LAND AND WATER DAYS @ FAO 07-11 May 2012

Session 9: Land and water management for urban and periurban agriculture

Coordinator and lead rapporteur: Javier Mateo-Sagasta	**Lead facilitator:** Domitille Vallee

Agenda

Time	Item/presentation	Speaker (s)	Comments on process
11:00 - 11:05	*Welcome , goals and methodology of the session*	*Jean Boroto, Javier Mateo-Sagasta and Domitille Valle*	*Verbal*
11:05- 11:15	*Context and key topics (to frame the discussion and clarify key concepts)*	*Javier Mateo-Sagasta*	*Short Power point with synthetic graphs / pictures*
11: 15 – 12:10	*Round tables discussion on land and water key methodologies and technologies*	Table facilitators and audience, with Domitille Vallee as lead facilitator	"world cafe" setting: participatory discussions in round tables.
12:10 – 12:30	Reporting on the tables' highlights	Delegates from each table	Verbal
12:30 – 12:55	A reality check and open discussion	Project coordinators and all with Domitille Vallee as lead facilitator	Verbal
12:55 – 13:00	Wrap up	*Jean Boroto*	Verbal

Session Report

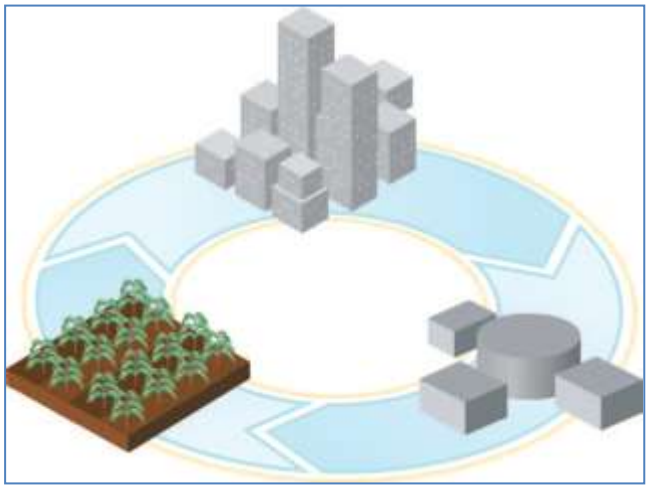
Jean Boroto (NRL officer for Africa) opened the session by welcoming the participants and encouraging for an active participation. Javier Mateo-Sagasta (NRL water quality officer) presented the objectives of the session, namely: (i) Review key methodologies and technologies to access and manage land and water in urban and peri urban agriculture. (iI) Identify the challenges and barriers to adopt and scale up these land and water methodologies and technologies in the field, (iii) Discuss successful solutions and lessons learnt to overcome these barriers and challenges in the field. To conclude with the preliminary section Ms Domitille Vallee (NRL officer) showed the audience the items that would be covered in the session and the participatory methodology that would be followed.

Subsequently, Javier Mateo-Sagasta gave an introductory presentation to set the context and frame the discussion. This presentation stated that: Urban population is quickly growing and concentrating in cities with 70% of the total population expected to be living in urban areas by 2050. This is coming together with great challenges regarding employment, food and nutrition security, and water supply and sanitation. Urban and peri-urban agriculture can contribute to mitigate such problems by improving food availability, generating employment and income and favoring the recycling of wastes. Land and water are crucial resources for horticulture, agroforestry and aquaculture, also in the urban and peri-urban context. The key particularity is that land and clean water are frequently scarce in and around the cities, where agriculture competes with households and commercial activities. Nevertheless there are technologies and methodologies to improve access to land and water for urban and peri-urban agriculture and to make a safe and productive use of these scarce resources. In the session these technologies and methodologies were discussed in the following round tables, with a particular focus on the challenges for their adoption and scaling-up:

TABLE TOPICS	FACILITATORS and REPORTEURs
Wastewater treatment and reuse in UPA	*Javier Mateo-Sagasta, Karla Andino*
Rainwater harvesting on rooftops for UPA	*Henry Gonzalez, Jan van Wambeke, Vera Boerger*
Secure access to land for UPA	*Julien Custot;*
Irrigation and soil management in home-gardens	*Makiko Taguchi, Pilar Roman*

These were the main points raised in the **discussion tables:**

Wastewater treatment and reuse



Very often water resources in and around the cities are scarce and polluted. As a consequence millions of informal urban and periurban farmers have no alternative but to irrigate with partially treated, raw or diluted wastewater. Even when wastewater is a reliable source of water all the year-round and has the nutrients that plants need to grow, it also contains hazardous contaminants (e.g. pathogens or chemical agents) that can harm human health and the environment. Nevertheless, there are methodologies (WHO/FAO guidelines 2006) and technologies to make a productive and safe use of these waters:

Technologies and methodologies	Challenges for adoption and scaling up	Recommendations to overcome these challenges
Wastewater (and grey water) treatment for reuse	Complicated operation and maintenance of some types of wastewater treatment plants	• Technical trainings. • There are simple technologies, easier to operate and maintain (e.g. constructed wetlands or sand filters)
	High costs for implementation, operation and maintenance	• Use simple low cost technologies (e.g. grey water sand filters in Hondurans) • Use low-cost recycled construction materials (e.g. wires to make small scale sand filters). • Economic analysis to identify who benefits (e.g. environment, citizens, urban farmers) to clarify how cost should be shared. • Innovative financing (e.g. PES) and incentives for success stories.
	Negative public acceptance for (treated) wastewater irrigation	• Terminology is important. “Water reuse” is easier to accept than “(treated) wastewater use”.

		• Awareness raising to convey the message that water reuse is a way to avoid wastage of valuable resources (e.g. water, nitrogen and phosphorus in wastewater)
	Poor performance of wastewater treatment plants (WWTP) due to overloading of WWT plants (wastewater loads are higher than the WWTP capacities)	• Good sanitation planning • Size wastewater treatment plants to cope with future growing population
	Fragmented competencies, multilevel governance and institutional complexity	• Creation of coordination mechanisms among institutions (e.g. waster reuse national committee) • Coordinate urban and sanitation plans and involve also local communities and urban and periurban farmers. • FAO has a role a neutral partner and facilitator of agreements and negotiations.
Good agricultural practices to minimize contact of treated wastewater with edible parts of the crops. Post harvest measures to ensure food safety	There was no time to discuss about adoption and scaling up	

Rainwater harvesting on rooftops

It is an alternative to get good quality water for urban agriculture without competing with the drinking water network**.**

Technologies and methodologies	Challenges for adoption and scaling up	Recommendations to overcome these challenges
Nicaragua: • Water uptake area: 15m2 roofs	Challenges for adoption: • The use of the harvested water should be defined from the beginning	Rainwater harvesting projects should be part of broader programs • Capacity building for technicians

• Storage: 5000 l tank. (Plastic tank instead of constructed tanks because of earthquakes) • 1300 mm of rain during a 6 month period • 500 beneficiaries • Cost: 620U$/system • Water quality is monitored	• Lack of training on design, models, and calculation (e.g to calculate the necessary collection area and size of storage to irrigate a certain area) • Limited space for the tanks • Water quality control • Lack of data Challenges for scaling up • As it is very successful, the programme is eventually politicized • Project is ending, need to develop a plan for continuity/up scaling • Ministry and municipal staff who were trained/ worked in the project might not continue providing assistance to beneficiaries • Costs of tanks	and extension staff on how to calculate and implement water harvesting (size, models, quality, etc) • Develop standard guidelines and training materials • Develop polices for water harvesting (Ruanda and Jamaica have policy that every new built house has to have water harvesting facility) • Monitoring of potential and feasibility of rainwater harvesting (this is already happening in Jamaica and Grenada) • Map of rainwater harvesting potential (already happening in South Africa) • Provide cost/benefit information for producers and policy makers • Work with local authorities for sustainability • Government subsidies for rainwater harvesting

Note: Rainwater harvesting policy developed in South Africa, but not implemented.

Irrigation and soil management in home-gardens

In the urban and periurban context water and soils are frequently scarce and/or degraded. Compacted soils, very low space, organic matter poor soils and low rainfalls are all factors that make food production in and around the cities a challenging goal. But there are methodologies and technologies to make an efficient and productive use of this scarce and degraded resources:

Technologies and methodologies	Challenges for adoption and scaling up	Recommendations to overcome these challenges
Zambia: • Drip irrigation system made of locally accessible materials	• Long time for installation and start up of system, • Clogging of dripping systems	• Cos-benefit analysis to prove advantages (nutrition security, environmental benefits, etc) and promote investment. • Bring private sector in (e.g. technical suppliers)
Nicaragua: • Plastic bottle dripping system for home gardens	• Space needed for the tanks • Bottles need to be recharged on a regular basis (once per day)	

• Household organic waste to compost		• Microfinanzing
Gaza: • Aquaponic systems , combining soil-less vegetable growing (hydroponics) and fish farming (aquaculture) within a closed re-circulating system of water and nutrients.	• Not easy operation and maintenance (pH fluctuations, frequent power cuts, cold winters) • Costs: 1000 USD/system (biofilters, fishes, etc) • Inspire culture change and habit change	• Promote the commercial potential (business model) • Support subsidies from government • Public rewarding mechanisms for good practices

Note: Authorities don't want potable water to be used for urban agriculture

Access to land for UPA

Concentration of population and economic activities in cities results in very limited land availability and intense competition for its use. Besides, there's often uncertainty regarding the ownership of land. Market forces push up land price and make it often unaffordable for urban and periurban food producers. But still there are methodologies and approaches to facilitate appropriate access to land for UPA.

Methodologies and approaches	Challenges for adoption and scaling up	Recommendations to overcome these challenges
Local committees to address issues of land access.	Complex negotiations	All stakeholders are to be involved. In order to move forward, it can be even more efficient to identify some key influential people at local level.
Innovative leas of land are to be developed. There are good examples and case studies: • Gaza: Bedouin villages • Sri Lanka – Colombo : UPA on land along the roads and railways	Identification of areas suitable for UPA requires inventorying and mapping, coupled with research on tenure status, ownership and potential for cultivation.	Urban design has to include access to land for food and agriculture. Policies need to promote local actions and empower people. Policies need to be adapted to local contexts
When access to land is too difficult, innovative no-land technologies can be developed and implemented. Examples: • Gaza: aquaponics • Sri Lanka: vertical gardens.	Each city has its specificities and solutions need to be adapted to them While mayors have "fixed term" political mandate, policies regarding access to land need long term commitment and continuity	In order to facilitate access to land, a good articulation is to be supported between national level (particularly legislation) and local level (regulation, zoning and master plan) Land access has to be considered in the context of urban design with policies and actions at national and local level.

Public institutions have an exemplarity role to play (for example by setting school gardens).		There should also be rewards for good practices. Need to have a mix between top-down and bottom-up approaches

Note: the complete report on this round table in annex 1

List of FAO guidelines and knowledge materials on land and water for UPA

- FAO 1992. Wastewater treatment and use in agriculture. FAO Irrigation and drainage paper. 47. Rome.
- FAO 1994. Water quality for agriculture. FAO Irrigation and drainage paper. 29 Rev.1. Rome.
- FAO 1997. Quality control of wastewater for irrigated crop production. FAO Water Report 10. Rome.
- WHO/FAO/UNEP 2006. Guidelines for the safe use of wastewater, excreta and grey water. Volume II: Wastewater use in agriculture. Geneva, World Health Organization.
- FAO 2010. The wealth of waste: The economics of wastewater use in agriculture. FAO Water Report 35. Rome.
- FAO 2010. Experiencias en prácticas de manejo de aguas servidas para la producción agrícola a pequeña escala. FAO Santiago de Chile
- FAO 2010. Manuel des bonnes pratiques de l'utilisation saine des eaux uses dans l'agriculture urbaine. FAO, Dakar.
- FAO 2012 Voluntary guidelines on responsible governance for tenure of land and other natural resources.
- FAO Captación y almacenamiento de agua de lluvia (in preparation)
- FAO Guidelines on urban and peri-urban forestry (in preparation)

Factsheets and animations on land and water for UPA

- http://www.fao.org/nr/water/docs/FAO_recycling_society_web.pdf
- http://www.fao.org/nr/water/docs/fao_urban_agri_factsheet.pdf
- http://www.fao.org/ag/agp/greenercities/pdf/FS/UPH-FS-7.pdf
- http://www.youtube.com/watch?v=GcQ_A_U00E8

Annex 1: Complete report of the discussion table: " Access to land for UPA"

Background document: "Securing land for UPH"
http://www.fao.org/ag/agp/greenercities/pdf/FS/UPH-FS-7.pdf

Approaches

The context

Major challenges regarding food and nutrition security for urban dwellers in a context of urban growth and development of megacities. Some of the food production is – and will be - done in and around the cities.

Urban-rural linkages are very important. There is a urban-rural continuum. Land access has to be considered across this landscape.

Actors

Public institutions have an exemplarity role to play (for examples by setting school gardens).

Policies need to promote local actions and empower people. Targeting the beneficiaries of the projects is very important. There should also be rewards for good practices.

Contribution to urban design

Land access has to be considered in the context of urban design with policies and actions at national and local level.

Constraints

In urban areas, there are intense competitions regarding the uses of land : formal (housing, industries) or informal (slums). Besides, there's often uncertainty regarding the ownership of the land.

Each city has its specificities. Policies need to be adapted to local contexts.

Access to land should not be limited to crop production. It should include access to land for urban and peri-urban forestry, livestock, as well as marketing or processing facilities.

While mayors have "fixed term" political mandate, policies regarding access to land need long term commitment and continuity. Cross-cutting approaches are necessary, particularly to bridge the gap between ministers and offices in charge of agriculture and cities.

Tools need to be developed for targeting and rewarding the beneficiaries. Example regarding rewarding: Gaza.

Solutions and examples

Need to have a mix between top-down and bottom-up approaches

Guidelines

Voluntary guidelines on responsible governance for tenure of land and other natural resources (to be endorsed on May 11, 2012). A very important tool that will give a framework for all policies dealing with access to land. It will be implemented on voluntary basis

Guidelines on urban and peri-urban forestry

Local governance

Set local committees to address issues regarding access to land. All stakeholders are to be involved. In order to move forward, it can be even more efficient to identify some key influential people at local level.

Urban design has to include access to land for food and agriculture.

Access to land

Innovative leas of land are to be developed. There are good examples and case studies:

- Gaza: Bedouin villages
- Sri Lanka – Colombo : UPA on land along the roads and railways

When access to land is too difficult, innovative technologies can be developed and implemented. Examples:

- Gaza: aquaponics
- Sri Lanka: vertical gardens.

Conclusion

In order to facilitate access to land, a good articulation is to be supported between national level (particularly legislation) and local level (regulation, zoning and master plan)