banikoara produced cotton. These findings should be used to reframe both environmental and agricultural policies in the context of climate change.

**Keywords:** Agriculture, Benin, climate change, decentralisation, urbanisation, vulnerability

## Adequacy of Smallholders Farming Systems to Achieve Food Security in North Kordofan State, Sudan

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This study was conducted in North Kordofan State, Sudan in four localities, Sheikan, Umruwaba, Ennuhud and Ghibaish, and covered two consecutive cropping seasons (2007/08 and 2008/09). The area is characterised by production of both cash and food crops as millet, sorghum, groundnut, sesame and roselle. The objectives of the study were to determine optimum crop combinations, assess food security situation, net income, production factors, comparative advantage and competitiveness pertinent to food and cash crops in the study area based on efficiency of resource allocation. Primary data were collected via structured questionnaires. A multi-stage random sampling technique was employed. Linear programming (L.P), partial crop budget, robust regression, household economy approach (HEA) and policy analysis matrix (PAM) as empirical approaches were used. Optimality in the area came with cultivation of 3.375 feddan (1 feddan = 0.42 ha) of groundnut and 3.00 feddan of cowpea to get a total gross margin of SDG 1596 (10 SDG = 1.70 €). Groundnut and cowpea were accepted as best crops with gross margin of SDG 152 and 361, respectively. Resource efficiency indicated that land, labour and capital were positive and significantly correlated at one percent level. PAM results revealed that millet production has extreme high comparative advantage and competitiveness. Food security situation showed that daily energy received per person was 1243 kCal which was found to be below the recommended amount by WHO. This indicates food insecurity in the area. Accordingly, the study recommends an adoption of the optimum cropping combinations, mitigation of factors affecting comparative advantages, competitiveness of the food and cash crops and improvement of nutritional status of people by using recommended energy intake.

**Keywords:** Food and cash crops, food insecurity, optimum crop combination

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## Trails as a Mean of Empowerment of the Landscape in Developing Countries

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A trail is a way to travel from one point to another in a territory. Trails can be planned or are just a result of customary use of movement needs. Within a planned strategy, there are several kinds of trails according to the way they are used: by foot, diving, air, via ferrata, each of which is used according to the potential of the site. As a result, trails are an adequate mean to educate society, especially urban population, about the environment and the importance of its preservation (natural and cultural values). This paper illustrates a methodology to design and construct trails in developing countries like Mexico, where there is a real need in educating society in these issues. Within the landscape, and especially the rural ones, for their appraisal and preservation, proper development of trails is a way to create advantages and more opportunities for rural people to additional ways of getting profits and at the same time protect the environment. Rural development can be helped by these opportunities, when linked to actions related to ecotourism and rural tourism. Trails and their proper implementation can help in such important aspects. There are several empirical approaches to build trails, but there are not many examples based on scientific and technical frameworks for developing countries. Mexico, similar to other countries, is experiencing landscape fragmentation and loss of natural ecosystems and environmental quality. This situation requires that rural people are adequately considered to get profits and to preserve their environment in the long term, by the proper use of trails. This paper presents the study case of the small town Coscomatepec in Veracruz State in the Gulf of Mexico.

**Keywords:** Developing countries, landscape, Mexico, rural development, tourism, trails

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## **Agricultural Development in the Knowledge Economy: “Closeness” in Access to Information and Innovation**

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In the current knowledge-based system of agricultural growth and development, improved farmer access to relevant, timely and user-friendly information can be a crucial input for innovation and thus for rural and agricultural development and growth. Such innovation can come about as the effective and successful use of newly developed (or discovered) production technologies, improved harvest and post-harvest inputs and processes, the application of tried environmentally friendly production practices or organizational and institutional arrangements that support farmers in reaching new markets and better negotiation stances, among others.

Previous studies of diffusion and adoption of innovations have identified some characteristics that are more commonly found among those who innovate, such as access to sources of finance, ownership of the land on which the crop is grown, level of schooling, size of the farm. In this paper, We aim at exploring a part of the innovation process that is still considered to be contained within a black-box: what factors drive the decision of a farmer to innovate?

Learning, either through experience or through a training process and access to information are considered crucial in the decision to innovate. It is hypothesized, that if a farmer is able to observe the learning process of other farmers, he/she will profit from the investment in learning and experimenting undertaken by his/her neighbor and will him/herself perceive lower costs to learning, accelerating the decision to innovate and to adopt new farming technologies. If this is true, then, a different degree of “closeness” (in a familiar, local or experiential sense) to the sources of information on new technologies that a farmer has access to, has a different impact on his/her decision to innovate. An attempt to test this is undertaken in the context of Colombian cacao producers.

When observed in isolation, the impact of the degree of closeness of the sources of information on the decision to innovate is marginal; however, in interaction with other aspects that may be determined by the rural-urban continuum (such as availability of farm labour, how cosmopolite farmers are and their access to mobile technologies or internet), a higher degree of “closeness” to the sources of agriculturally relevant information become more significant.

**Keywords:** Agriculture, development, information, innovation, learning, policy

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## Ethnicity, Marriage, and Family Income

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This study adds a microeconomic perspective to the discussion on ethnic diversity and economic performance in developing countries by investigating the motivation for intra-ethnicity marriage in rural sub-Saharan Africa. Specifically, the paper proposes that ethnic similarity between spouses enhances economic outcomes through a shared production technology leading to more efficient cooperation in agricultural activities. This leads to higher returns from marriage with a co-ethnic than with a non-co-ethnic so all individuals prefer a spouse from the same ethnic group. Furthermore, the framework suggests that the probability of marriage within the same ethnic group is positively related to the size of the group due to frictions in the marriage market: Search costs for co-ethnic spouses are larger the smaller the group. The theoretical predictions are supported using Ethiopian rural household data by demonstrating that inter-ethnicity marriage of the household head has adverse implications for family income. The negative effect is robust to controlling for lagged income and initial conditions, present when investigating the link with changes in family wealth, and comparable for ethnic majority and minority groups. The findings suggest that where the tradition of homogamous marriage is interrupted, for example in situations of displacement or forced migration, policies may be designed to assist in replacing these mechanisms and in facilitating the understanding and co-operation between non-co-ethnic spouses in order to secure livelihoods. This specifically applies to members of ethnic minority groups as they are often at a disadvantage in their access to, for example, production factors and also have a higher probability of marrying outside their ethnic group, which, in turn, hampers family income according to the findings of this study.

**Keywords:** Ethnic diversity, family income, heterogamy, marriage

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## **Women Collectives: A Hub of Lifelong Learning and Food Security**

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This presentation emanates from a study conducted among the Bang' Jomariiek women collective in rural Seme area of Kisumu County in Kenya. The initial study focused on the indigenous teaching and learning processes the women employed in the production of pots, baskets, and indigenous architecture. The study also considered the women's production of practical art items as important income generating and community development initiatives. These women and their community were the first consumers of the pots, baskets, and the indigenous architecture thus produced. A more interesting serendipity finding in the study involved the ways in which the women ensured food security for their families and community. The study found that these women have evolved a sustainable system of food production that contributes substantially to poverty alleviation in their community. This system involves an agricultural education process, easily identifiable as an aspect of lifelong learning and which proceeds in a cyclical manner with some members always present at the various points in the continuum. This collective's members have a learning/work team through which they conduct their food production activities. Members benefit from this team in various ways: learn good food production practices from others knowledgeable about the same, access a work team for their farms and so are able to produce more food than if they worked alone in the farm, and are always in a vibrant indigenous learning environment with its attendant advantages. As they worked members shared their knowledge and experience about the work at hand, and being an indigenous learning environment, they taught each other about matters as came up in their engagements.

**Keywords:** Food security, women

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## People at the Center: Food Sovereignty and Human Rights Compliant Rural-Urban Continuum Development

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The links between agricultural and food production, how and where food is produced, access and control over productive resources (land, water, seeds, etc.), land grabbing, impact of agriculture on the environment, control over the food system overall, access to adequate and healthy diets, and food consumption patterns and quality of life are undeniable. The persistence of unacceptable high prevalence of hunger, micronutrient deficiency associated with increasing rates of overweight and obesity, especially among women and lower income populations, in a world that is wealthier than ever before in history, and fully capable of producing enough food to adequately feed all human beings, have put in question the present model of agricultural development and, in special, the governance of the food system overall. This state of affairs goes hand in hand with the enormous concentration of economic and political power in the hands of the private corporate agrifoodbusiness sector, and national and international public policies that not only fail to regulate them, but in reality serve these interests. It is fundamental that people across the food chain (production, harvest, process, marketing, consumption...), and across the life span and diversity (gender, race, ethnicity, income/class, nation...), and across urban and rural spaces, and in and out of food production work need to be put at the centre of policy making at all levels, be food sovereign and have their human right to adequate food and nutrition realised. In this, it is also central to reaffirm that this will only be reached with the full promotion and protection of women's human rights. Civil society organisations and social movements have organised themselves in a global network for the right to food and nutrition that seeks to bring together people from all walks of life, urban and rural, struggling for a human rights compliant food system. Academic and research institutions must strengthen their alliance with public interest civil society organisations, and guarantee its capacity to think outside the box and serve public interest. This will only be possible if it maintains its independence from and its critical view of private corporate sector interests.

**Keywords:** Agribusiness, agricultural production, food sovereignty, food system, global network on the right to food and nutrition, governance of the food system, human right to adequate food and nutrition, hunger, land grabbing, malnutrition, women's human rights