

(PERI)URBANA POLJOPRIVREDA I „ZELENI“ RAZVOJ GRADA – PRIMER BEČA

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Rezime

Problemi sa kojima se suočavaju savremeni gradovi zahtevaju drugačije uobličavanje njihovih razvojnih putanja kako bi se obezbedile pretpostavke za opstanak i funkcionisanje urbanih (eko)sistema. Stoga, integrisanje "zelenih" agendi u urbano planiranje postaje nužna pretpostavka urbanog razvoja. U skladu sa sopstvenim mogućnostima i potrebama, savremeni gradovi kooptiraju različite "zelene" strategije i taktike – jedna od njih je i (peri)urbana poljoprivreda. Ovaj fenomen postaje sve vidljiviji u savremenim gradovima, višestruko utičući na obeležja i funkcije urbanih (eko)sistema. U radu se na primeru Beča, jednog od „najzelenijih“ gradova Evrope, analiziraju karakteristike, funkcije i pretpostavke za razvoj (peri)urbane poljoprivrede. Cilj rada je da se ukaže na glavne činioce koji doprinose implementaciji ove prakse, kao i da na njene mogućnosti i ograničenja u jačanju održivosti urbanih ekosistema.

Ključne reči: (peri)urbana poljoprivreda, održivi urbani razvoj, urbani (eko)sistemi, Beč

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1 Uvod

Od prve decenije 21. veka, svetska populacija je pretežno urbana, uz izraženu tendenciju stope rasta (UN, 2025). Savremeni život u užurbanim, brzorastućim gradovima podrazumeva kvantitativnu i kvalitativnu promenu u potrebama urbane populacije, a samim tim i usložnjavanje funkcionalnih mehanizama za njihovo zadovoljenje. Ovo proizvodi kontinuiran pritisak na uspostavljene urbane (eko)sisteme što se manifestuje, u intenziviranju i produbljivanju urbanih ekoloških problema (npr. urbano aerozagađenje, buka, zagađivanje vodnih resursa, prekomerno generisanje komunalnog otpada, uništavanje biodiverziteta, urbana toplotna ostrva i sl.) i kontinuiranom rastu potrošnje energenata (Mougeot, 2006; Breuste et al. 2021).

Ne bi li ublažili negativne posledice urbanih ekoloških problema, savremeni gradovi, u skladu sa sopstvenim mogućnostima i potrebama, tragaju za održivim razvojnim strategijama (Fioretti et al., 2020; Wheeler, 2023). Njihov cilj je da omoguće i, potencijalno unaprede, funkcionalnost uspostavljenih urbanih (eko)sistema. Ove strategije podrazumevaju primenu raznovrsnih mera u različitim sferama funkcionisanja grada (Wheeler, 2023) kako bi se olakšao svakodnevni život urbane populacije, smanjili troškovi upravljanja gradom i, u konačnom, obezbedilo unapređenje kvaliteta života u gradu. Jedna od takvih mera je i podsticanje razvoja (peri)urbane poljoprivrede.

U radu se predstavljaju opšte karakteristike i principi na kojima počiva koncept (peri)urbane poljoprivrede (dalje: PUP). Pored toga, analizira se i primer Beča, grada sa višedecenijskom praksom održivog urbanog planiranja i jasnim strateškim fokusom na PUP. Cilj rada je da se identifikuju glavni činioci koji doprinose implementaciji ove prakse, kao i da se ukaže na mogućnosti i ograničenja PUP u jačanju održivosti urbanih (eko)sistema.

2 (Peri)urbana poljoprivreda – pojam, tipovi i principi

PUP je koncept i praksa koji podrazumeva uzgajanje, preradu i prodaju prehrambenih i neprehrambenih kultura u urbanim područjima (urbana poljoprivreda) ili na njihovom obodu (periurbana poljoprivreda) sa ciljem njihove upotrebe za zadovoljenje potreba urbane populacije (Mougeot, 2006; FAO et al., 2022). Iako se o ovom konceptu aktivnije govori tek od sredine ili, češće, kraja 20. veka (što odgovara pojavi i prihvatanju ideje održivog (urbanog) razvoja), praksa je neraskidivo vezana za grad, faktički od samog njegovog nastanka (Dobele & Zvirbule, 2020; Gomez Villarino et al., 2021). Naravno, sa transformacijom grada i gradskog načina života (posebno nakon industrijske revolucije i pod uticajem procesa modernizacije), kao i sa samim razvojem poljoprivrede (intenzifikacijom proizvodnje), praksa PUP poprima brojne specifičnosti, u pogledu značaja, obima, aktera, posledica, odnosa prema drugim

aktivnostima u urbanom prostoru i sl. Ujedno, PUP se ponekad pominje i kao jedna od reakcija na tzv. zelenu revoluciju u poljoprivredi (Gunapala et al., 2025).

Za PUP je tipično da se: a) temelji na (peri)urbanim resursima, b) organizuje je i u njoj učestvuje urbana populacija, c) proizvodi su namenjeni gradskom tržištu ili sopstvenoj upotrebi (Zhou et al., 2025). Pored toga, PUP je specifična i po obimu proizvodnje, tipičnim kulturama/vrstama, karakteristikama proizvođača, organizaciji proizvodnje, karakteristikama proizvodnih inputa i sl. (Tab. 1.)

Iako se u ovom radu govori o jedinstvenom fenomenu iz pozicije funkcionisanja i unapređenja urbanog (eko)sistema, između urbane i periurbane poljoprivrede primetne su izvesne razlike (McEldowney, 2017; FAO et al., 2022). Urbana poljoprivreda je vezana za unutrašnje gradske zone, dok je periurbana smeštena u rubnim delovima grada. Urbana poljoprivreda je češće nekomercijalnog karaktera, namenjena hobiju, socijalnom povezivanju i proizvodnji za sopstvene potrebe; kod urbane poljoprivrede dominiraju socijalni, ekološki i kulturni efekti (FAO et al., 2022). Za razliku od ovoga, orijentacija ka tržištu je znatno izraženija kod periurbane poljoprivrede; ekonomska motivacija i efekti su veći i značajniji (FAO et al., 2022).

Tabela 1. Specifičnosti (peri)urbane poljoprivrede

Obeležje	Opis
obim i sezonalnost proizvodnje	proizvodnja manjeg obima; celogodišnja ciklična proizvodnja
tipične kulture/vrste	pretežno biljna proizvodnja (povrće, voće, začinsko bilje, cveće), životinjska proizvodnja ređa, prilagođena (peri)urbanim uslovima (npr. živina, sitna stoka, riba)
karakteristike proizvođača	urbana populacija, različitog demografskog, socio-kulturnog i socio-ekonomskog profila; često bez poljoprivrednog znanja i veština; sekundarni izvor prihoda ili hobi; različita motivacija i proizvodna orijentacija proizvođača
tip, organizacija i tehnologija proizvodnje	male površine, male parcele; neretko nekonvencionalni oblici poljoprivrede (npr. organska proizvodnja, vertikalne bašte, bašte na krovovima, hidro/akvaponika i sl.); mogućnost primene inovativnih rešenja
proizvodni inputi	potencijalno visoke cene inputa (zemljište, radna snaga, voda); mogućnost subvencionisanja troškova inputa (u zavisnosti od mesta PUP u urbanoj razvojnoj strategiji); ograničeno zemljište; problem zagađenosti prirodnih inputa u proizvodnji (zemljište, voda, vazduh)
odnos prema tržištu	blizina urbanog tržišta, često neposredan odnos sa kupcima, kupovina na mestu proizvodnje, društvene mreže kao kanal komuniciranja
efekti	ekonomski, socijalni, ekološki, kulturni

Izvor: de Zeeuw (2004); prilagođeno.

U literaturi su prisutne brojne tipologije PUP koje se baziraju na različitim kriterijumima. Tako, Müller, Veen i Jansma (2022) govore o šest tipova³ PUP koji su definisani na osnovu 10 karakteristika klasifikovanih u četiri osnovne dimenzije (prostorna, operacionalna, proizvodna i dimenzija zajednice). Ističući fleksibilnost PUP, Gomez Villarino, Urquijo, Gómez Villarino i García (2021) govore o mnoštvu njenih varijeteta, u zavisnosti od toga da li se (peri)urbana poljoprivreda obavlja na privatnom ili javnom zemljištu, da li je individualna ili kolektivna aktivnost, komercijalnog ili nekomercijalnog karaktera, u zavisnosti od toga koju potrebu zadovoljava i iz kog razloga se ljudi njome bave i sl. Takođe, PUP je moguće klasifikovati prema tipovima prostora i stepenu uključenosti urbane populacije (Skar et al., 2020), kao i „lokaciji, obimu, cilju, vlasništvu, biljnim ili životinjskim vrstama, situaciji sa zemljišnim posedom, intenzitetom proizvodnje“ (Palmer, Santo and Brent, 2016; Pearson, 2010; Veenhuizen and Danso, 2007; navedeno prema: FAO et al., 2022: 14-15).

PUP počiva na nekoliko važnih principa. Prvo, s obzirom na često nepovoljan kvalitet i kvantitet resursa⁴ koje koristi u proizvodnji, (peri)urbana poljoprivreda teži njihovoj optimizaciji (Gomez Villarino et al., 2021). Drugo, kako bi se omogućila njihova optimalna upotreba, urbani farmeri primenjuju različite metode i tehnike proizvodnje, neretko inovativne, čak i eksperimentalne⁵ (Yuan et al., 2022; Mirza et al., 2025). Treće, PUP je, zapravo, forma cirkularne ekonomije (De Jesus & Aguiar Borges, 2024) koja nastoji da smanji negativno delovanje na urbane ekosisteme i doprinese njihovoj vitalnosti i rezilijentnosti⁶. Četvrto, lokalnost je u PUP u prvom planu – proizvodnja se bazira na lokalnim resursima od kojih se dobijaju lokalni proizvodi namenjeni lokalnom tržištu. Suština PUP je u formiranju kratkih, ujedno i održivih kratkih lanaca snabdevanja (tzv. short supply chains) (De Jesus & Aguiar Borges, 2024). Peto, upravo zbog toga, PUP neretko podrazumeva direktni kontakt između urbanih farmera i lokalnih potrošača. U kratkim lancima snabdevanja, mesto proizvodnje i mesto potrošnje se približavaju tj. eliminišu se (ukoliko je to moguće) posrednici u distribuciji i prodaji hrane (Aubry & Kebir, 2013). Šesto, kroz angažovanje u PUP, dolazi do povezivanja urbanih farmera, ali i potrošača njihovih proizvoda u (ne)formalnu

3. Npr. urbane farme, parkovi u zajednici, „uradi sam“ bašte/farme, farme bez zemlje, socijalne farme, bašte u zajednici (Müller et al., 2022).

4. Reč je malim površinama i zagađenosti zemljišta, zagađenosti i nedostatku vodnih resursa, aerozagađenju, buci i sl.

5. Npr. hidroponika, aeroponika, „zeleni“ krovovi, „nebeske“ farme, tzv. smart urbana poljoprivreda i sl. (Yuan et al., 2022; Mirza et al., 2025).

6. Kroz implementaciju principa cirkularne ekonomija, PUP potencijalno smanjuje karbonski otisak, fragmentira urbana toplotna ostrva, unapređuje biodiverzitet i kvalitet zemljišta i sl.

zajednicu. Takva zajednica doprinosi razmeni i širenju znanja i iskustava u vezi sa (is)hranom, zdravljem, blagostanjem i doprinosi promociji održivih praksi (Ilieva et al., 2022). Ujedno, na ovaj način jačaju i različite forme kapitala u zajednici (Ben-Othmen et al., 2023).

3 (Peri)urbana poljoprivreda kao deo “zelene” urbane agende – primer Beča

Skoro dvomilionski Beč je jedan od vodećih evropskih (glavnih) gradova u “zelenoj” tranziciji⁷. Razvoj grada se već pet decenija, a posebno od 2000-ih, temelji na principima održivosti sa ciljem da se struktura i funkcionisanje urbanog ekosistema, a time i kvalitet života građana konstantno unapređuju (Suitner, 2021). Beč je i doslovno najzeleniji evropski glavni grad, s obzirom na to da je oko polovine njegove ukupne teritorije pod “zelenom” infrastrukturom, uz kontinuirani rast zelenih površina (Breiling & Ruland, 2008; Kumnig, 2017). Urbane farme i zajedničke bašte jedan su od segmenata tzv. zelenog pojasa⁸ i jedna od taktika tzv. zelenog urbanog planiranja.

Prema podacima Poljoprivredne komore Beča (Wiener Landwirtschaftsbericht, 2022), Beč je vodeći evropski grad kada je reč o PUP – oko 6,330 ha (15% ukupne površine grada) je u nekom režimu proizvodnje, od čega su oko trećine obradivih površina pod organskom proizvodnjom. Takođe, u Beču se nalazi oko 40% svih plastenika u Austriji (Viljoen, 2018). U PUP Beča gaje se različite kulture – „od žitarica do šećerne repe, krompira, uljarica i proteinskih useva, kao i povrća, voća, bobičastog voća, lekovitog i kulinarskog bilja” (Wiener Landwirtschaftsbericht, 2022: 11). Trendovi u proizvodnji variraju – uzgoj nekih kultura je u opadanju (npr. žitarice, korenasto povrće), a drugih u porastu (npr. uljarice, povrće, vinova loza). Prema podacima Komore (Wiener Landwirtschaftsbericht, 2022), urbani farmeri obezbeđuju oko trećinu povrća koje konzumiraju stanovnici Beča.

PUP u Beču čine površine u komercijalnom i nekomercijalnom režimu. U komercijalne farme ubrajaju se vinogradi, plastenici povrća i površine pod žitaricama (Viljoen, 2018). S druge strane, u nekomercijalne urbane farme ubrajaju se npr. zajedničke bašte, parcele za proizvodnju (najčešće organske) hrane za sopstvene potrebe, urbane (privatne ili polujavne) baštenske kolonije – zajedno, one bi se mogle okarakterisati kao segment tzv. solidarne poljoprivrede (Viljoen, 2018).

⁷. Pritom, interesantno je da Beč nikada nije dobio titulu Evropske zelene prestonice niti Evropskog zelenog lista.

⁸. Beč je već krajem 19. i početkom 20. veka doneo odluku o sistematskoj zaštiti urbanog zelenila (Breiling & Ruland, 2008).

Posebna pažnja u PUP Grada se pridaje organskoj proizvodnji. Ona se smatra jednim od centralnih stubova održivosti, a strateška je namera Beča da postane organska prestonica Austrije, i u proizvodnji i u potrošnji (Wiener Landwirtschaftsbericht, 2022). U tu svrhu, primenjuju se različiti podsticaji za (peri)urbane organske proizvođače, a kupcima se olakšava pristup namirnicama⁹.

Jasno je da razvoj PUP ne bi bilo moguć bez njenog integrisanja u strateške razvojne dokumente i procese Grada. Regulativu kojom se uređuje ovo pitanje je moguće podeliti na onu koja se direktno odnosi na poljoprivredu i onu koja se tiče urbanog razvoja. U prvom slučaju, Grad je još 2000. godine usvojio Zakon o promociji poljoprivrede u Beču (Wiener Landwirtschaftsbericht, 2022) kojim se obezbeđuje budžetsko finansiranje javnih usluga PUP¹⁰. Pored toga, ovu oblast uređuje i regulativa na nacionalnom i, posredno, EU nivou. U drugom slučaju, PUP je kooptirana u gradske strateške planove. Tako, u upravo isteklom Planu urbanog razvoja do 2025. godine, zaštita i unapređenje poljoprivrednih površina su bili prepoznati kao podjednako važni za razvoj Grada, kao i razvoj urbane infrastrukture, stanovanja i poslovnih prilika (Vienna City Administration, 2014). Ne samo da je deo razvojne strategije zbog svog ekološkog i ekonomskog doprinosa, nego je PUP prepoznata i kao činilac u kreiranju urbanog identiteta i jačanju socijalne kohezije. Detaljnije, ova pitanja su predstavljena i analizirana u Poljoprivredno-strukturnom razvojnom planu – AgSTEP¹¹ (Vienna City Administration, 2015). Takođe, PUP se navodi i u okviru protektivnih mera i aktivnosti Programa zaštite klime (Vienna City Administration, 2014). Za PUP u Beču posebno su značajni i tematski planovi poput Plana zelenih i otvorenih površina¹² (Vienna City Administration, 2015) ili Pametne klimatske strategije

⁹. Grad je 2017. godine pokrenuo program za podršku proizvođačima koji žele da se bave organskom proizvodnjom, a 2022. godine je usvojen petogodišnji nastavak programa podrške, sa planiranim godišnjim budžetom oko 250.000 evra (Wiener Landwirtschaftsbericht, 2022). Aktuelni program (kao i prethodni) daje podršku u periodu konverzije, uz dodatne mere namenjene marketingu, konsultativnim uslugama, usavršavanju proizvodnih tehnologija i sl. (Wiener Landwirtschaftsbericht, 2022).

¹⁰. Pored ovog zakona, tu je i čitav niz gradskih podzakonskih akata koji regulišu oblast (Vienna City Administration, 2015).

¹¹. U AgSTEP planu se govori o obeležjima, tipovima i multifunkcionalnosti PUP, uz praćenje globalnih i uvažavanje regionalnih i lokalnih specifičnosti u njenom razvoju (Vienna City Administration, 2014; Amann & Juraszovich, 2016).

¹². Planom se određuju posebne aktivnosti u vezi sa zaštitom i unapređenjem površina u PUP. Namera je da se postojeće površine očuvaju i uvećaju jer se time razvija „zeleni“ pojas Grada. Planom je predviđena i klasifikacija urbanog prostora a, u skladu sa karakteristikama tipova, definišu se njihove funkcije, između ostalog i one koje se tiču PUP (Vienna City Administration, 2015).

Beča¹³ (Vienna Municipal Administration, 2022) koji, iako primarno fokusirani na druge aspekte urbanog razvoja, inkorporiraju PUP kao važnu srodnu temu/aktivnost.

Novousvojenim planom urbanog razvoja Grada do 2035. godine (nem. Magistrat der Stadt Wien, 2025) trebalo bi da se nastave utvrđene prakse podrške cirkularnoj ekonomiji i unapređenju urbane mikroklimе, uz PUP kao jednu od aktivnosti koja ide u korak sa postavljenim razvojnim ciljevima. Jačanje i promovisanje PUP se sada posmatra u širem (međugradskom, regionalnom, pa čak i prekograničnom) kontekstu (Magistrat der Stadt Wien, 2025). Poljoprivredno zemljište na teritoriji Grada je kategorizovano što omogućava diverzifikaciju mera i aktivnosti, u skladu sa karakteristikama i značajem pojedinih kategorija u urbanom razvoju. Takođe, u novom Planu neki oblici PUP (npr. urbano baštovanstvo) češće i čvršće nego ranije dovode u vezu sa socijalnim aspektima urbanog razvoja¹⁴.

Na osnovu navedenog, stiče se utisak da je razvoj PUP u Beču uglavnom indukovao „odozgo“ tj. iz gradskih institucija¹⁵. Međutim, ne treba zaboraviti ni lokalne, građanske inicijative koje doprinose razvoju, pre svega, nekomercijalnih oblika proizvodnje u susedstvu. Ove inicijative informišu i edukuju građane, povezuju proizvođače i potrošače, ali i sarađuju sa različitim gradskim institucijama (npr. gradska uprava, bolnice, škole, univerzitet i sl.). Građani Beča imaju generalno pozitivan stav prema PUP kao delu „zelenog“ pojasa Grada (Taczanowska et al., 2024) pa se čini da je više doživljavaju kao prostor za hobije, rekreaciju, druženje, a manje kao mehanizam za obezbeđivanje prehambene sigurnosti. PUP je jedan od mehanizama pomoću kojeg građani, posebno

¹³. U ovom se planu PUP posmatra kao ključni faktor u kreiranju održivog urbanog prehrambenog sistema čime se smanjuju štetni efekti po urbani ekosistem, a samim tim i urbanu mikroklimu. U Planu se posebno naglašava važnost razvoja organske, kao i alternativnih formi PUP kojima je zajednički cirkularni model organizovanja proizvodnje što, opet, pozitivno doprinosi zacrtanim ciljevima u oblasti upravljanja mikroklimom, pre svega klimatskoj neutralnosti do 2040. godine (Vienna Municipal Administration, 2022).

¹⁴. Urbane bašte pominju se kao deo tzv. socijalne infrastrukture koja bi trebalo da pomogne jačanju socijalne kohezije, posebno na nivou susedstva (Magistrat der Stadt Wien, 2025).

¹⁵. Grad ne samo da reguliše pitanja u vezi sa upravljanjem PUP, već i aktivno u njoj sudeluje, putem svojih institucija i preduzeća. Važnu ulogu u ovom procesu imaju gradski Departman za šumarstvo i poljoprivredu koji upravlja sa oko 2,000 ha zemljišta u režimu organske proizvodnje (<https://www.wien.gv.at/>), kao i gradska vinarija (<https://www.weingutcobenzl.at/en>). Takođe, Grad je 2022. godine kreirao poseban brend – Bečki gurman (nem. *Wiener Gusto*) – pod kojim se prodaju prehrambeni proizvodi sa (peri)urbanih farmi Beča (<https://www.wien.gv.at/>).

aktivisti, pokušavaju da „povrate grad“ (Kuming, 2017: 233), uz istovremenu artikulaciju kritičkog stava šire javnosti prema ovakvim gradskim projektima i pravu na participaciju u njima (Exner, Schützenberger, 2018).

Međutim, uprkos značajnim ulaganjima, prinos PUP, posebno ako se posmatra u odnosu na raznovrsnost uzgojenih namirnica, može da zadovolji tek određeni udeo prehrambenih potreba stanovnika Grada (Vicente-Vicente et al., 2021). Takođe, razvoj i promovisanje proizvodnje su dodatno opterećeni visokim troškovima kupovine/najma zemljišta, karakteristikama tržišta (npr. supermarketi) i potrošačkim navikama kupaca, “zelenom” džentrifikacijom, nepovoljnim pravno-političkim rešenjima, kreiranjem privremenih “zelenih” rešenja i sl. (Kuming, 2017).

4 Kako (peri)urbana poljoprivreda doprinosi urbanim (eko)sistemima, a kako urbani (eko)sistemi oblikuju (peri)urbanu poljoprivredu?

Na prikazanom primeru Beča, jasno se uviđa multifunkcionalni karakter PUP. Najočigledniji su njeni ekološki i ekonomski doprinosi. U prvom slučaju, PUP potencijalno: a) jača biodiverzitet i kvalitet zemljišta, b) fragmentira i redukuje urbana toplotna ostrva i pozitivno deluje na urbanu mikroklimu, c) smanjuje aerozagađenje i prigušuje urbanu buku, d) doprinosi recikliranju (posebno, organskog) otpada i e) sprečava plavljenje urbanog terena i sl. Ekonomski efekti su, takođe, potencijalno višestruki (Gottero et al., 2023), imajući u vidu da PUP: a) generiše (nova) radna mesta (u proizvodnji i u pratećim delatnostima), b) generiše i diverzifikuje prihode, c) jača lokalno tržište prehrambenih proizvoda, d) smanjuje troškove domaćinstava za nabavku hrane, e) podstiče inovativne biznis projekte, f) kao segment cirkularne ekonomije, doprinosi upravljanju otpadom, te smanjuje troškove njegovog odlaganja i sl. Međutim, sve više se pažnje posvećuje potencijalnim pozitivnim efektima PUP u oblasti socijalnih odnosa i kulture grada. Tako, smatra se da angažovanje u i oko PUP doprinosi: a) jačanju socijalne kohezije i pripadanja zajednici, b) povezivanju građana sa prostorom, c) upoznavanju sa drugačijim navikama i životnim stilovima, d) jačanju građanskog aktivizma i participativnih praksi u upravljanju urbanim prostorom, e) promovisanju i edukaciji o održivim vrednostima i kulturnim obrascima, f) kreiranju novih navika u korišćenju i oblikovanju urbanog prostora i pejisaža i sl. (Gottero et al., 2023; Ilieva et al., 2022).

S druge strane, determinizam koji oblikuje mogućnosti za razvoj i efikasno funkcionisanje PUP je izrazito složen. Čine ga čine sva tri bazična elementa urbanog (eko)sistema koja mogu delovati i podsticajno i ograničavajuće. Tako, postojeći urbani biljni i životinjski svet može da deluje: a) restriktivno na razvoj PUP usled uspostavljenih hranidbenih lanaca, prisustva invazivnih vrsta, osvojenog staništa i sl., ali i b) podsticajno, integrišući kultivisane biljake i gajene životinje u pravcu jačanja biodiverziteta. Abiotičke urbane faktore (vodni resursi,

vazduh, zemljište, klima) neretko karakteriše nepovoljan kvalitet (zagađenost) i kvantitet (oskudnost) što stvara visoko-stresno okruženje koje limitira mogućnosti za razvoj PUP. Međutim, ovakvo okruženje može da bude i podsticaj za kreiranje inovativnih metoda proizvodnje u (pri)gradskim zonama.

Na posletku, antropogeni i sociogeni činioci su sami posebni veoma raznovrsni – čine ih urbana populacija¹⁶, infrastruktura i objekti, urbana toplota i osvetljenje, buka, urbani otpad, institucije, politike, tržišta, vrednosti i norme, životne navike urbane populacije, stepen povezanosti u zajednicu, otvorenost zajednice i sl.. Njihovi međusobni odnosi su višestruko uslovljeni (De Oliveira Batitucci et al., 2019) što dodatno usložnjava njihovo delovanje na PUP, kako u pravcu njenog podsticanja, tako i ograničavanja.

5 Zaključak

Savremena istraživanja prepoznaju PUP kao jedan od važnih elemenata u ostvarivanju "zelene" urbane agende. Ona omogućava kreiranje tzv. multifunkcionalnih urbanih prostora koji doprinose vitalnosti grada. Bez obzira na to da li je više usmerena na komercijalne ili socijalne ciljeve, PUP može da aktivira različite tipove urbane populacije (npr. po socijalnom poreklu, pripadnosti društvenom sloju, životnim stilovima i sl.) što joj daje inkluzivni potencijal.

U radu je prikazan slučaj razvoja PUP u Beču. Iako je ovaj primer zanimljiv i relevantan, ipak na umu treba imati njegove specifičnosti koje određuju ulogu PUP u „zelenoj“ tranziciji Grada, kao i društvene činioce koji utiču na njen razvoj (npr. tradicija urbanog planiranja, višedecenijska „zelena“ strateška orijentacija, integrisanje sa drugim aspektima lokalnog, regionalnog i nacionalnog razvoja, prirodne predispozicije, opšte stepen razvijenosti, zainteresovanost građana i sl.). Beč je grad sa kontinuirano visokim skorovima u merenju kvaliteta života, pripada jednom od najrazvijenijih delova Evrope i deo je Globalnog Severa u kojem PUP treba posmatrati u kontekstu dominantne percepcije socioprirode (Exner, Schützenberger, 2018). Sasvim je drugo pitanje na koji se način praksa PUP uspostavlja, razvoja i funkcionise u gradovima poluperiferije ili periferije, koji su joj primarni ciljevi i ko su tipični urbani farmeri, a ko tipični potrošači u takvim socio-ekonomskim i političkim okruženjima.

Kao zajednički proizvod *bottom-up* i *top-down* inicijativa, PUP je svojevrsna laboratorija uživo – ne samo u proizvodno-tehničkom smislu, već i ekološkom i ekonomskom, pa i kulturnom i socijalnom. Ona ujedno otvara pitanja

¹⁶ O kompleksnosti ovih činilaca moguće je zaključiti već na primeru urbane populacije – tako, razvoj i funkcionalnost PUP su određeni brojem stanovnika grada, njihovom prostornom distribucijom, promenama u broju i strukturama urbane populacije, njenim znanjima i veštinama, očekivanjima, ulogama koje je spremna da preuzme u sistemu proizvodnje i sl.

prehrambene sigurnosti, ali i pravde, kao i urbane rezilijentnosti u uslovima delovanja ekoloških i ekonomskih stresora. Naposljetku, PUP bi trebalo da radi za grad u celini, zajedno sa njegovim različitim funkcionalnim i hijerarhijskim (van)institucionalnim nivoima.

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(PERI)URBAN AGRICULTURE AND GREEN URBAN DEVELOPMENT – EXAMPLE OF VIENNA

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Summary

Contemporary cities are facing challenges that require reconfiguration of their developmental trajectories in order to ensure the preconditions for the survival and functioning of urban (eco)systems. Therefore, integration of green agendas into urban planning has become an essential assumption of urban development. In compliance with their specific capacities and needs, modern cities adopt various green strategies and approaches - one of which is (peri)urban agriculture. This phenomenon is becoming increasingly visible in contemporary urban contexts, having multiple impacts on the features and functions of urban (eco)systems. Using the example of Vienna, one of the greenest cities in Europe, the paper analyzes the characteristics, functions, and preconditions for the development of (peri)urban agriculture. The aim of the paper is to identify the main factors contributing to the implementation of this practice, as well as to examine its potential and limitations in strengthening the sustainability of urban ecosystems.

Key words: (peri)urban agriculture, sustainable urban development, urban (eco)systems, Vienna

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1 Introduction

Since the first decade of the 21st century, the global population has become predominantly urban and this trend continues to intensify (UN, 2025). Contemporary life in fast-paced, rapidly growing cities entails both quantitative and qualitative changes in the needs of the urban population, and, consequently, increasing complexity in the functional mechanisms required to meet those needs. This places continuous pressure on established urban (eco)systems, which manifests in the intensification and worsening of urban ecological problems (e.g., air pollution, noise, water resource contamination, excessive municipal waste generation, biodiversity loss, urban heat islands, etc.), as well as in the continuous growth of energy consumption (Mougeot, 2006; Breuste et al., 2021).

In order to mitigate the negative consequences of urban ecological problems, contemporary cities - according to their capacities and needs - seek sustainable development strategies (Fioretti et al., 2020; Wheeler, 2023). Their aim is to enable and potentially enhance the functionality of established urban (eco)systems. These strategies involve the implementation of various measures across different spheres of urban functioning (Wheeler, 2023), with the goal of facilitating the everyday life of the urban population, reducing the costs of city management and, ultimately, improving the overall quality of urban life. One such measure is the promotion of (peri)urban agriculture.

This paper presents the general characteristics and principles underlying the concept of (peri)urban agriculture (hereinafter: PUA). Additionally, the City of Vienna is analyzed as an example of the urban environment with decades-long experience in sustainable urban planning and a clear strategic focus on PUA. The aim of the paper is to identify the key factors that contribute to the implementation of this practice, as well as to highlight the opportunities and limitations of PUA in strengthening the sustainability of urban (eco)systems.

2 (Peri)urban agriculture – concept, types and principles

PUA is a concept and practice that involves the cultivation, processing and sale of food and non-food crops in urban areas (urban agriculture) or on their outskirts (periurban agriculture) with the aim of meeting the needs of the urban population (Mougeot, 2006; FAO et al., 2022). Although this concept has been discussed more actively only since the mid - or more often the late - 20th century (which corresponds to the emergence and acceptance of the idea of sustainable (urban) development), the practice itself has been intrinsically linked to the city practically since its very origin (Dobele and Zvirbule, 2020; Gomez Villarino et al., 2021). With the transformation of the city and urban lifestyles (especially after the Industrial Revolution and under the influence of modernization processes), as well as with the development of agriculture itself (through the intensification of production), the

practice of PUA has taken on numerous specific characteristics in terms of its significance, scope, actors, consequences and its relationship to other activities in urban space. At the same time, PUA is sometimes mentioned as one of the responses to the Green Revolution in agriculture (Gunapala et al., 2025).

It is typical for PUA to: a) be based on (peri)urban resources, b) be organized and carried out by the urban population and c) produce goods intended for the urban market or for self-consumption (Zhou et al., 2025). PUA is also specific in terms of its scale of production, typical crops/species, characteristics of producers, organization of production, features of production inputs, etc. (Table 1).

Table 1. Specifics of (Peri)urban Agriculture

<i>Characteristics</i>	<i>Description</i>
scope and seasonality of production	small scale production; all-year-round cyclical production
typical culture/species	mainly plant production (vegetable, fruit, herbs, flowers), rare/limited animal production, adapted to (peri)urban conditions (e.g. poultry, small livestock, fish)
characteristics of producers	urban population, with different demographic, socio-cultural and socio-economic background; often with no agricultural knowledge and skills; secondary income source or hobby; different motivation and production orientation among producers
type, organization and technology of production	small land areas, small plots; often use of unconventional types of production (e.g. organic production, vertical gardens, roof gardens, hydro/aquaponics, etc.); application of innovative solutions
inputs in production	potentially high input costs (land, workforce, water); possibility of subsidizing input costs (depending on the position of PUA in urban development strategy); scarce land; the problem of pollution of natural inputs in production (land, water, air)
relations towards market	proximity to urban market; often direct producers – customer relations; at-farm-gate selling; social media as communication channel
effects	economic, social, ecological, cultural

Source: de Zeeuw (2004); adapted.

Although this paper discusses PUA as a unified phenomenon from the perspective of the functioning and improvement of the urban (eco)system, certain differences can be observed between urban and periurban agriculture (McEldowney, 2017; FAO et al., 2022). Urban agriculture is associated with inner-city areas, while periurban agriculture is located on the urban outskirts. Urban agriculture has more often non-commercial character; it is intended for leisure, social interaction and production for self-consumption. In urban agriculture, social, environmental and cultural aspects tend to dominate (FAO et al., 2022). In contrast, a market-oriented approach is much more typical for periurban agriculture; economic motivations and effects are greater and more significant (FAO et al., 2022).

There are numerous typologies of PUA, based on different criteria. Müller, Veen and Jansma (2022) identify six types of PUA³ based on ten characteristics classified into four main dimensions (spatial, operational, production and community dimensions). Emphasizing the flexibility of PUA, Gomez Villarino, Urquijo, Gómez Villarino and García (2021) point to the extensive variety of its forms, depending on whether (peri)urban agriculture is practiced on private or public land, whether it is an individual or collective activity, commercial or non-commercial in nature, depending on which needs it satisfies and the reasons why people engage in it, etc. Additionally, PUA can be classified according to types of space and the degree of involvement of the urban population (Skar et al., 2020), as well as by "location, scale, purpose, ownership, plant or animal species, land tenure arrangements, and production intensity" (Palmer, Santo and Brent, 2016; Pearson, 2010; Veenhuizen and Danso, 2007; as cited in: FAO et al., 2022: 14–15).

PUA is based on several important principles. First, given the often limited quality and quantity of resources used in production, PUA strives to optimize their use (Gomez Villarino et al., 2021). Second, in order to enable optimal utilization of the resources, urban farmers apply various production methods and techniques, often innovative and even experimental⁴ (Yuan et al., 2022; Mirza et al., 2025). Third, PUA is, in fact, a form of circular economy (De Jesus and Aguiar Borges, 2024) that seeks to reduce negative impacts on urban ecosystems and contribute to their vitality and resilience⁵. Fourth, locality is central to PUA - production is based on local resources that yield local products intended for the local market. The essence of PUA lies in the formation of short, and at the same time sustainable, supply chains (De Jesus and Aguiar Borges, 2024). Fifth, precisely because of this, PUA often implies direct contact between urban farmers and local consumers. In short supply chains, the place of production and the place of consumption are brought closer together; intermediaries in the distribution and sale of food are reduced or eliminated whenever possible (Aubry and Kebir, 2013). Sixth, through engagement in PUA, connections are formed not only among urban farmers, but also among consumers of their products, creating a specific form of (in)formal community. Such a community contributes to the exchange and dissemination of knowledge and experiences related to food, health and well-being and also promotes sustainable practices (Ilieva et al.,

³. E.g. urban farms, community parks, DIY gardens/farms, no-land farms, social farms, community gardens (Müller et al., 2022).

⁴. E.g. hydroponics, aeroponics, green roofs, sky farms, smart urban agriculture, etc. (Yuan et al., 2022; Mirza et al., 2025).

⁵. Through implementation of principles of circular economy, PUA can potentially contribute to carbon footprint reduction, fragmentation of urban heat islands, improvement of biodiversity and soil quality, etc.

2022). At the same time, this process strengthens various forms of capital within the community (Ben-Othmen et al., 2023).

3 (Peri)urban agriculture as a part of “green” urban agenda – example of Vienna

With a population of almost two million people, Vienna is one of the leading European (capital) cities in the green transition⁶. For five decades - especially since the 2000s - the city's development has been grounded in the principles of sustainability, with the aim of continuously improving the structure and functioning of the urban ecosystem and, consequently, the quality of life of its residents (Suitner, 2021). Vienna is also quite literally the greenest European capital, given that around half of its total territory is covered by green infrastructure, alongside the continuous expansion of green spaces (Breiling and Ruland, 2008; Kumnig, 2017). Urban farms and community gardens are one of the components of the green belt⁷ and one of the tactics in green urban planning.

According to data from the Vienna Chamber of Agriculture (Wiener Landwirtschaftsbericht, 2022), Vienna is a leading European city in terms of PUA - around 6,330 hectares (15% of the total urban area) are under some form of agricultural production, of which about one-third of arable land is under organic production. In addition, Vienna hosts around 40% of all greenhouses in Austria (Viljoen, 2018).

In Vienna, a wide range of crops is cultivated within PUA - “from cereals to sugar beet, potatoes, oilseeds and protein crops, as well as vegetables, fruits, berries, medicinal and culinary herbs” (Wiener Landwirtschaftsbericht, 2022: 11). Production trends vary - some crops are in decline (e.g., cereals, root vegetables), while others are on the rise (e.g., oilseeds, vegetables, vineyards). According to Chamber (Wiener Landwirtschaftsbericht, 2022), urban farmers produce around one-third of the vegetables consumed by Vienna's residents.

PUA in Vienna consists of areas under both commercial and non-commercial management regimes. Commercial farms include vineyards, vegetable greenhouses and cereal-growing areas (Viljoen, 2018). In contrast, non-commercial urban farms include, for example, community gardens, plots used for the production of (mostly organic) food for self-consumption and urban (private or semi-public) garden colonies -together, these can be characterized as a segment of so-called solidarity agriculture (Viljoen, 2018).

⁶. Interestingly, Vienna has never won a European Green Capital nor European Green Leaf award.

⁷. By the end of 19th and the beginning of the 20th century, Vienna decided to systematically protect its urban greenery (Breiling and Ruland, 2008).

Special attention is given to organic production. It is considered one of the central pillars of sustainability. Vienna's strategic intention is to become Austria's organic capital, both in production and consumption (Wiener Landwirtschaftsbericht, 2022). To this end, various incentives are implemented for (peri)urban organic producers and consumers are facilitated in accessing organic products⁸.

It is obvious that the development of PUA would not be possible without its integration into the City's strategic development documents and processes. The legal framework governing this issue can be divided into regulations directly related to agriculture and those concerning urban development. In the first case, in 2000, the City adopted the Vienna Agriculture Promotion Act (Wiener Landwirtschaftsbericht, 2022) which provides budgetary funding for the public services within PUA⁹. Besides, this issue is also regulated by national legislation and, indirectly, by EU-level regulations. In the second case, PUA has been incorporated into the city's strategic planning documents. In the recently expired Urban Development Plan 2025, the protection and improvement of agricultural land were recognized as being equally important for the urban development as the development of infrastructure, housing, and business opportunities (Vienna City Administration, 2014). PUA is not only part of the urban development strategy due to its environmental and economic contributions, but it is also recognized as a factor in shaping urban identity and strengthening social cohesion. These issues are examined in more detail in the Agricultural Structural Development Plan – AgSTEP¹⁰ (Vienna City Administration, 2015).

PUA is also mentioned within the protective measures and activities of the Climate Protection Programme (Vienna City Administration, 2014). For PUA in Vienna, thematic plans such as the Green and Open Space Plan¹¹ (Vienna City

8. In 2017, Vienna launched a program of support for the organic producers and in 2022 the five-year follow-up program of support was accepted with the annual budget of 250.000 euro (Wiener Landwirtschaftsbericht, 2022). Current program (as the one before) provides support during conversion period, with additional support for marketing, consultations, improvement of production technologies etc. (Wiener Landwirtschaftsbericht, 2022).

9. Besides this law, there are numerous additional city regulations (Vienna City Administration, 2015).

10. AgSTEP plan refers to characteristics, types and multifunctionality of PUA, along with the monitoring of global and respect of regional and local specifics in its development (Vienna City Administration, 2014; Amann and Jurasszovich, 2016).

11. Plan defines specific activities regarding protection and improvement of land in PUA. The aim is to preserve and enlarge existing land in order to develop urban green belt. Plan also foresees classification of urban space and, in accordance to

Administration, 2015) and the Smart Climate Strategy of Vienna¹² (Vienna Municipal Administration, 2022) are also particularly important. Although primarily focused on other aspects of urban development, these plans incorporate PUA as an important related topic/activity.

The newly adopted Urban Development Plan of the City until 2035 (Magistrat der Stadt Wien, 2025) is expected to continue established practices of supporting the circular economy and improving the urban microclimate, with PUA as one of the activities aligned with the set development goals. The strengthening and promotion of PUA is now seen in a broader (inter-city, regional and even cross-border) context (Magistrat der Stadt Wien, 2025). Urban agricultural land is categorized, which enables the diversification of measures and activities in accordance with the characteristics and significance of its specific categories in urban development. Furthermore, in the new plan, certain forms of PUA (e.g. urban gardening) are more frequently and firmly linked than before to the social aspects of urban development¹³.

Based on the above, it appears that the development of PUA in Vienna is largely top-down driven, i.e. by city institutions¹⁴. However, local civic initiatives should not be overlooked, as they contribute to the development of primarily non-commercial forms of neighborhood production. These initiatives inform and educate citizens, connect producers and consumers and cooperate with various city institutions (e.g., municipal administration, hospitals, schools, universities, etc.).

type characteristics, its functions will be defined, among other those related to PUA (Vienna City Administration, 2015).

¹². This plan sees PUA as a key factor in creation of sustainable urban food system which reduces negative effects on urban ecosystem and urban climate, as well. The importance of development of organic and alternative forms of PUA is particularly being emphasized. They have in common circular model of production which contributes to established goals in micro-climate management, climate neutrality up to 2040 in particular (Vienna Municipal Administration, 2022).

¹³. Urban gardens are seen as a part of specific social infrastructure which could help to strengthen social cohesion, especially in neighborhoods (Magistrat der Stadt Wien, 2025).

¹⁴. The City not only regulates the issues regarding PUA management, but also actively participate in it, through its institutions and companies. The important role play Vienna's Department of forestry and agriculture which manage approximately 2,000 ha of organic production land (<https://www.wien.gv.at/>), and City vinery (<https://www.weingutcobenzl.at/en>). Additionally, in 2022, the City created special brand - Viennese gourmet (nem. *Wiener Gusto*) – to sell food products from (peri)urban farms in Vienna (<https://www.wien.gv.at/>).

Viennese citizens generally hold a positive attitude toward PUA as part of the city's green belt (Taczanowska et al., 2024). It seems they perceive PUA more as an opportunity for hobbies, recreation and social interaction and less as a mechanism for ensuring food security. PUA is one of the mechanisms through which citizens, particularly activists, attempt to "reclaim the city" (Kumnig, 2017: 233), while simultaneously articulating a broader public critique of such urban projects and asserting the right to participate in them (Exner and Schützenberger, 2018).

However, despite significant investments, PUA yields - especially when viewed in terms of the diversity of cultivated food products - can meet only a certain share of the urban food needs (Vicente-Vicente et al., 2021). Additionally, the development and promotion of production are further constrained by high costs of land purchase or rental, market characteristics (e.g., supermarkets) and consumer habits, green gentrification, unfavorable legal-political frameworks, the creation of temporary green solutions and similar factors (Kumnig, 2017).

4 How (peri)urban agriculture contributes urban (eco)systems, and how urban (eco)systems shape (peri)urban agriculture?

Using Vienna as an example, the multifunctional character of PUA becomes clearly evident. The most obvious are its ecological and economic contributions. In the first case, PUA potentially: a) enhances biodiversity and soil quality, b) fragments and reduces urban heat islands and positively affects the urban microclimate, c) reduces air pollution and mitigates urban noise, d) contributes to the recycling (especially of organic) waste and e) prevents flooding of urban land. Economic effects are also potentially manifold (Gottero et al., 2023), given that PUA: a) generates (new) jobs (in production and related activities), b) generates and diversifies income, c) strengthens the local food market, d) reduces household food expenditure, e) encourages innovative business projects, f) as a segment of the circular economy, contributes to waste management and reduces waste disposal costs.

However, increasing attention is being paid to the potential positive effects of PUA in the domain of social relations and urban culture. It is considered that engagement in and around PUA contributes to: a) strengthening social cohesion and a sense of community belonging, b) connecting citizens with space, c) fostering awareness of different habits and lifestyles, d) strengthening civic activism and participatory practices in urban governance, e) promoting education on sustainable values and cultural patterns, f) creating new habits in the use and shaping of urban space and landscape, etc (Gottero et al., 2023; Ilieva et al., 2022).

On the other hand, the determinism shaping the possibilities for the development and efficient functioning of PUA is highly complex. It consists of all three basic elements of the urban (eco)system, which can act both as enabling and limiting factors. Thus, the existing urban flora and fauna may: a) act as a constraint on the development of PUA due to established food chains, the presence of invasive species, occupied habitats, etc., but also b) be a supportive factor by integrating cultivated plants and domesticated animals in ways that enhance biodiversity. Abiotic urban factors (water resources, air, soil, climate) are often characterized by poor quality (pollution) and limited quantity (scarcity), creating a high-stress environment that limits the possibilities for PUA development. However, such an environment can also stimulate the development of innovative production methods. Finally, anthropogenic and sociogenic factors are particularly diverse - they include the urban population¹⁵, infrastructure and built structures, urban heat and lighting, noise, urban waste, institutions, policies, markets, values and norms, urban lifestyles, the level of community cohesion, openness of the community, etc. Their interrelationships are highly interdependent (De Oliveira Batitucci et al., 2019), which further complicates their influence on PUA, both in terms of fostering and constraining its development.

5 Conclusion

Contemporary research recognizes PUA as one of the important elements in achieving the green urban agenda. It enables the creation of multifunctional urban spaces that contribute to the vitality of the city. Regardless of whether it is more oriented toward commercial or social goals, PUA can activate different groups in urban populations (e.g., in social background, class, lifestyles, etc.), which gives it an inclusive potential.

The paper presents the case of development of PUA in Vienna. Although this example is interesting and relevant, its specificities should be kept in mind, as they shape the role of PUA in the city's green transition, as well as the social factors influencing its development (e.g., urban planning tradition, decades-long green strategic orientation, integration with other aspects of local, regional and national development, natural predispositions, overall level of development, citizens' engagement, etc.). Vienna is a city with consistently high quality-of-life scores; it belongs to one of the most developed parts of Europe, and it is part of the Global North, where PUA should be understood in the context of the dominant perception of socionature (Exner and Schützenberger, 2018). A very different

15. On complexity of these factors can be concluded based only on the example of urban population – development and functionality of PUA are shaped by the urban population size, their spatial distribution, changes in size and structures of urban population, their knowledge and skills, expectations, roles they are ready to take in production system, etc.

question is how PUA practices are established, developed and function in cities of the semi-periphery or periphery, what its primary goals are, and who the typical urban farmers and consumers are in such socio-economic and political environments.

As a joint product of bottom-up and top-down initiatives, PUA represents a kind of living laboratory - not only in a production and technical sense, but also in ecological and economic, as well as cultural and social terms. It simultaneously raises issues of food security, but also of justice, as well as urban resilience under conditions of ecological and economic stressors. Ultimately, PUA should work for the city in general, simultaneously with various urban functional and hierarchical (non)institutional levels.

Conflict of interest

The authors declare that there is no conflict of interest.

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