Policy for Roof Top Gardening in Kathmandu Metropolitan City

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Submitted to:
Kathmandu Metropolitan Council (KMC)
LIST OF ACRONYMS AND ABBREVIATIONS

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<tr>
<td>NEFEJ</td>
<td>Nepal Forum for Environmental Journalists</td>
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<td>KMC</td>
<td>Kathmandu Metropolitan City</td>
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<td>RTG</td>
<td>Roof Top Gardening</td>
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<td>EPA</td>
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<td>SWM</td>
<td>Solid Waste Management</td>
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<td>PPP</td>
<td>Public Private Partnership</td>
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<td>Public Sector Partnership</td>
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<td>CBO</td>
<td>Community Based Organization</td>
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<td>MSW</td>
<td>Municipal Solid Waste</td>
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<td>PSP</td>
<td>private sector participation</td>
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<td>INGO</td>
<td>International Non-governmental Organization</td>
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<td>IEC</td>
<td>Information, education and communication</td>
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NOTE:

This draft rooftop garden policy has been formulated by the Nepal Forum for Environmental Journalists for the KMC Department for Environmental Management. An earlier version was shared and discussed with local and national policy stakeholders, RUAF Foundation and UN Habitat-Nepal in a national policy workshop held 20 December 2013. This revised document includes the observations and recommendations made during the workshop.

This draft rooftop garden policy will be submitted for formal approval and institutionalisation at the level of KMC and its Environmental Department.

KMC has already allocated around 30,000US$ for a rooftop garden program for the upcoming fiscal year 2014/2015.
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1. BACKGROUND

Nepal has 58 municipal bodies with a total urban population of 4.5 million people accounting for 17% of the total population in the country. Kathmandu is the capital and largest metropolitan city and is located in the hills of Bagmati zone, Central development region, Nepal. The city is the urban core of the Kathmandu Valley in the Himalayas. The municipal area encompasses 50.67 square kilometres. Metropolitan Kathmandu is divided into five sectors namely the Central Sector, the East Sector, the North Sector, the City Core and the West Sector. Administratively, the city is further divided into 35 administrative wards. For many years, the city of Kathmandu has faced high numbers of immigrants from rural areas. In 2011, Kathmandu Valley was home to 2.5 million people and Kathmandu district is the most rapidly growing district in the country. Over one million people live in Kathmandu Metropolitan City (KMC), while the rest live in the four other municipalities and the surrounding peri-urban areas.

Uncontrolled and rapid urbanization has resulted in an increase in environmental pollution, ground water scarcity, waste and water management problems as well as a rapid decrease in agricultural land. Loss of these production areas, that traditionally provided Kathmandu city with rice, grains, vegetables, poultry and dairy made it more vulnerable to disruptions in food supply. The city now has to depend on the produce of either rural areas or imports from India or China. The only major access road is often blocked due to floods or landslides, while the changing climate is likely to increase the frequency of such natural disasters. Climate change has already affected rural production, resulting in steep increases in vegetable prices in 2012. Protection and preservation of remaining peri-urban agricultural lands is deemed highly necessary. Next to this, the potential of using built-up spaces, and specifically rooftops, provides an interesting opportunity to
grow food in inner-city areas, otherwise often lacking (open) space for food production (*RUAF Foundation, March 2013*).

To address this situation, KMC will need to promote productive rooftops, coupled with harvesting rainwater, recycling organic household waste and using climate-smart production technologies. The ward profile documents for the 35 wards prepared by the Kathmandu Metropolitan Council provides information for each ward on population, the structure and condition of the houses and the type of roofs. This information can be used to assess the potential for roof top gardening. Case studies of existing rooftop gardens show that intensive rooftop production helps families to become (more) self-sufficient in vegetables and herbs and potentially sell some produce surplus. Rooftop gardening may thus positively contribute to increased diversification of food and income sources and reduced vulnerability to food price hikes and economic crisis. In addition, rooftop gardens may have positive impacts on ambient and home temperatures, reducing heating and cooling requirements and thus reducing emissions and save costs, improve aesthetic value and air quality (*RUAF Foundation, March 2013*). To achieve this, building codes may have to be revised to allow for and promote wider adoption of the practice.

Roof top gardening (RTG) systems are becoming increasingly popular and are being promoted by KMC as a waste management strategy, through composting of household waste and its use in the garden. In the households where such practices are being carried out, only part of the waste will need to be collected by local bodies; while the rest is composted and used for RTG. RTG thus also contributes to waste management and to reducing waste transport and landfill volumes.

Uptake of RTG at larger scale is however constrained by lack of clear policy guidelines for promotion of RTG by KMC. It is for this purpose that these policy guidelines have been developed.

This draft RTG policy has been developed in close collaboration with concerned officials from the Environment Management Division and the Environmental Research Centre of KMC. The policy seeks to ensure benefit to all income level communities in the city as well as to low income communities specifically.
2. HISTORIC CONTEXT

Roof Top Gardening (RTG) in the form of growing of vegetables has been practiced by many households in KMC in the past. Applied production practices are generally simple and mostly organic in nature and the common practice is to consume the products at the household level only. With the increase in the amount of urban solid waste, composting at the household level and promotion of RTG received much attention by KMC.

Some studies were carried out in the year 2010 on the potential of RTG in KMC. Those studies recommended several short-term and long-term measures for proper solid waste management at household level through RTG. As response, KMC started promoting the use of composting bins at household level coupled to its use in RTG or backyard gardening. The objective of the project was mainly to decrease urban waste volumes.

3. CURRENT SITUATION

A diagnosis implemented in 2012 by the Environmental Public Health Organisation (ENPHO), supported by RUAF Foundation and UN-Habitat, further identified the potential for rooftop gardening in KMC as well as its potential contribution to increasing local food production. A food flow mapping exercise demonstrated that a large part of the vegetables consumed in the city are imported from rural areas and other countries (China, India). Localised production of these vegetables would contribute to reducing food transport and storage and related energy use and emissions. A pilot project was developed in collaboration with KMC that trained and reached about 250 households. A local radio programme was developed that attracted further interest of potential gardeners.

While it is encouraging to notice that RTG activities in the KMC are getting increasingly popular, partnerships between the public and private sector in delivering RTG services could be further strengthened in order to reach a larger number of households and sustain the activity.

Workshops are being organised with views to raise awareness on urban agriculture and rooftop gardening and to disseminate practical information to the local community. Training workshops are also being organised to present the concepts
and practices of rooftop gardening; the advantages it has to offer; to showcase existing practices and cases; and to discuss and validate possible designs and models for RTG.

A KMC RTG programme and policy could be embedded in broader KMC environmental programmes/policies and other relevant policies and programmes.

4. SUMMARY OF RELEVANT POLICIES AND REGULATIONS

National Policy on Solid Waste Management 2053 (1996): The first Solid Waste Management National Policy was formulated in the Nepali year 2053 (1996) to tackle the emerging solid waste management problems due to urbanisation. The policy emphasized the need for waste management in municipal and urban areas. This policy has recently been replaced by a new policy (2013). The main objectives of this policy are to increase efficiency of solid waste management, to minimize the impact of solid waste on the environment and public health, to treat solid waste as resource, to include private sector participation in solid waste management, and to improve public participation by increasing public awareness on sanitation.

Environment Policy and Strategy on Periodic Plans of the Government: The present periodic "Three Years Plan 2067/068- 2069/70 (2010-2013)" emphasizes the promotion and extension of sanitation facilities through public awareness in rural and urban areas with the participation and contribution of the local government and communities. There is no specific provision in the Environment Policy and Strategy for urban agriculture and its potential importance in climate change related issues.

Water Resources Act 2049 (1993) and related Regulations: The Water Resources Act 1993 contains provisions to minimize environmental impacts, including soil erosion, floods and landslides. It rules on environment related matters, rain water harvesting and pollution control. The Irrigation Rules, 1989, prohibits activities that pollute the canals or irrigation water (Rule 4.1). Surface runoff, water harvesting at house hold level, effluent discharge etc. that are closely related to RTG would come under the above provisions.
Environment Protection Act 2053 (1997) and the related Regulations: In the process of mainstreaming the environmental protection in development proposals, the Government of Nepal enacted the Environment Protection Act (EPA) 1997 and the Environment Protection Regulations (EPR), 1997. The Act (Section 7) prohibits sources of pollution that may cause significant adverse impacts on the environment, or any such act that is likely to be hazardous to public life and people's health, or any act that disposes or causes to be disposed sound, heat, radioactive rays and wastes from any mechanical devices, industrial enterprises, or other places contrary to the prescribed standards.

Local Self Governance Act 2055 (1998) and related Regulations: The Local Self Governance Act has made ward committees responsible for managing local activities within their respective areas. The functions, duties and powers of each Ward Committee under the Village Development Committee include keeping neat and cleaning the roads, ways, bridges, drainage, ponds, lakes, wells, deep water, taps, etc. within the Ward. The Ward Committees have to arrange for disposal of wastes, dirt and rotten materials and to make arrangements to encourage the inhabitants of the Ward to maintain good sanitation standards.

Solid Waste Management Act 2068 (2011): The main objective of this Act is to amend and consolidate the laws relating to solid waste management and to arrange for the systematic and effective management of solid waste by minimizing solid waste at the source, re-using, processing or proper disposing of the solid waste. The objectives also include maintaining a clean and healthy environment by minimizing the adverse effects of solid waste on public health and the environment.

5. MAJOR ISSUES TO BE ADDRESSED IN A RTG PROGRAMME

5.1. Planning, budgeting and monitoring for RTG: RTG requires technical and management support. At the level of KMC, it requires meticulous planning, budgeting and an implementation strategy to ensure that support services to households are provided un-interrupted. This requires planning for manpower, material and finances. It also requires to plan for promotional incentives (for specific categories of the urban population) and to increase
the capacity of involved households in urban farming and proper production techniques. Desired standards and benchmarks should be developed.

5.2. **Implementation strategy**: the implementation strategy has to be designed to include public-private partnerships (PPP), private sector participation (PSP), NGO, and CBO participation in a way to make the services efficient and cost effective.

5.3. **Inadequate capacity of KMC**: The current capacity of KMC in RTG is not adequate. KMC lacks in-house capacities to deal with subject of RTG due to the absence of trained manpower and lack of technical and managerial know-how. This issue needs to be resolved through staff training and capacity building, induction of professionals and adopting PPP models for service delivery.

5.4 **Household composting**: Household composting of organic waste is a traditional practice in Nepal. However, this practice must be promoted for wider application so that at least solid waste is segregated into inorganic and organic parts at source at households and other establishments. This will have a significant positive impact on minimising waste generation.

5.5 **Improved public awareness**: Attempts have been made to improve public awareness about RTG by the efforts of municipalities, NGOs and CBOs. However, to have a significant impact, continued and concerted awareness campaigns are needed involving KMC and NGOs/CBOs.

5.6 **Prioritizing RTG and developing a municipal action plan**: RTG has been receiving more attention recently. However, this effort must continue to keep RTG as a priority strategy for Solid Waste Management. RTG can also be promoted as strategy for localised food production and climate change adaptation. A Municipal level action plan on RTG can stimulate capacity building, information management, coordination and resource mobilization for the sector.

6. **JUSTIFICATION AND NEED FOR AN RTG POLICY**

Effective and larger-scale RTG requires a concerted effort and participation of all involved stakeholders i.e. state institutions, local bodies, private sector, NGOs,
CBOs and communities. To cater to Solid Waste Management, urban food supply strategies and climate change adaptation, a new and more comprehensive RTG Policy is required. Such a policy should make KMC and other participating agencies capable, responsible and accountable in providing improved and financially sustainable RTG services with the participation and mobilization of all stakeholders.

7. **POLICY OBJECTIVES**

1. To promote RTG, protect the environment and enhance resilience to climate change by appropriate management of built-up urban space for agriculture.

2. To make KMC responsible and accountable for RTG within their local jurisdiction.

3. To minimize Municipal Solid Waste (MSW) by promoting household composting for its reuse and recycling through RTG.

4. To ensure safe production of food at the household level and increase localised food production.

5. To promote public-private partnerships (PPP), private sector participation (PSP), NGO, CBO and raise public awareness to ensure community participation in managing RTG.

6. To make RTG services self-sustaining on the longer term.

8. **GUIDING PRINCIPLES**

1. RTG shall be considered a solution to cost-effective means to solid waste management at household level; to produce urban food at household level and to enhance household and urban resilience to climate change. It shall be made accessible to every citizen irrespective of caste, creed, social, financial or gender status.

2. RTG is an important public activity having direct positive impacts on the environment, household livelihoods, ambience of the city, and KMC’s image.
3. Zero waste shall be the ultimate target to be achieved through practicing the concept of reduction, reuse and recycling of organic waste in RTG.

4. RTG shall be made self-sustaining through cost recovery by household consumption and sale of the products.

5. Public private partnerships, private sector participation, NGO/CBO participation shall be promoted to improve efficiency and cost effectiveness of RTG.

6. Institutional strengthening shall be done to ensure efficient promotional service delivery.

7. KMC will provide technical guidance, training and capacity building support to RTG households backed by research and development organizations.

9. **POLICY STATEMENT**

1. KMC shall be the lead agency to promote RTG in its area of jurisdiction.

2. KMC shall provide or facilitate provision of essential infrastructure for RTG to the citizens at the designated place.

3. KMC shall ensure social inclusiveness in delivery of service covering all sections of the society with special focus on the poor and disadvantaged.

4. KMC shall promote locally available proven technologies within the city or close to the city ensuring that it does not cause high financial burden to any participating community or individual.

5. KMC shall demonstrate the construction of engineered RTG systems for selected groups of community leaders and social entrepreneurs for its promotion at the household level.

6. KMC will promote public private partnerships, private sector participation, NGO, CBO and community participation for providing RTG services efficiently and cost effectively.
7. KMC may enter into PPP arrangement or contracting arrangements with the private sector keeping in mind the nature of contracts and the life cycle of tools, equipment, vehicles, plants, machineries and facilities proposed to be created through the private sector.

8. KMC and/or Partner Agencies shall makeendeavour to collaborate with foreign companies having appropriate technology conducive to local conditions to set up joint venture activities with the condition to transfer such technology after a certain period.

9. KMC shall take the lead in public awareness programmes to educate the population on waste management and rooftop gardening.

10. Special efforts may be made to promote home composting for the promotion of RTG. KMC shall make serious efforts to educate the waste generators to reduce the generation of waste and promote home composting of waste reducing the proportion of waste going to landfill.

11. Necessary rules, regulations and directives shall be framed by KMC for the management of RTG.

12. Partner Agencies will provide technical support and capacity in RTG.

13. KMC may make provisions for rewards/ incentives for effective and efficient implementation of RTG to the concerned individual or community groups. The KMC may reward the beneficiary for innovation in RTG.

14. KMC may explore RTG potential for commercial production involving the private sector.

15. KMC may extend financial support to local communities or individuals who take initiative in setting up an appropriate system of RTG based on set criteria and conditions of implementation.

16. KMC shall explore the possibilities of raising funds from donor agencies and national and international financial institutions for funding RTG projects through grants and soft term loans to individuals or community groups.
17. KMC shall include RTG-friendly policies in general plans, and adopt urban agriculture-friendly zoning policies.

18. KMC shall pass resolutions, initiatives, and legislation supporting RTG and urban agriculture. Broad policies supporting urban agriculture can be promoted at the household, community, wards and at the municipality level.

19. KMC shall increase funding for programs that provide RTG and urban farmers with training and technical assistance.

20. KMC shall promote monitoring of RTG on environmental impacts.

10. IMPLEMENTATION STRATEGY

10.1 Training, Public awareness and Community Participation

Information, education and communication (IEC) programme shall be developed through professional agencies and customized to meet local needs to educate the people on the following:

(i) Basics of RTG: Nutrition & income, garden design and management, reuse of organic urban wastes, pest control, equipment and tools needed etc.

(ii) Composting of the organic fraction of urban solid wastes (and subsequent use of such compost in RTG).

(iii) The choice of plants, soil quality, and production techniques (including quantity of fertilizers).

(iv) Use of local resource materials.

(v) Effective marketing of the products.

(vi) Health and economic benefits of and risks involved in RTG.

Special attention will be given to educating school children in RTG at home and in schools and in educating their parents on the nutritional aspects of RTG.

Students may be involved in city wide campaigns for educating the communities.
10.2 **Capacity Building**

(i) Training need assessment may be carried out for various levels of stakeholders within KMC.

(ii) Training modules encompassing all important aspects of RTG will be developed.

(iii) Impart orientation training and technical training to officers and staff of KMC and other stakeholders as per the training need assessment.

(iv) Provide (temporal) technical assistance to local communities where considered where needed.

10.3 **Prepare standards**

Prepare standards and guidelines for effective RTG and for enhancing community participation in RTG.

10.4 **Strengthen KMC**

(i) Strengthen KMC by inducting technical experts enhancing their capacity to provide technical support and improved RTG services.

(ii) KMC to prepare status report of RTG services in the wards, communities and individual households. Identify the deficiencies in the service delivery, prepare short, medium and long term plans and ensure resource allocation in the KMC annual budget.

(iii) KMC to identify appropriate technologies conducive to local conditions for various types of households and communities.

(iv) KMC to identify suitable parcels of open space that can be used for RTG in a professional manner.

(v) KMC to promote joint ventures between international and local NGOs and promote technology transfer.
10.5 Establish a RTG cell in KMC

(i) Establish a RTG cell (unit) in KMC and appoint qualified persons to manage the RTG services effectively.

10.6 Promote PPP, PSP, NGO and CBO participation

(i) KMC to identify the areas where PPP, PSP, NGO and CBO participation may be promoted and determine the roles and responsibilities of each of the parties in a contract.

(ii) KMC to promote the role of NGOs and CBOs in public awareness programs.

10.7 Make RTG services financially sustainable

(i) The capital costs of installing RTG and of basic tools and equipment at the individual level, as far as possible, should be met by the beneficiary’s own resources. KMC grants and funding from donor agencies should be limited to community level activities only.

(ii) Funding may be mobilized from international funding agencies, INGOs, and KMC’s own resources for meeting the capital costs.