

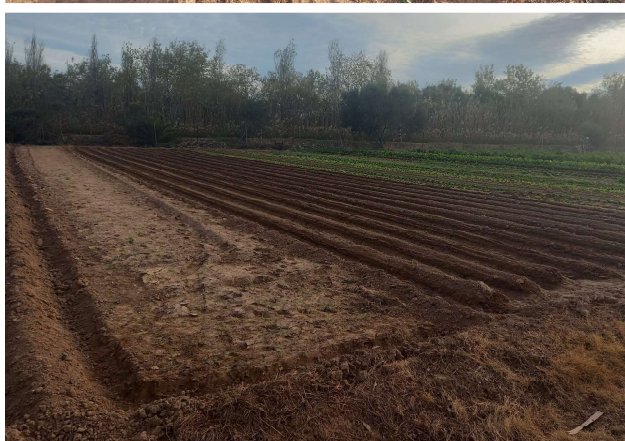
Advancing Circular Nutrient and Carbon Solutions in Cities

Renaturing Cities

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Why urban agriculture?



- 50% world population lives in cities
- Phosphorus is limited
- Food production is energy-intensive
- Shift towards healthier diet
- Minimize food losses
- Improve local economies
- Foster social well-being
- Revalorization of unused spaces
- Urban greening
- Cities have the competencies to act

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Healthy Soil for Urban Agriculture through Nutrient and Carbon Circularity





Healthy soil



Degenerated soil



5





spinach, sweet potato

Mineral fertilizer, struvite, labrinor, compost and pruning

Applying pruning results in:

- SOC increases by 24%.
- lower yields for spinach, highest yield for sweet potato
- better water management



N_2O emissions (g/m²·day)

	NPK	struvite+labinor	compost	pruning+labinor	pruning
spinach	740	790	90	110	
sweet potato		760	60	100	30

0.002% of N applied
Compared to 1%
according to IPCC

Pruning waste: What makes most sense?

Soil regeneration
and fertilization ?

Electricity
Production ?



65 m² of soil



140 kg of
sweet potato



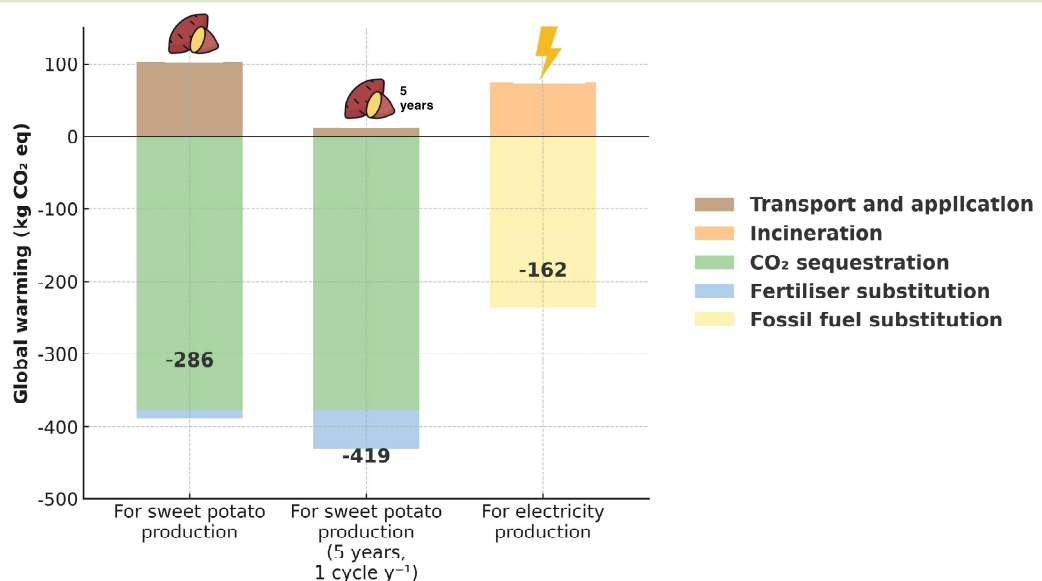
6,500 km



1,150 kWh
3 months house
consumption (no
heating)

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Kg of CO₂e of various uses of 1 tonne of pruning waste from a life cycle perspective

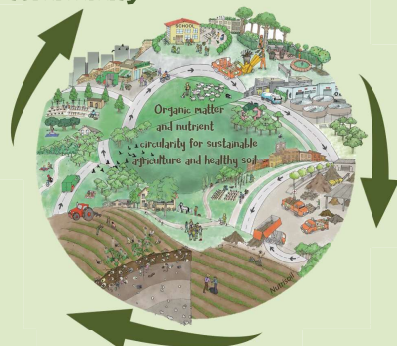


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Practitioners Workshop

key stakeholders in carbon and nutrient circularity?

Urban community



Waste & wastewater management

Agriculture and soils

Circularity: building sustainable systems from the ground up

Q1. What is your vision in terms of soil health, resource circularity and urban food supply in 2030?

Q2. What obstacles and difficulties do you face in the direction of this vision?

Q3. What needs to be done to promote the circularity of nutrients and carbon within the urban community?

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AMB Workshop

Theme	Barrier	Action	Vision
1. Urban waste is valorised for agricultural application	- Unclear classification of waste - Contaminated low quality compost (microplastics)	- Selective waste collection (door to door, GPS tracking, smart containers) - Proximity based management - Consult farmers needs	- Higher quality final product - Municipal-farmer contracts supply farmers with organic material - Decentralised treatment plants
2. Education and skills match labour demands of a circular economy	- Prioritise technical education over hands on experience - Farming is not attractive	- Mentorship and civic agriculture - Valorisation of ecosystem services	- Young farmers and entrepreneurs - Biocultural heritage and identity
3. Incentives and disincentives	- Waste generated at zero-cost - Consumption habits - Bureaucracy and paperwork	- Public green procurement - Polluter pays - Bureaucratic procedures streamlined	Environmental stewardship is compensated
4. Value added by sustainable practices is communicated effectively	- Disconnection from product cycle - Externalities not included in cost	- Direct sales with consumers: trust building and education - Public purchasing criteria	- Change in consumer habits - Land leases include soil quality - Local products are preferred
5. Infrastructure is adequate	- Cost of machinery - Logistics in delivering organic material to fields	- Shared machinery - Administration handles logistics and aids application	Current resources are optimised over investing in new projects
6. Regulations are adapted to local realities to facilitate carbon and nutrient circularity	- Policies favour large scale producers - Law 7/22 National Waste Law - Waste classification	- Standardise regulatory requirements according to local condition - Binding policies with long-term vision - Adapted to local resources (quality, facilities, and soil needs)	- Nutrient levels controlled in soils and burden removed from farmers - Long-term projects do not become obsolete
7. Policies are integrated throughout the entire cycle of nutrient and carbon circularity	- Co-benefits not well understood - Compartmentalisation of departments - Private interest and lobbyists	- Interdisciplinary councils - Integrate soil into the model - Regulations for circularity over management	- Bottom-up participatory processes in policy making - Systems planning - Integrated land management

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EU Policy Workshop

8 City representatives:

- Athens, Greece
- Thessaloniki, Greece
- Padova, Italy
- Rotterdam, Netherlands
- Ramallah, Palestine
- Granollers, Spain
- Greater Manchester, UK
- Glasgow, UK

Questions:

- Q1.** How is your city performing now?
- Q2.** How relevant is this theme for your city 10 years from now?
- Q3.** How effective is the EU in addressing these themes?



EU Workshop

Key take aways:

- European regulations are driving change
- It's less about funding large projects, and more about small local projects with a direct impact
- Climate action is prioritised over soils
 - Co-benefits of climate action and environmental stewardship is not well understood.
 - We are not taking full advantage of our efforts



Theme	City Average	
	Today	10 Years
1. Urban waste is valorised for agricultural application	4	7.2
2. Education and skills match labour demands of a circular economy	3.1	7.6
3. Incentives and disincentives	3.9	7.7
4. Value added by sustainable practices is communicated effectively	5	8
5. Infrastructure is adequate	3.7	7.1
6. Regulations are adapted to local realities to facilitate carbon and nutrient circularity	3.8	7.3
7. Policies are integrated throughout the entire cycle of nutrient and carbon circularity	3.7	7.7



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Thank you!

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