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Calculating the value of the commons: Generating resilient urban futures

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Abstract

In this article, we present a method for valuing the multidimensional aspects of urban commons. This method draws from and contributes to a broader conception of social or community returns on investment, using the case and data of a vibrant project, strategy, and model of ecological resilience, R-Urban, on the outskirts of Paris. R-Urban is based on networks of urban commons and collective hubs supporting civic resilience practices. We use data from 2015, the year before one of the hubs was evicted from its site by a municipal administration that could not see the value of an "urban farm" compared to a parking lot. We combine estimates of the direct revenues generated for a host of activities that took place in R-Urban, including an urban farm, community recycling centre, a greenhouse, community kitchen, compost school, café, a teaching space, and a mini-market. We then estimate the market value of volunteer labour put into running the sites, in addition to the value of training and education conducted through formal and informal channels, and the new jobs and earnings that were generated due to R-Urban activity. Finally, we estimate the monetary value of the savings made by an environmentally conscious design that focused on water recycling, soil and biodiversity improvement, and social and health benefits, breaking them down by savings to the organization, participants and households involved in R-Urban itself, as well as savings to the state and the planet. Although our article is built on specific quantities from a concrete project, the method has wide applicability to urban commons of many types seeking to demonstrate the worth and value of all their many facets and activities.

KEYWORDS

citizen-driven ecological transition, collective governance, community economies, co-production, economics of nonprofits, resilience, social and ecological design, social returns on investment, urban commons, value

1 | INTRODUCTION

All around the world, citizens are reclaiming urban space for community use. New urban commons are emerging supported by communities that are also evolving to govern and sustain them (Bollier & Helfrich, 2012; Linebaugh, 2008; Ostrom, 1990). These initiatives constitute a contemporary "silent revolution" (De Moor, 2008) that is getting on with the transformative work of producing socially just and resilient ways of living within a one planet footprint. What is known about these initiatives is growing, but there is little systematic empirical analysis of the kinds of

transformations taking place, even less about how to track their impacts. This article grapples with this issue and offers a blended method (Jayasinghe & Thomas, 2014) for calculating the value produced by one urban commoning project for which extensive data was collected over a period of 1–2 years. In this article, we build on official monetized value framings and add to them, producing a form of "qualculation" with qualitative and quantitative inputs (Callon & Muniesa, 2005) that enables us to make claims about the societal and planetary benefit of urban commoning.

The subject of our analysis is the first implementation of R-Urban, a bottom-up strategy based on networks of urban commons and collective hubs supporting civic resilience practices that was initiated by the activist architecture practice Atelier d'Architecture Autogérée (aaa) (Atelier d'Architecture Autogérée & PublicWorks, 2015; Petcou & Petrescu, 2018; Petrescu, Petcou, & Baibarac, 2016). This first R-Urban project (2009–16) was established on the suburban outskirts of Paris in Colombes, a multicultural municipality where residents have incomes below the national average and where social housing towers are interspersed with single family dwellings. It was funded with an initial €1.2 million grant—50% from the European Union and 50% from local and regional funds including the Municipality which, at that time, was led by Social Democrats and Greens (R-Urban, 2019).

The project commandeered unused land and in collaboration with local residents and the Municipality established two interconnected hubs for growing food, recycling material waste, conducting ecological education and cultural interchange. The Colombes sites were planned with a 10–15-year horizon and were to become part of a network of civic hubs of local resilience to be further developed after the 2014 municipal elections (Atelier d'Architecture Autogeree & PublicWorks, 2015). After only 4 years of full operation, however, a new conservative right-wing Municipal government closed the project down, but not before significant protests. A side effect was that a massive amount of data had been collected on the project's operations. The R-Urban model has since been replicated in three additional urban areas of Paris (in Gennevilliers, Nanterre, and Bagneux by aaa) and in London (in Hackney Wick and Poplar by PublicWorks) with funding support from local municipalities.

The putative reason for the Colombes project closure was the need for a car park that would provide greater returns on asset value. In the face of this business-as-usual language of "return on investment," it is difficult for commoning communities to assert their own "value sovereignty" and develop ways of protecting commons (Bollier, 2016a). It is for this reason that we step into the well-trodden and contentious field of alternative value accounting. As feminist economists and architects, we acknowledge the irony (and pitfalls) of using the master's tools to try and challenge the dominant economization of lifeworlds, yet we are reluctant to cede all econo-metrics to the Capitalocene. If we are to build post-capitalist urban resilience, we need tools to track inputs and outputs of money, labour, care, and conviviality. In a moment of transition, in which new metrics are not yet in place, monetized calculation is a way to create "membranes" to capture value from the dominant system, that we can filter and use in a different way (Bollier, 2016a, p. 10).

Our value accounting gives visibility to what usually is invisible and uncounted—that is, voluntary unpaid labour, environmental care services, everyday ecological practices, and well-being improvements. This hidden value is normally appropriated by the state or the market for free (Bollier, 2016a, p. 30). In what follows, in Section 1, we outline the R-Urban project. In Section 2, we discuss our approach to valuation before turning in Section 3 to the method we employed to document the diverse values created by R-Urban. The results and conclusions of our analysis are presented in Section 4.

2 | R-URBAN: COMMONING AS A WAY OF BUILDING URBAN RESILIENCE

With the ambition to fight locally against global crisis, aaa imagined a framework for civic resilience named R-Urban which would mobilize the agency of citizens and grassroots organizations via a network of self-managed collective hubs in a transition to dynamic sustainability. The "R" in R-Urban stands partly for "resilience," a transformative condition, which allows us not only to adapt but also to transform and reinvent our society towards more balanced, equitable ways of living. The "R" also stands for "resourcefulness," situating resilience in a positive light and relating it to the empowerment and agency of citizens and emergent communities (MacKinnon & Derickson, 2013). Although conceived and initiated by architectural designers and urban researchers, the R-Urban framework is designed to be enacted through co-production with local residents and a wide range of actors, all of whom have a role to play in the process.

The R-Urban framework adopts a multilevel perspective on transition, following a "grassroots fighters" pathway for change (Geels, 2011, p. 33; see also Geels & Schot, 2007, 2010). This involves setting up interconnected self-managed collective hubs that act as "niches" for socio-technical innovation (Kemp, Schot, & Hoogma, 1998; Schot and Geels, 2008). The hubs boost the capacity for resilience within neighbourhoods (Stevenson & Petrescu, 2016) by providing spaces where skills, knowledge, labour, and creativity around urban agriculture, recycling, and eco-construction and cooperative housing are shared. Importantly, these hubs are spaces where "commoning" can be learnt, practiced, and enacted.

Commoning is the process by which commons, that is, cultural and natural resources that are held, governed, and produced collectively, are made (De Angelis in AnArchitektur, 2010; Linebaugh, 2008). Commoning takes place when human and non-human agents come together to share access to, to take care of and responsibility for, and ultimately benefit from, a material or immaterial resource that supports livelihood and good living (as commons). The process of commoning creates a community and that becoming-community in turn creates a commons (Gibson-Graham, Cameron, & Healy, 2013; Gudeman, 2001). This is a dynamic formulation of commoning and commons that is somewhat at odds with more static conceptualizations that link the commons to forms of public or state-owned property. This latter view informs much of the literature on urban commons with its focus on struggles over enclosure, privatization, and the subsequent loss of commons or legal barriers to their creation (see Huron, 2018 for a review). The focus on commoning, in contrast, diverts attention to the process by which commons are made and maintained with a diverse range of property ownerships. Thus commoning can take place around privately owned or open access resources, as well as those that are publically owned. Moreover,

just because an asset is publically owned and part of a "common wealth" does not ensure that it has a commoning community that keeps it alive. This is not to deny that legalities are unimportant, but to refuse to limit commoning to legal arrangements. As this article demonstrates, R-Urban is an urban intervention that provokes commoning—creating spaces where a resilient alternative to the current way of governing resources within a community and beyond can emerge (Ostrom, 1990).

The first step of implementation of the R-Urban strategy is to access urban space and install a physical infrastructure that will create assets for the new collective hubs where commoning activities can take place. The second step involves identifying and enrolling stakeholders, including existing organizations, initiatives, and individuals throughout the locality who can use the space and infrastructure and share the resources and the training provided by the hubs. Accessing urban space can be achieved by using available private or public land, including spaces that can be temporarily and reversibly used.

The realization of the R-Urban framework started in 2011 on unused and vacant city-owned land in Colombes with three hubs: AgroCité, Recyclab, and Ecohab. As shown in Figure 1, AgroCité was located on vacant land near a large social housing complex; Recyclab was built on one lane of a disused road; the Ecohab housing development was to be built on a vacant plot of land midway between the other two hubs. Hubs were located within easy walking and biking distance from each other to enable the circulation of food, waste, recycled materials, repaired goods, people, knowledge, and cultural exchanges.

From 2011 to 2016, some 6,900 citizens participated in the Colombes R-Urban sites and approximately 400 became active stakeholders.[1] The majority participated in AgroCité in the micro farm, family garden plots, and community garden. Local citizens helped to construct a community building to house a café, a teaching space, a market, a greenhouse, a kitchen, and a compost school (see Figure 2). The site became a hub for ecological education and community learning. Some participants set up small businesses within AgroCité and generated income for themselves and for the R-Urban collective.

The Recyclab was the community recycling and eco-construction centre that was self-constructed using second-hand materials. Repurposed shipping containers were used as the ground floor with a first floor built out of wood (see Figure 3). The structure housed workshops, materials storage space, a design studio and apartment, and garden deck. AgroCité and Recyclab established systems to reduce CO_2 emissions, harvest and use rainwater, compost organic waste, and collect and recycle other waste. Both these hubs were organised as civic organisations with each type of activity (compost, recycling, cuisine, garden, book keeping, repairing, etc.) managed by a collective of active members (3–4 per group) who were passionate about these practices. The thematic collectives were represented in the governance structure of each hub, counting 15 people at AgroCité and 11 people at Recyclab. aaa and the city were also represented in the governance structure. Decisions were taken during general assemblies of all hub members, which took place four times a year.

Following local elections in May 2014, and before aaa and the R-Urban team could complete Ecohab (the planned cooperative

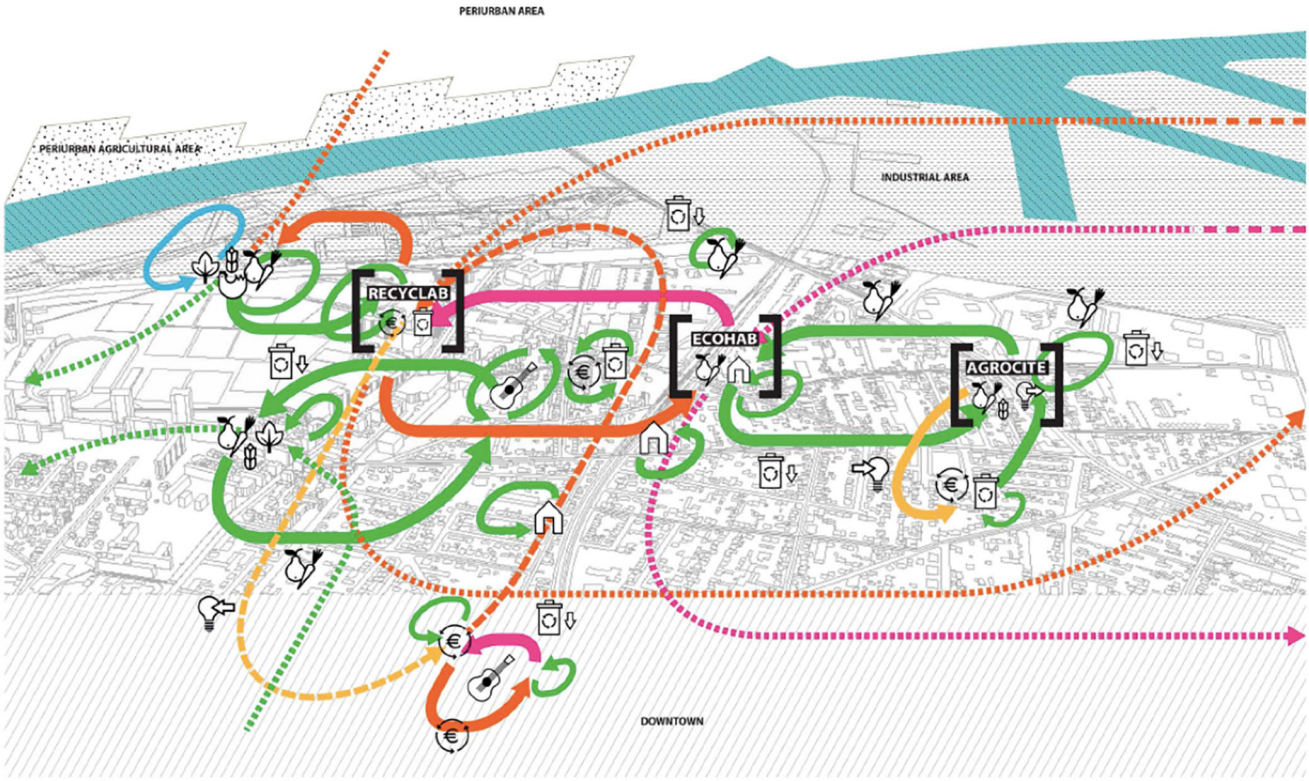

FIGURE 1 R-Urban Colombes, Initial Design
Source: aaa [Color figure can be viewed at wileyonlinelibrary.com]

FIGURE 2 R-Urban Agrocité, Colombes
Source: aaa [Color figure can be viewed at wileyonlinelibrary.com]

FIGURE 3 R-Urban Recyclab, Colombes
Source: aaa [Color figure can be viewed at wileyonlinelibrary.com]

housing units), the newly elected administration of Colombes Municipality embarked on a privatization campaign and abolished the R-Urban leasing contract. In June 2015, the new mayor decided to replace the AgroCité hub with a temporary private car park and demolished Recyclab in order to clear the land for future city projects.[2] Both hubs were finally dismantled in 2017 and were reinstalled in new locations: AgroCité in Gennevilliers and Recyclab in Nanterre.

This act of enclosure is not unfamiliar to urban commoners the world over. In 2006, the South Central Farm in Los Angeles was bulldozed after the land was sold to a developer, despite it being a brilliant exemplar of community resilience involving a collective of

350 mostly Latinx families (comprising about 2000 people). A national campaign that raised $US16 million to purchase the land at the developer's asking price was not enough to save it (Irazábal & Punja, 2009). The LA showdown asserted the private property rights of capitalist landlords, but other more recent confrontations like Gezi Park in Istanbul reveal the antagonism between state-ownership and common use. There, a protest in 2013 against the privatization of the only remaining public park in the European side of the city (for the construction of a mall and luxury residences) led to a nation-wide rebellion over the character of the state, leading to 8,000 injuries and 11 deaths (Amnesty International, 2013). Gezi Park protest organizers still languish in jail facing life sentences without parole on charges of treason.

While one could speculate on the underhand political motivations for these kinds of actions, it is also true that the question of "value" haunts any decision to displace and (re)enclose the urban commons. The precarity of urban commons is partly produced by the inability to assert their value in the face of the capitalist urban private property market with its inflated financial returns on investment. In order to begin to address this legal and financial precarity, a much more robust understanding of value in social, ecological, and financial terms as well as a more honest identification of full costs and benefits are required. What follows is our attempt to set up a method for calculating the value of an urban commons such as R-Urban.

3 | THEORETICAL APPROACHES TO CALCULATING THE VALUE OF COMMONING

In a world where we seek to promote ecologically sustainable forms of living, the value question needs to go beyond financial capital and commodification (Graeber, 2001), including nurturance and eco-maintenance (Bollier, 2016a, 2016b). Yet the tools available to assess the value of any urban development are ones that direct analysis towards value measured in financial terms. The cost–benefit method (or more accurately the benefit/cost method) is a ratio that shows the value of benefits realized for each dollar spent. *Economic* cost–benefit analysis limits what is included to the financial inputs and outputs. Direct benefits include the revenues generated; direct costs include expenditures on labour, capital, and land. *Social* cost–benefit analysis includes a more comprehensive suite of benefits, including, for example, improvements in individual health, social well-being as well as psychological well-being. While these social values may not take a monetized form, they can be translated into financial terms using a variety of methods. The data that allow a benefit/cost ratio to be identified can also be used to calculate a return on investment (ROI). Here the total costs accrued are subtracted from the value of the total benefits derived and multiplied by 100 to get a measure of the profit or "return" earned on an investment. When social benefits are included in the calculation, the result is a social return on investment (SROI) (Nicholls, 2017).

Of course what is considered a cost or a benefit and how either gets included in the valuing frame is a question for debate. The approach taken here draws on a framing of a diverse economy that recognizes the valuable contributions of both paid and unpaid labour—including volunteer work, caring work, and governance work to name just some. The diverse economy framing has been developed as a challenge to dominant capitalocentric framings in which capitalist economic relations (paid waged and salaried labour, monetized commodity transactions, and private capitalist enterprise) are foregrounded and the value of "non-capitalist" economic relations rendered non-credible (Gibson-Graham, 1996/Gibson-Graham, 2006: 35). Monetary equivalents can, however, be used to "cost" labour, products, and services that are not exchanged via the market, that is, that are not "commodified." Feminist economists and statisticians, for example, have devised ways of measuring and valuing unpaid labour (Hoskyns & Rai, 2007; Safri & Graham, 2011). One method is to measure inputs and time spent, giving unpaid labour a "replacement value" (how much it would cost to replace unpaid workers with paid workers), another is to measure outputs (e.g., value of prepared meals or garden maintenance). The input method tends towards lower aggregate estimates and the output method tends towards higher estimates; the more conservative form of estimating, the input method, is actually the dominant method (Ironmonger, 1996).

In both forms of cost–benefit analysis, effects on other parties outside the investor/producer and the direct consumer are considered indirect effects and can also be counted. But often more distant "external" effects (e.g., on CO2 emissions or neighbourhood crime rates) are excluded. Increasingly this relegation of actual effects that have significant environmental costs is being held up for examination. A whole subfield of environmental and ecological economics, for instance, argues for "full cost accounting." Calculating the full costs of any project involves considering the life cycle of a project and cost effects along the entirety of the supply chain and waste streams (Epstein et al., 2011). Epstein et al. (2011), for example, have produced a full cost accounting of coal mining in Appalachia that includes producing both conservative, average, and high cost estimates for land disturbance, public health problems, climate damage, excess mental retardation for those living near coal production sites, acid precipitation, local water contamination, and so on.

By the same token full benefit accounting would involve estimating the social value produced by any project beyond the creation of paid employment or improvements in individual wellbeing. Determining full benefit requires identifying improvements in household, community and ecological health, social and psychological well-being, as well as improvements in civic involvement and participatory democracy. A more comprehensive method of full cost–benefit analysis attaches a price to as many of these external and indirect effects as possible, but in so doing, brings into relief a constitutive contradiction: that which is excluded by conventional financial accounting (as indirect or external) is actually internal to the analysis, not external. Discomfort with conventional accounting has led many to seek going beyond GDP, such as the Index of Sustainable Economic Welfare (England, 1998), with Bandura (2008) listing 178 different indices that actually subtract measures that reduce well-being such as pollution, disaster recovery, etc. And despite this proliferation of academic

interest in measuring well-being more broadly and sustainably, there has been little take-up of these indices when making municipal or national level fiscal decisions.

The diverse economy framing enlarges the scope of what is recognized as valuable. As discussed above, both paid and unpaid labour are seen to contribute to living well, but by acknowledging the diversity of economic relations we can identify many other beneficial activities that can expand a commons and build community, rather than capitalist, economies. A community economy is built upon ethical investments—in surviving well, distributing surplus, responsibly encountering others, consuming sustainably, and sharing our planetary commons, all with a view to the wellbeing of future more-than-human generations (Gibson-Graham, 2006). In *Take Back the Economy: An Ethical Guide for Transforming Our Communities*, Gibson-Graham et al. (2013) proposed the Community Economy Return on Investment (CEROI) as a mechanism for tracking and valuing the creation of ethical economies. Community economy "returns" include both social benefits such as increased forms of individual, household and community well-being, as well as ecological benefits such as a reduced ecological footprint. They also include increased collectively controlled surplus, increased ethical trade, and expanded commons (see Figure 4).

The CEROI tool provides a guide for the method we devised for calculating the value of the R-Urban commons. This tool provides a way of distinguishing how the R-Urban intervention specifically enabled commoning and the emergence of ethical economic and ecological relations. We use actual and estimated amounts of money, admittedly the dominant metric of value in the capitalist economy (Dyer-Witheford in Bollier, 2016a, p. 23), to represent the value of urban commoning (Bauwens in Bollier, 2016a, p. 2). Our innovation is to deploy this metric to account for the incredible volume of value that can be returned on an investment in commoning.

A €1.2 million grant from the European Union and other public funders formed the initial investment that initiated the R-Urban intervention in Colombes. We designate this financial amount as the overarching Community Economy Investment. This amount flowed into a range of material and immaterial activities that could be identified as investments in surviving well, consuming less, social enterprise development, surplus sharing, fair encounters, and expanding the commons. In this article, we do not disaggregate these specific investments but concentrate on calculating the "community economy returns" that these investments enabled. Section 2 outlines the methodology employed to calculate returns that relate to increased wellbeing, reduced ecological footprint, increased collectively controlled surplus, increased ethical trade, or expanding the commons. What has become clear by attempting to operationalise the CEROI is that these returns are interdependent. For the purpose of this article, all can be construed as contributing to commoning.

Using the CEROI tool as a loose guide, we propose a method that can be used by any group who seeks to speak to the language of power about the broader social and environmental value of commons oriented activities. Such a method allows us to see how value can be sucked out of one system, to support a postcapitalist vision and politics here and now, in our midst.

4 | METHODOLOGY FOR CALCULATING THE VALUE OF AN URBAN COMMONS

Community Economy Returns are calculated in four stages: first, in terms of direct financial revenues generated for individuals and for the collective; second, in terms of the estimated value of unpaid labour generated by R-Urban activities; third, in terms of the estimated value of increased individual capacities that were generated; and fourth, in terms of saved costs to the commons and commoner households, the state, and the planet. Figure 5 shows the (sometimes overlapping) relationship between these methods of calculation and Community Economy Returns. In most of the accompanying tables, returns are grouped into different areas of activity of the project: "Architecture & Construction," "Gardening & Environmental Care," "Research, Training & Education," "Small Business & Jobs Training," "Care & Governance of the Commons," and "Human & Social Wellbeing." These categories all contribute in different ways to the Community Economy Returns shown on the left of Figure 5. Our CEROI calculations are complemented by qualitative data on subjectivity changes with the emerging commoning community.

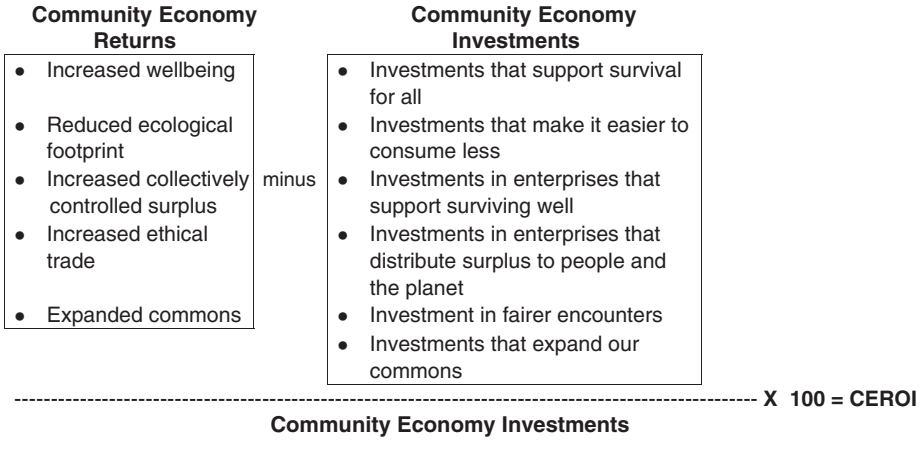

FIGURE 4 Community Economy Return on Investment (CEROI)
Source: Gibson-Graham, Cameron and Healy, 2013

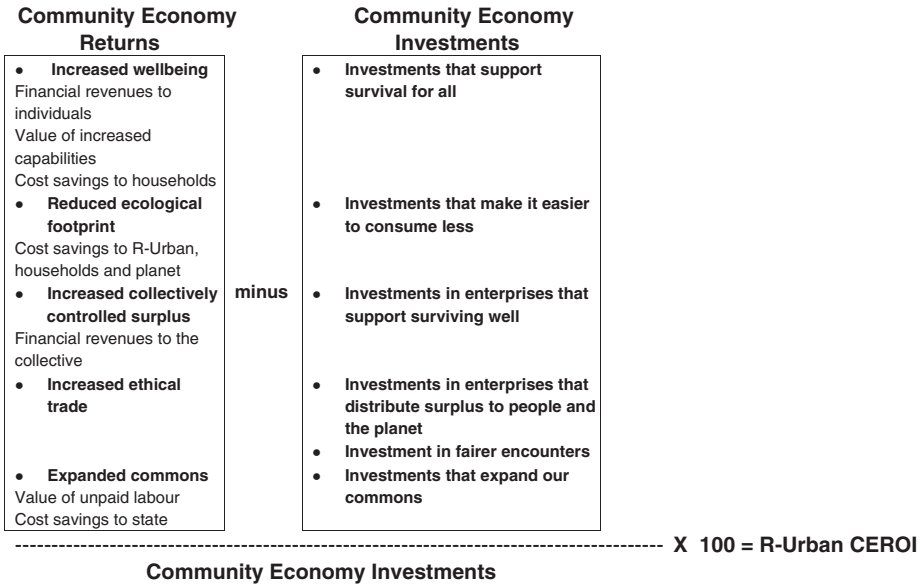

FIGURE 5 Method for Calculating the R-Urban Community Economy Return on Investment

The initial investment of €1.2 million was spent on architecture, engineering, construction, and management. The cost of buildings and infrastructure were expected to be amortized over at least 10 years, but given the eviction, the project ended prematurely. So while returns are usually understood to grow over time as up-front costs decrease, the generation of benefits was truncated. The following data are thus a snapshot of 1 year (2015) of a project that was expected to last much longer. All of these figures and estimates are based on accounting records kept at AgroCité and Recyclab that reflect aaa's role as unofficial archivist of the project. Our exercise is both important and valuable to perform, because the following data can be used to project costs and benefits for subsequent iterations of R-Urban, as well as providing a guide for other commons oriented projects.

4.1 | Monetary value generated by R-Urban

In Table 1, we list all the activities that generated monetary revenue for participants, increasing their material wellbeing, and for the overall project, increasing its viability as a commons. As R-Urban evolved, more varied activities began to take place, adding to the monetary impact of the overall project. Soon after the Colombes R-Urban project took shape and partly because of the widespread critical engagement with the project in popular and academic sources, aaa was commissioned to design and implement two new R-Urban hubs which brought in €50,000. Architectural design commissions from aaa also increased and brought in income of €110,000. In the accounting represented here, all commission revenues are treated as income generated by the project that helped to consolidate the commoning process.

R-Urban adopted a capacity-focused development model, with the idea that "development has to start from within the community," based on the capacities, skills, and assets of people living in the neighbourhood (Kretzmann & Mc Knight, 1996: 25). The hubs were the places where these skills and assets were informally identified and then supported to evolve into different initiatives and forms of community economy. The collective started with an asset mapping exercise to identify resources in the neighbourhood. Presentations by experts and workshops with economic and ecological researchers supported the development of stakeholders' initiatives. Shared interests emerged and groups with similar projects became involved in knowledge exchange and mutual learning. The economic profile of each hub as such evolved organically, with people's interests leading the way for adding new projects.

Each month, a recycling school was held with local participants led by a designer. The school participants learnt to make products such as recycled doormats, lampshades, and bags, which were sold at the R-Urban shop. Makers received payment for their products and distributed 20% of their earnings to the R-Urban commons collective to contribute to the running costs of the workspace (electricity, internet, water, insurance, etc.). On one section of the AgroCité site, a collective urban farm was developed by an employed farmer (on a 2-year contract) with assistance from a group of volunteers trained in urban agriculture. The farm produced garden produce that was sold in farmer's markets held weekly on site.

AgroCité became a site for research, training, and education and some of these activities regenerated revenue. A successful application to the French Ministry of Ecology resulted in a grant of €50,000 to aid in research and implementation to be spent over 4 years. Garden tours and talks were conducted by aaa and volunteers. The number of weekly requests for tours grew and so visitors were charged a small fee. A local resident who was an expert composter set up a Compost School at the AgroCité to train others in the techniques of composting and worm farming. This became a successful small business that charged students a fee per course and generated funds sufficient to pay two trainers, acquire materials, and pay a sum of €3,600 as rent to AgroCité for the training space. Training in permaculture allowed two R-Urban members to procure external commissions to offer specialized courses, some in other R-Urban networked sites.

TABLE 1 Direct financial revenues generated by R-Urban Colombes

Area of activity	Revenue generating activities per annum	Individuals and small business revenue	Collective 20% share	R-urban revenue
Architecture and Construction	Construction contracts. *2 contracts @ €25 k each/year*			50,000
	Architecture commissions *€/year*			110,000
	Sale of recycling school products. *€50/month × 12 months*	480	120	
Gardening and Environment Care	Sale of garden produce. In the R-urban shop. *€600/month × 6 month/year*			3,600
Research Training and Education	Research grant. French Ministry of Ecology. *25% of 4 year €50,000*			12,500
	Garden tours and talks. *2 tours/month × 12 months @ €100/tour*			2,400
	Compost school. *2 trainers × €3,750/month*	86,400	3,600	
	Permaculture training. *2 people × 1 day every 2 weeks × 9 months @ €200/day*	7,200		
Small Business and Jobs Training	Café run by local residents. *1 canteen/week × 52 weeks @ €200/canteen*	8,320	2,080	
	Beer sales. *€300/month × 12 months*	2,880	720	
	Flea market stalls run by local residents. *Sales of €100/month × 12 months*	960	240	
	Local shop. *€75/month × 10 sellers*	7,200	1,800	
TOTAL	300,500	113,440	8,560	178,500

The AgroCité built structure was designed to encourage conviviality. It included a kitchen and indoor and outdoor commons spaces which became well utilized by participants. A number of other small businesses were begun using these assets. A weekly canteen was organized and run by 20 participants. They served healthy lunch and dinner meals using mainly local and seasonal vegetables grown on site. Canteen participants earned individual income and contributed 20% of their earnings to the AgroCité commons. A local brewer organized organic beer sales under the same arrangement. An AgroCité shop was set up for participants to sell products they had grown or made and a monthly flea market was held on site. Earnings accrued to individuals with a 20% share going to the AgroCité commons.

In summary, Table 1 shows that the total monetary revenue generated by R-Urban in its first year of full operation amounted to €300,500. Of this amount, 38% flowed to individuals as paid workers or small business people. An amount representing 59% flowed directly to R-Urban and a further 3% was contributed by individuals and small businesses as a collective share to the R-Urban common pool to cover the running costs of the work space. In many evaluation exercises, it is at this point, once the direct economic development benefits have been identified, that conventional analysis would stop. This reflects the dominance of a capitalocentric interest only in the generation of paid jobs and financial sustainability as measures of success of any initiative.[3] However, our commoning calculations go much further.

4.2 | The value of volunteering

The direct monetary revenue was not the only value produced by this initiative—additional value and benefits accruing through unpaid or volunteer labour were generated and can be identified via interpretive accounting methods. Throughout the life of AgroCité and Recyclab, records were kept of how much time people spent on different activities. These are diaries, if you will, of a non-profit organization seeking to organize the flow of volunteer labour and monitor the growth of knowledge and skills that took place in each site. For the purpose of this exercise, the value of volunteer unpaid labour is estimated by referring to the average market value of each particular form of labour, purchased in local labour markets at average wages.

As shown in Table 2, volunteer labour was performed in all the categories of activity shown in Table 1 with the addition of a very important new category, that of "Care & Governance of the Commons." Working through Table 2 from the top we see that even though the bulk of the architectural and construction labour involved in building the AgroCité and Recyclab infrastructure was paid for from the initial investment, a large amount of unpaid architectural and construction labour was volunteered to complete the structures and add additional features. In "Gardening & Environmental Care," there were volunteer gardening teachers and volunteer carers of the chickens and bees. The large bulk of volunteering hours was expended gardening on the collective urban farm.[4] This

TABLE 2 Estimated value of unpaid volunteer labour by R-Urban, Colombes

Area of activity	Volunteer labour time per annum	Monetary value of volunteer labour estimated €/day based on fulltime paid equivalents
Architecture and Construction	Ongoing architecture and construction. *8 people × 3 days/month @ €150/day*	43,200
Gardening and Environmental Care	Gardening teachers. *2 people × 0.5 days/week @ €125/day for 9 months/year*	4,875
	Livestock husbandry. *3 people × 0.5 day/week @ €75/day*	5,850
	Voluntary gardening. *20 people × 0.5 day/week × 36 weeks @ €100/day*	36,000
Research Training and Education	Voluntary lecturing. *1 person × 2 days/week @ €250/day*	26,000
	Training and teaching. (e.g., aromatherapy, garden design, cooking). *2 people × 1 day/week @ €150/day*	15,600
Small Business and Jobs Training	Repairing the R-urban equipment. *10 people × 1 days/month @ €175/day*	21,000
	Cooking and catering assistance. *4 people × 0.5 days/month @ €125/day*	3,000
Care and Governance of the Commons	Book-keeping. 1 person × 2 days/week @ €150/day	15,600
	Event organizing. *4 people × 1 day/week @ €125/day*	26,000
	Organizing and management of different groups activities. *10 people × 0.5 days/week @ €125/day*	32,500
	Cleaning and Maintenance and Caring for premises. *15 people × 0.5 day/week @ €100/day*	39,000
	Administrating and managing the hubs. *3 people × 2,5 days/week @ €125/day*	48,750
TOTAL		317,375

volunteer work produced food for sale (recorded in Table 1) as well as produce for direct use in the café. "Research & Training" also attracted volunteer contributions (researchers, scientists, teachers, etc.) and the "Small Business" activities regularly attracted volunteers, for example, contributing in the R-Urban café and repairing equipment.

Creating an urban commons requires hours of input into organization and care of the common space itself. This is reflected in the huge amount of volunteer hours put into event organizing, managing group activities, administering the hubs, and book-keeping to track labour and revenues, as well as the surplus sharing and rent paid to AgroCité. Most important of all was cleaning, maintaining, and caring for the premises. When valued at the average pay rate for these types of work, we see that "Care & Governance of the Commons" amounted to approximately 50% of all value created via volunteered unpaid labour. The total estimated value of annual volunteered labour amounts to €317,375, an amount that is roughly equivalent to the total monetized value generated by year (€300,500).[5]

4.3 | The value of increased capacities

Having tracked the actual and estimated monetary value that is conventionally captured, we now draw attention to what often does not usually enter the value frame, that is, the wider social value that can be seen as indirect value generated (Mulgan et al., 2019: 34). The R-Urban hubs were open to the public daily, offering a general atmosphere that was proactive and positive, with activities that were easy to join. R-Urban welcomed people of 10 different nationalities and different social and cultural backgrounds. Some people had turned up at R-Urban having lost their jobs recently, others were "burnt out," still others had been experiencing depression. Over time the morale of many people involved in R-Urban improved. Local residents, many of whom did not know each other prior to R-Urban, reported feelings of belonging and connection previously unfelt. The spaces allowed many different people to intersect meaningfully, including public housing resident gardeners, researchers, and groups of students. Much of the interacting took place initially in the context of formal training workshops and then informal peer to peer learning.

TABLE 3 Estimated value of increased individual capacity generated by R-Urban Colombes

Area of activity	Increased individual capacity	Estimated value
Skill Enhancement leading to Employment	New jobs for compost school graduates. *35 jobs @ €2,500/month × 6 months*	525,000
	Guides. *30 frequent guides and speakers x1 day/week × €100. 75 less frequent guides and speakers x1 day/2 month × €100/day*	201,000
Skill Enhancement and Access to Tools (resulting in more DIY and fewer market based repairs)	Construction, DIY, recycling, repairing in home. *20 people × 10 days/year @ €150/day*	30,000
	Access to common tools and appliances. *80 people using shared tools × 0.5 day/week @ €20*	41,600
Training Cost Savings	Training in using R-urban eco-prototypes. *8 people × 0.5 days/week @ €125/day*	26,000
	Practical training in computer and digital skills. *8 people × 4 days/year @ €250/day*	8,000
	Peer training in repairing. *5 people × 2 days/month @ 150€/day*	18,000
	Practical training in organizational skills. *25 intense users × 1 day/month @ €125/day. 60 light users × 3 days/year × €125/day*	60,000
	Practical training in caring for premises. *50 people × 4 days/year @ €100/day*	20,000
	Practical training in communication skills. *10 people × 0.5 day/13 weeks @ €125/day*	16,250
	Peer gardening workshop. *100 people × 3 day/month for 9 months @ €75/day*	202,500
	Peer composting workshop. *75 people × 2 day/month for 9 months @ €75/day*	101,250
TOTAL		1,249,600

In Table 3, we attempt to capture the value of the new skills and capacities that participants gained by involvement in the broad range of R-Urban activities, including drop in and regular gardening, recycling and repair activities, workshops around particular skills, ecological and cultural events such as conferences, symposia, seminars, and art exhibitions. Table 1 documented formal workshops, whereas there was also much informal education, practical training, and peer-to-peer education which is part of what Table 3 seeks to estimate.

Estimations of increased capacity have been made in three ways. First, where R-Urban participants learnt new skills that they put to use by gaining paid employment, estimations of their increased monetary earning capacity have been made. For example, a number of people who graduated from the compost course were able to attain paid employment in 2015. Some became compost trainers elsewhere, others found jobs coordinating new local urban agriculture policies and managing biodiversity in other municipalities. Out of a total of 50 students, 15 formerly employed people changed their jobs after the training, while 35 formerly unemployed people went on to actually get jobs. New net social value was created by these 35 people's increased earnings in their new jobs.

Acquiring new skills means generating lifetime changes, not just short-term ones, and many substantive increases in individual capacity generated benefits outside of the one-year time frame. One of the cooks, for example, created her own small restaurant and earned approximately €84,000 in the year after she gained catering skills and self-confidence in the Colombes R-Urban canteen. Table 3 cannot capture such "value" because we limited ourselves to the 1 year of the project before eviction.

Although not directly linked to acquisition of paid jobs, a good number of people developed the capacity to become "ambassadors" for R-Urban. They acted as guides, giving tours to explain the value of what they were doing, to show how the prototype worked. Participants unused to public speaking gave speeches at protests, and acted as hosts to diverse types and categories of visitors (journalists, researchers, neighbourhood residents, etc.). This increased both internal networking in the neighbourhood, as well as external networking.

Second, where participants learnt new skills that they put to use directly in their own lives, two methods have been used. One is to estimate costs saved by not having to pay for this work. For example, we observed that, as a result of their engagement with R-Urban, a number of people increased their involvement in home construction and repair, and DIY domestic work. Also, by accessing and caring for commonly held tools and appliances, commoners saved on rental fees. On average, French data show that people perform about 45 days a year on the combination of DIY, repair, construction, domestic animal care, and gardening (Champagne & Pailhé, 2015). Based on interviews with participants, our conservative estimation is that 20 people performed 10 days of labour more than they would have done otherwise.

The monetary estimate of this increase in unpaid labor has been valued based on the average cost of hiring someone to do odd jobs.

The other calculation method was via the proxy of the average cost of formal training in the particular skill area (Burkett & McNeill, 2018: 17). At least eight people acquired weekly training in using various R-Urban prototypes, such as rain and grey water collectors and use, composting toilets and phyto-remediation technologies. The value of this increased individual capacity is estimated based on what it would have cost people to receive formal classes to become proficient. Many people acquired gardening and composting skills via peer to peer learning and this has been valued in terms of market based tuition costs. Similar estimation methods were used for digital and computer skills gained. In addition, people gained many new skills when they took on the task of running and self-managing the organization—learning how to run meetings, act on committees, participate in representative decision-making and liaising between small groups and the larger body of participants. Participants learnt how to care for the premises, (opening and locking the buildings, cleaning and setting up for various classes and fairs and festivals, etc.). Others learnt diverse communication skills especially in the lead-up to the eviction (to respond to media requests, interviews, school visits, researcher visits, etc.). By accessing and caring for commonly held tools and appliances, commoners saved on rental fees.

When all these imputed values of increased individual capacity are summed together, the value comes to a massive €1.25 M. But before we can finalize the community economy return on investment there is one last component—the costs that were saved by the R-Urban development.

4.4 | The value of saved costs

In assessing the social value of any project, it is useful to consider the reduced costs and savings as appropriate indicators (Burkett & McNeill, 2018: 10). Given the nature of the R-Urban project, both environmental and social costs were saved and the savings were made by different "agents"—including individuals and the R-Urban commons, the State in its different forms, and the planet itself. A range of existing studies were consulted when calculating the saved costs as shown in Table 4.[6]

In the category of "Architecture & Construction," the ecological design of the R-Urban infrastructure meant that there were savings in building costs, energy and water use. These savings accrued both to the R-Urban commons, to individuals who learnt new ecological practices and brought them into their daily lives and to the State authorities that manage waste water. By not purchasing new building materials but using recycled materials, the cost of building the two hubs was reduced by a factor of 10%. This reduced the demands on the initial grant and was a saving that R-Urban made. By using solar panels for energy generation and passive solar design, both buildings also reduced the energy usage of non-renewable electricity. A plant-based water remediation system was established, and this saved what the state would have spent on water remediation if the system was not in place. The composting toilet and waste water management system further contributed to savings for R-Urban and the state respectively. Even more importantly, R-Urban participants learnt new habits of reducing water consumption and carried them everywhere they went. We estimate that this translated into a reduction by 20% of private water consumption per participant and a 20% reduction of sewage treatment costs due to reduced water waste.

In the area of "Gardening & Environmental Care," many of the design and practice aspects of R-Urban contributed to further planetary savings. AgroCité increased green cover over its site by 50%, at a minimum, saving the cost of laying sod to get green cover. There was an accompanying improvement in soil quality produced by the farm, the gardens, and composting, but this has not been estimated owing to lack of comparable data. Organic farming methods were used, resulting first in savings to the planet by increasing biodiversity and reducing the costs of species destruction (Sautereau & Benoit, 2016) and second in reducing the health costs met by the State of people consuming food affected by pesticides. One initiative at R-Urban involved 35 families joining a community supported agricultural network that supplied fresh food grown on a farm 30 km away. This reduced their food transportation footprint and translated into household savings per kilo of food. A further saving to the state was made since there was no longer the need to collect and process the organic waste that R-Urban recycled and reused itself.

In the category of "Small Business & Jobs Training," the 35 people who gained employment for 6 months following the Compost School training had been formerly registered as unemployed jobseekers and received monthly assistance from the state of approximately €2000/month. By gaining employment, the state saved these social benefits.

In terms of "Care & Governance of the Commons," we considered that the overall reduction of car use that R-Urban enabled benefited the wider atmospheric commons and reduced pressure on public infrastructure, generating further savings to the state and the planet. With food provisioning more local and R-Urban offering a source of local entertainment and connection, we estimate that for 1 day/week participants were less dependent on their cars for shopping and leisure activities and this produced a saving in household transport costs. In addition, this reduction of car travel produced a reduction in air pollution, as did increased repair and reuse of goods. Air pollution produces costs of €1,100/person/year (European Environment Agency 2018). We thus estimate R-urban participants reduced their contribution to the cost of pollution for 1 day/week, producing savings split between the state (which is tasked with meeting the costs of air pollution clean-up and health impacts) and the planet.

In the area of "Human & Social Wellbeing," there are a number of saved costs that accrued to individuals, households and the state. The promotion of re-using, repairing and recycling of used goods through barter and exchange clubs generated savings to six individual participants per month, since they learnt to repair broken tools, appliances, and electronic goods (e.g., televisions, computers, etc.) More generally, all participants were affected by the ethic of consumption reduction, re-use and recycling, and came to change their consumption habits. Our conservative estimation is that people reduced their general

TABLE 4 Costs saved by R-Urban Colombes, the state and the planet

Area of activity	Value of saved costs estimated €/item	R-Urban and House holds	State	Planet	Basis for measurement
Architecture and Construction	Reduced building cost (reused and recycled materials). *10% of total price of the 2 hubs @ €600,000*	60,000			2 hubs × 300,000€ × 10%
	Reduced consumption of non-renewable energy. *2 hubs × €465/year energy produced by 15m² solar panels*	930			2 × €465/year energy cost produced by 2 × 15 m2 solar panels. (cf. https://www.insunwetrust.solar/blog/le-solaire-et-vous/reduire-facture-delectricite-grace-aux-panneaux-solaires-photovoltaiques/)
	Reduction of clean water consumption at Agrocité site. *Collect and use 1,200 m3 rainwater (1900 m² roof and site × 632 L/m²) collected/year × €4,36/m3*	5,232			*632 L/m2* rainwater collection (cf www.climate-data.org)
	Reduction in cost of waste water treatment at Agrocité site. *520 m3 annual water consumption @ €4,36/m3 = 2,267€/year × 50% reduction cost of waste treatment*		1,134		*€4,36/m3* water treatment cost (cf. Commissariat Général au Développement Durable 2011)
	Reduction of individual clean water consumption. *20% reduction × €183/person/year × 400 people*	14,640			*€183/person/year* water Consumption cost (cf. Commisariat Général au Développement Durable 2011)
	Reduction of individual sewage. *20% reduction × €805/person/year × 400 people*		64,400		*€805/person/year* sewage cost (cf. Commisariat Général au Développement Durable 2011)
Gardening and Environmental care	Increased green cover. *50% × cost of laying sod @ €50/m² × AgroCité site of 2500m²*			62,500	*€50/m²* laying sod average cost (cf. prix-de-pose.fr)
	Increased biodiversity. *400 people × cost of reducing biodiversity @ €332/person*			132,800	€2,225BN/year cost of biodiversity loss in 2008 divided by 6,7BN world population in 2008 = €332/person/year (cf. Bourgeois-Gironde, Doazan, & Figuières, 2011).
	Savings associated with reduced pesticide use. *Savings of 50% costs @ €125/person/year chemical contamination in food growing costs × 400 people*		25,000		$39,5BN/year costs associated with negative effects resulting from chemical contamination in food growing in USA in 1990/250 M persons in USA in 1990 = €125/person/year (cf. Bourguet & Guillemaud, 2016).
	Reduced cost of fresh vegetable transport. *35 families in CSA × €564/household/year*	19,740			80 km reduction in food transport, resulting form 30 km distance for R-Urban CSA transport compared with 110 km average (cf. Savin, 2000) x52weeks x25% from food consumption = 1,040 km/household/year reduction transport × 0,542 €/km = 564€/household/year
	Reduced cost of collecting organic waste. *94€/collection/person × 0,0332collection/person/year × 400persons*		1,250		58 km average distance of organic waste collector and treatment/collection × 1,62 €/km/person/collectio = 94€/collection/person. (cf. Ripert, 1997). 168 kg organic waste/person/year transported with 5 T truck = *0,0332collection/person/year).* (cf. InNumeri 2019).
Small business and jobs training	Saved social benefits with new compost jobs. *35 people × €2000/month for 6 months.*		420,000		*35 people × €2000/month average salary × 6 months average salary time/year*
		129,600			

TABLE 4 (Continued)

Area of activity	Value of saved costs estimated €/item	R-Urban and House holds	State	Planet	Basis for measurement
Care and Governance of the commons	Reduced personal transport costs. *400 people × 1/7 × cost of car travel @ 2.272€*				12,600 km/year/household car travel (cf. Van Dender & Clever, 2013) × 0,54€/km (cf. Jouadauin, 2018) = 6,804€/year/car × 0,33 = 2,268€/year/pers
	Reduction of air pollution. *400 people × 1/7 × cost of air pollution clean up @ 1,100€/person/year*		31,428	31,428	1,100€/year/people cost of air pollution (cf. European Environment Agency 2018)
Human and Social Wellbeing	Reduced goods consumption. *6 × €2,000/year*	12,000			6 RepairCafé/year × 2,000€ repaired goods/each
	Reduction of delinquency. *400 people × 2.280€/person × 1/7*		130,285		*2.280*€/year/pers cost for crime prevention (cf. www.lefigaro.fr/actualite-france/2012/02/20/01016-20120220ARTFIG00491-la-delinquance-estimee-a-150-milliards-d-euros-par-an.php)
	Number of daily steps, self-assessment tabac and alcohol. *200people x1.832€/y × 10% day time and 200people x1,772€/y × 10% day time*		72,080		1832€/year/person saved cost for tabac consumption (cf. Comité National Contre le Tabagisme cnct.fr) 1,772€/year/person saved cost for alcohol (cf. Kopp, 2015)
	Reduced general consumption. *400 people × €2.5/month/pers*	12,000			*Qualitative observation*
	Reduction in cost of mental and physical health care. *250people x4,040 €/y × 25% free time in R-urban hubs*		252,500		4,040€/year health cost per person in France (Antunez et al, 2018)
TOTAL	1,478,947	254,142	998,077	226,728	

consumption spending by about €2.5 a month. In terms of savings for the state of costs for delinquency prevention, although it is difficult to prove causal links between collective participation and crime reduction, enough research has been done to show that increasing sense of community in collective projects such R-Urban does in fact lead to changes in the behavior of at-risk populations (Draper & Freedman, 2010; Welsh & Farrington, 2000). The reduction on costs of delinquency have been calculated by taking recent statistics on yearly costs of crime in France ie. 2.280 €/person (although knowing that the costs of crime in Paris and Ile de France are higher than in the country) (Bichat, 2017) and conservatively reducing them by 1/7 for the participants in R-Urban.

Reflecting on Table 4, participation in R-Urban generated savings for direct participants and households to the tune of €254,142, savings to the state of approximately €998,077, and savings to the planet of €226,728.

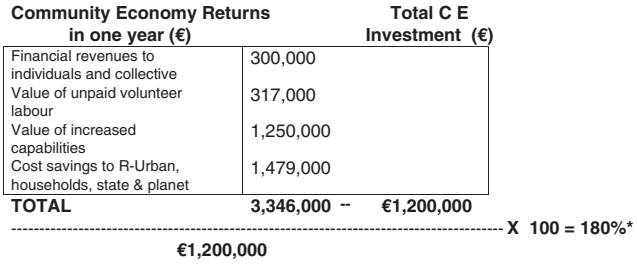

FIGURE 6 R-Urban Community Economy Return on Investment
* 2700 % if a full 10 year period of CEROI is counted

5 | RESULTS AND CONCLUSION

In the final summation of our results, the community economy benefits and flows of value generated by R-Urban totalled around €3.35 million euros. Revenue generating activities (Table 1) totalled €300,500, and the value of unpaid volunteer labour performed (Table 2) came to about €317,000. R-Urban acted as a kind of "commoning university," freely offering training in building self-construction, gardening, water-filtration, recycling and repair, and collective governance. Investing in people and enhancing their capacities through R-Urban (Table 3) generated a monetary equivalent of €1.25 million. Total cost savings (Table 4) amounted to €1.48 million. Of these, €254,000 (16%) accrued to R-Urban and its participant households. The bulk of benefits rippled out to the state (68%) and the planet (16%) as costs saved because of the ecological and human wellbeing effects R-Urban produced. According to our calculations, with the initial Community Economy Investment of €1.2 m, the CEROI for 1 year is 180% (Figure 6).

Given that the US stock market advertises at best a 10%–12% return on investment in good years, the return on investment for a

restaurant in a G-20 country hovers in the 3%–5% range, and the ROI for commercial real estate hovers around 7%–9%, the CEROI on R-Urban is high enough for anyone interested in such matters to take notice. By contrast, the ROI on establishing a parking lot (the Colombes Municipality option for the Agrocité site) is of a very different order. The cost for the construction of a 30-car space parking in the area is approximately €250,000 and the levelling and grading of soil (what a waste of soil fertility, we might add) would add another €20,000 bringing this to a total cost of €270,000. At standard rates of €1,500/car/year at preferential prices for those paying in advance, the annual parking lot revenue for about 30 spaces would result in annual income of €45,000. With a 10 year life span for the temporary car park (and thus an average yearly investment of €27,000), the ROI for the first year would have been 67%. But if they were forced onto a 1 year time frame just as R-Urban calculations were due to the eviction, then the municipality's ROI would have been negative 83%. Admittedly the ROI improves for any initial investment amortized over a number of years, but so is the case with R-Urban, except that in its case the benefits would be expected to increase every year. If we actually had a 10 year lifespan for the project, as initially promised and planned, we would have had 10 years of returns to report, not just one. In which case, our total returns would have swelled to 33 million, resulting in a total full 10 year CEROI of 2700% (Figure 6).

From the perspective of a diverse, more than capitalist economy, it is interesting to note that the relative contribution of benefits deriving from unpaid, shared, and care activities is considerably higher than that from revenue-generating activities. Such a balance demands attention and recognition particularly for its green footprint. Our exercise shows that commoning value has an important "invisible" part (all the value documented in Tables 2,3, and 4), which is ten times more than its visible part (€300,500 of financial revenues generated in Table 1). It is also worth noting that our estimation of benefits does not include many other harder to track outcomes, as for example, the value of increased social relations (cf. Powdthavee, 2008).

Qualitative interview data affirm that participants in R-Urban recognized changes in themselves that indicate movement towards new (commoner) subjectivities (Petrescu, 2017), however, in depth attention to this aspect is outside the scope of this paper. A few comments will have to suffice. Annie says of R-Urban Colombes: "We believe a lot in this project. It is a place of resources for all, which creates a social bond. We need today islands of greenery, places where we can share, exchange, mix experiences" (Van Eeckhout, 2016). What is gratifying to see is that the experiences of participants in Colombes are being mirrored in the new R-Urban sites. Clarisse, who coordinates the activities in the R-Urban Gennevilliers AgroCité, has observed that: "So far, after one year, there are 252 members, with crazy energy, totally different profiles, to create something that will be a place of learning, transmission around ecology, recycling, and to start living differently, to take care of everything…and so, they [have] changed their way of being a citizen in the city" (Petrescu, Petcou, & Lowe, 2019).

To conclude, in this article, we have documented the diverse forms of value that were generated by the R-Urban Colombes project. We have done so in order to speak back to urban developers who think in terms of realizing and maximizing the value of urban assets. But we have also done so in order to speak back to those who see experiments such as R-Urban as marginal and inconsequential and certainly not promising as pathways to the much-needed transformational change. We suggest that R-Urban offers insight into how everyday practices can be radically transformed and urban resilience strengthened. The establishment of community infrastructure where learning and exchange can take place alongside the activities of gardening, recycling, and repair as commoning practices is important. There is need for space to learn how to be a commoner and how to become a community and to participate in community economy transactions and negotiations. The design and architectural dimensions of R-Urban should not be underestimated. Without designated spaces for convivial exchange during winter, when it rains or is windy, or places to hang out and make food together, the connections and trust building necessary to developing commoner subjectivity are harder to make and sustain.

Our method uses a wide series of indicators and applies it to data culled from a very specific project in Paris. However, the basic framework could have applicability around the world, especially where rapid urbanization is taking place, and where wellbeing and caring values are currently ignored or devalued. This exercise proposes a way to track the impact and growth of new sorts of translocal, networked commons that are establishing community economies within the belly of capitalism (Bollier, 2016a, 2016b; Gibson-Graham et al., 2013). As Bauwens and Niaros (2017) argue, value can be co-opted from the "old" system and invested in a commons capable of creating commoning value. R-Urban demonstrates how commoned urban space can support commoners to live locally within ecological boundaries. Part of our work as postcapitalist accountants is to bring into visibility the unseen benefits, labour, and savings within commoned urban space—showing that degrowth can take place now, starting where we are (cf. Buch-Hansen, 2018; Petcou & Petrescu, 2019). This work is grounds for hope that it is possible to move towards living and producing value differently, perhaps even within a one planet footprint.

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ENDNOTES

[1]This is the participation figure we use throughout the analysis to represent both intensive and frequent, but less intensive, citizen-commoners.

[2]The Mayor argued that a car park was needed in the neighbourhood, and so it tragically enacted the refrain from Joni Mitchell's song, "They paved paradise and put up a parking lot." She consequently requested demolition of the two R-Urban hubs through a litigation procedure at the Tribunal Administratif. After many appeals and despite a civic protest campaign, the case went eventually in favour of the municipality concerning AgroCité, but not Recyclab (Van Eeckhout, 2016; Tribillion, 2015).

[3]A capitalocentric approach refers to a discursive framing in which capitalist economic relations are positioned as the economic norm with the capacity to act as the dynamic drivers of growth and producers of wellbeing, against which all other economic relations are subordinated or devalued (Gibson-Graham, 1996: 35).

[4]Here we are distinguishing between unpaid volunteer labour put into the collective farm project from the unpaid labour people put into their individual and family garden plots. We have chosen to capture the value of this latter gardening activity in Table 3 in terms of peer to peer training in gardening and self-provisioning. An alternative method would have been to estimate the costs saved by reducing household food budgets and include this in Table 4.

[5]From the point of view of a classic ROI calculation, these volunteer hours would be regarded as investments, not returns. But this is to underplay the social value of this labour which would not have been generated without the R-Urban project. From a Community Economy ROI perspective, we situate this volunteer work as creating value that contributes to increased well-being, reduced ecological footprint and an increased collectively controlled surplus. See Drake (2019) for an analysis of volunteer labour in community gardens as surplus generating labour.

[6]See also the Farming Concrete Data Collection Toolkit (2015).

REFERENCES

Amnesty International. (2013) Gezi Park protests: Brutal denial of the right to peaceful assembly in Turkey.

AnArchitektur (2010) On the Commons: A Public Interview with Massimo De Angelis and Stavros Stavrides. E-flux 17. Retrieved on December 20, 2019 from http://www.e-flux.com/journal/view/150

Antunez, K., Bergonzoni, A., Boisguérin, B., Cuvilliez, J., Dahmouh, A., Ferretti, C., & Ngouana, U. (2018) Les dépenses de santé en 2017. Résultats des comptes de la santé: édition 2018.

Atelier d'Architecture Autogérée & PublicWorks (2015) R-urban act: A participative strategy of urban resilience. Paris: aaapeprav

Bandura, R. (2008). A survey of composite indices measuring country performance: 2008 update. Working paper. New York, NY: United Nations Development Programme, Office of Development Studies.

Bauwens, M. & Niaros, V. (2017) Value in the commons economy: Developments in open and contributory value accounting. Berlin: Heinrich Böll Stiftung & P2P Foundation.

Bichat, J. (2017). Le coût du crime et de la délinquance en 2016 in N*otes & Syntheses*. *Institut Pour la Justice*, *40*(4), 1–125.

Bollier, D. (2016a). *Re-imagining value: Insights from the care economy, commons, cyberspace and nature*. Berlin, Germany: Heinrich Böll Stiftung.

Bollier, D. (2016b) Commoning as a transformative social paradigm, The Next System Project. Retrieved on July 23, 2019 from https://thenextsystem.org/commoning-as-a-transformative-social-paradigm

Bollier, D., & Helfrich, S. (2012). *The wealth of the commons. A world beyond market and state*. Amherst, MA: Levellers Press.

Bourgeois-Gironde S., Doazan, Y., and Figuières, C. (2011) Le prix de la biodiversité et le coût de la répugnance morale. Les Echos. Retrieved on July 9, 2019 from http://archives.lesechos.fr/archives/cercle/2011/01/17/cercle_32880.htm

Bourguet, D., & Guillemaud, T. (2016). The hidden and external costs of pesticide use. In *Sustainable Agriculture Reviews* (pp. 35–120). Cham: Springer.

Buch-Hansen, H. (2018). The prerequisites for a degrowth paradigm shift: Insights from critical political economy. *Ecological Economics*, *146*(C), 157–163. https://doi.org/10.1016/j.ecolecon.2017.10.021

Burkett, I., & McNeill, J. (2018). *Generating social value: Framing the value question in commissioning and social procurement*. Melbournem, Australia: Social Traders. https://doi.org/10.13140/rg.2.2.10175.10407

Callon, M., & Muniesa, F. (2005). Economic markets *as* calculative collective devices. *Organization Studies*, *26*(8), 1229–1250.

Champagne, C. Pailhé A. Solaz (2015) A. Le temps domestique et parental des hommes et des femmes: quels facteurs d'évolutions en 25 ans? Economie et statistique, n° 478–479-480. - Octobre 2015, INSEE. Retrieved on July 9, 2019 from https://www.insee.fr/fr/statistiques/fichier/1303232/es478h.pdf

Commissariat Général au Développement Durable, Études & Documents. (2011)

De Moor, T. (2008). The silent revolution: A new perspective on the emergence of the commons, guilds and other forms of corporate collective action in Western Europe. *International Review of Social History*, *35* (Suppl 16), 179–212.

Drake, L. (2019). Surplus labor and subjectivity in urban agriculture: Embodied work, contested work. *Economic Geography*, *95*(2), 179–200.

Draper, C., & Freedman, D. (2010). Review and analysis of benefits, purpose and motivations associated with community gardening in the US. *Journal of Community Practice*, *18*(4), 458–492.

England, R. W. (1998). Measurement of social well-being: Alternatives to gross domestic product. *Ecological Economics*, *25*(1), 89–103.

Epstein, P. R., Buonocore, J. J., Ekerle, K., Hendryx, M., Stout, B. M., III, Heinberg, R., … Glustrom, L. (2011). Full cost accounting for the life cycle of coal. *The Annals of the new York Academy of Sciences*, *1219*, 73–98.

European Environment Agency. (2018) Air quality in Europe — 2018 report. Copenhagen: European Environment Agency. Retrieved on July 9, 2019 from https://www.eea.europa.eu/publications/air-quality-in-europe-2018

Farming Concrete Data Collection Toolkit. (2015) Ithaca, NY: Design Trust for Public Space and Farming Concrete. Retrieved on July 9, 2019 from https://farmingconcrete.org/toolkit/

Geels, F. W. (2011). The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environmental Innovation and Societal Transitions*, *2011*(1), 24–40.

Geels, F. W., & Schot, J. W. (2007). Typology of sociotechnical transition pathways. *Research Policy*, *36*, 399–417.

Geels, F. W., & Schot, J. W. (2010). The dynamics of transitions: A socio-technical perspective. In J. Grin, J. Rotmans, J. Schot, F. W. Geels, & D. Loorbach (Eds.), *Transitions to sustainable development: New directions in the study of long term transformative change* (pp. 9–87). New York, NY: Routledge.

Gibson-Graham, J. K. (1996). *The end of capitalism (as we knew it): A feminist critique of political economy*. Oxford: Blackwell Publishers.

Gibson-Graham, J. K. (2006). *A post-capitalist politics*. Minneapolis, MN: University of Minnesota Press.

Gibson-Graham, J. K., Cameron, J., & Healy, S. (2013). *Take back the economy: An ethical guide for transforming our communities*. Minneapolis, MN: University of Minnesota Press.

Graeber, D. (2001). *Toward an anthropological theory of value: The false coin of our own dreams*. New York, NY: Palgrave Macmillan.

Gudeman, S. (2001). *The anthropology of economy: Community, market, and culture*. Oxford: Wiley-Blackwell.

Hoskyns, C., & Rai, S. M. (2007). Recasting the global political economy: Counting women's unpaid work. *New Political Economy*, *12*(3), 297–317.

Huron, A. (2018). *Carving out the commons: Tenant organizing and housing cooperatives in Washington DC*. Minneapolis, MN: University of Minessota Press.

Irazábal, C., & Punja, A. (2009). Cultivating just planning and legal institutions: A critical assessment of the south central farm struggle in Los Angeles. *Journal of Urban Affairs*, *31*(1), 1–23.

Ironmonger, D. (1996). Counting outputs, capital inputs and caring labor: Estimating gross household product. *Feminist Economics*, *2*(3), 37–64.

Jayasinghe, K., & Thomas, D. (2014). Alternative and social accounting. In M. Parker, G. Cheney, V. Fournier, & C. Land (Eds.), *The Routledge companion to alternative organization* (pp. 267–279). London, England: Routledge.

Jouadauin, N. (2018) Barème kilométrique 2018: Voiture, automobile. Le Figaro. Retrieved on July 9, 2019 from http://leparticulier.lefigaro.fr/jcms/c_57234/bareme-kilometrique-voiture

Kopp, P. (2015) Le coût social des drogues en France, Paris: OFDT retrived on July 9, 2019 from https://www.ofdt.fr/BDD/publications/docs/epfxpkvc.pdf

Kemp, R., Schot, J., & Hoogma, R. (1998). Regime shifts to sustainability through processes of niche formation: The approach of strategic niche management. *Technology Analysis and Strategic Management*, *10*, 175–196.

Kretzmann, J., & Mc Knight, J. P. (1996). Assets-based community development. *National Civic Review*, *85*(4), 23–27.

Linebaugh, P. (2008). *The magna carta manifesto: Liberties and commons for all*. Berkeley, CA: University of California Press.

MacKinnon, D., & Derickson, K. D. (2013). From resilience to resourcefulness: A critique of resilience policy and activism. *Progress in Human Geography*, *37*(2), 253–270.

Mulgan, G., Breckon, J., Tarrega, M., Bakhshi, H., Davies, J., Khan, H., & Finnis, A. (2019). *Public value: How can it be measured, managed and grown?* London, England: Nesta.

Nicholls, J. (2017). Social return on investment: Development and convergence. *Evaluation and Program Planning.*, *64*, 127–135.

Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. New York, NY: Cambridge University Press.

Petcou, C., & Petrescu, D. (2018). Co-produced urban resilience: A framework for bottom-up regeneration. *Architectural Design*, *88*(5), 58–65. https://doi.org/10.1002/ad.2343

Petcou, C., & Petrescu, D. (2019). R-urban and its three-year scenario of how to involve everyone in saving the planet. In R. Tyszczuk, J. Smith, & R. Butler (Eds.), *Culture and climate change: Scenarios* (pp. 73–75). Cambridge, England: Shed.

Petrescu, D. (2017). Being-in-relation and reinventing the commons. In M. Schalk, T. Kristiansson, & R. Maze (Eds.), *Feminist futures of spatial practice: Materialism, activism, dialogues, pedagogies, projections* (pp. 87–95). Baunach, Germany: Art Architecture Design Research.

Petrescu, D., Petcou, C., & Baibarac, C. (2016). Co-producing commons-based resilience: Lessons from R-urban. *Building Research & Information*, *44*(7), 717–736. https://doi.org/10.1080/09613218.2016.1214891

Petrescu D, Petcou C, Lowe, F. (2019) R-Urban: Networks of resilience in suburban neighbourhoods. 6'film produced by University of Sheffield & aaa

Powdthavee, N. (2008). Putting a price tag on friends, relatives, and neighbours: Using surveys of life satisfaction to value social relationships. *The Journal of Socio-Economics*, *37*(4), 1459–1480. https://doi.org/10.1016/j.socec.2007.04.004

Ripert, C. (1997) La logistique et le transport des déchets ménagers, agricoles et industriels. ADEME, Agence de'Environnement et de la Maîtrise de l'Energie. Ministère de l'Equipement des Transports et du Logement.

R-Urban. Retrieved on July 9, 2019 from http://r-urban.net

Schot, J.W., & Geels, F.W. (2008). Strategic niche management and sustainable innovation journeys: theory, findings, research agenda, and policy in Technology. *Analysis & Strategic Management*, *20*(5), 537–554.

Safri, M., & Graham, J. (2011). The global household: Toward a feminist postcapitalist international political economy. *Signs*, *36*(1), 99–125.

Sautereau N., Benoit M. (2016) Quantification et chiffrage des externalités de l'agriculture biologique, Rapport d'étude ITAB, 136.

Savin, J. M. (2000). L'évolution des distances moyennes de transports des marchandises. *Notes de synthèse du Service économique et Statistique*, *129*, 17–20.

Stevenson, F., & Petrescu, D. (2016). Co-producing neighbourhood resilience. *Building Research & Information*, *44*(7), 695–702. https://doi.org/10.1080/09613218.2016.1213865

Tribillion, J. (2015) Why is a Paris suburb scrapping an urban farm to build a car park? The Guardian, Retrieved on September 11, 2015 from https://www.theguardian.com/cities/2015/sep/11/paris-un-climate-conference-colombes-r-urban-urban-farm-car-park

Van Dender, K., Clever, M. (2013) Recent trends in car usage in advanced economies: slower growth ahead? Summary and Conclusions. International Transport Forum Discussion Paper.

Van Eeckhout, L. (2016) A Colombes, la lutte d'une ferme urbaine contre un parking. Le Monde. Retrieved on February 7, 2016, https://www.lemonde.fr/planete/article/2016/02/07/a-colombes-la-lutte-d-une-ferme-urbaine-contre-un-parking_4860995_3244.html

Welsh, B., & Farrington, D. (2000). Monetary costs and benefits of crime prevention programs. *Crime and Justice*, *27*(1), 305–361.

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