COVID briefs

BUILDING BACK BETTER: POST-PANDEMIC CITY GOVERNANCE

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TOWARDS CIRCULAR URBAN DEVELOPMENT POST-COVID

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Abstract

This policy briefing explores how the impacts of COVID-19 on our cities might be addressed by adopting a circular development pathway. The ecological regeneration of cities is central to a healthy recovery. The integration of accessible and connected green infrastructure will help to address health problems, whilst continuing to encourage active transport and the use of green space, the importance of which has been highlighted by the pandemic. The paper discusses how urban food systems need to be more robust, particularly in respect to feeding the urban poor. The informal practices for reusing and redistributing food have proved inadequate during the pandemic and should be formalised if supply is to be maintained. The paper suggests that increasing public interest in food-growing during the pandemic could be harnessed and encouraged to increase local supply, particularly amongst the urban poor. The long-term economic impacts of COVID-19 on our cities remain to be seen, but the experience to date suggests that there will be a shift in economic activities. This is likely to result in vacant buildings and sites. This redundancy wastes resources. The paper suggests that by creating adaptive and recyclable urban environments we can reduce waste. These economic trends will also result in unemployment. Adopting a circular development pathway will provide a range of more sustainable jobs linked with resource looping, ecological regeneration and adaptation. In conclusion, the paper suggests that adopting a circular development approach in cities post-COVID-19 could aid their sustainable recovery.

The impact of COVID-19 on cities

COVID-19 appears to have influenced the lifestyles and social practices of city dwellers. Some sustainable practices have emerged, for example: cycling, walking, recreation time spent in green spaces, home-working and food-growing. As well as producing significant benefits for the urban ecosystem and the health of those living in it (e.g. by reducing air pollution), if sustained, these activities could also benefit the global ecosystem (e.g. by reducing greenhouse gas emissions).

Changes in social practices impact cities' systems of provision (e.g. green space and active transport networks) and economic activities (e.g. commercial and retail), which may result in redundant infrastructure (e.g. offices, shops) and rising unemployment, at least in the short-term.

Circular development produces adaptable cities, offering space to transform and grow, and infrastructure that evolves with changing needs.

The economic impacts of COVID-19 are likely to be felt most by those in lower-skilled jobs (e.g. retail and hospitality). The pandemic has also been particularly problematic for the homeless, those suffering from food poverty and those living in high density environments. It is, thus, increasing social inequalities in cities. Less sustainable social practices have also emerged during the pandemic in cities (e.g. more car journeys and single-use plastic). These practices may become embedded, especially after a second wave of the disease, and will need to be addressed.

The European Commission's Green Deal to boost sustainable post-COVID-19 growth provides an opportunity to reinforce sustainable practices, create sustainable jobs and reduce social inequalities in cities, whilst regenerating urban ecosystems and improving the health of urban inhabitants. Adopting a *circular development pathway* could deliver these goals.

A circular development pathway

A circular development pathway is an approach to development which alters cities' systems of provision – urban infrastructure, processes and activities – to enable the circular practices of inhabitants to develop. Three actions are implemented in combination to deliver circular development: resource looping, adaptation and ecological regeneration (Williams, 2020; Williams, in press).

Looping

Circular development encourages resource looping (reuse, recycling and recovery) through the provision of infrastructural systems (e.g. grey-water recycling systems, recyclable infrastructure,) and the introduction of new processes (e.g. material flow monitoring, conversion of waste-water to feedstock, food reuse schemes). Increasing the efficient use of resources locally (e.g. water, food, materials, land and buildings) reduces waste, increases resource security, and creates sustainable economic opportunities and jobs in cities.

Adaptation

Circular development produces adaptable cities, offering space to transform (e.g. pop-up spaces) and grow, and infrastructure (e.g. scalable, movable, refittable, flexible) that evolves with changing needs. It also introduces processes (e.g. collaborative planning, co-provision) which support learning within communities and encourage self-organisation. This enables communities to innovate and adapt to changing contexts. The resulting flexibility will help infrastructure and communities transform to meet the new demands placed on them by COVID-19.
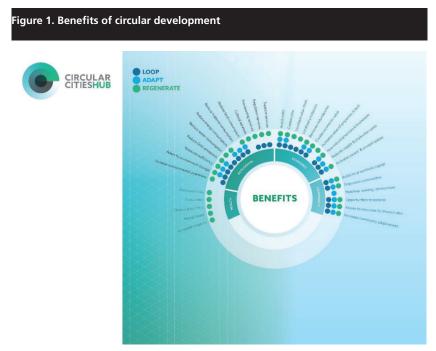
Ecological regeneration

Circular development also protects and enhances urban ecosystem services, which reinforce natural cycles and improve the health of those living in cities. Ecologically regenerative actions are often operationalised through the inclusion of green and blue infrastructure in the urban fabric, the management of urban ecosystems (e.g. water management,

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conservation, farming, forestry) and bioremediation (e.g. phytoremediation of contaminated urban sites). Green spaces encourage active modes of transport, external socialising and recreation. These spaces will be essential for urban inhabitants to recover post-COVID-19 and build healthy resilience.

Pre-pandemic, a variety of circular development pathways were being adopted by cities across Europe (Williams, in press). Some cities are now turning to circular systems to formulate post-COVID-19 recovery strategies that are in alignment with their sustainability and climate goals. For example, Amsterdam has made its Circular Strategy 2020–25 the central pillar of its recovery plan. Research conducted by the author shows multiple environmental, health, community and economic benefits gained by adopting a circular approach to urban development (Williams, in press).

Some are particularly pertinent to the post-COVID-19 recovery of cities (Figure 1). For example, ecological regeneration produces mental and physical health benefits. Ecological regeneration and looping actions can increase local resource sufficiency (I focus in this paper on food systems). All three actions used together can activate vacant sites and unused spaces, and create new economic sectors and job opportunities. Based on these findings, the remainder of this brief outlines four policy recommendations.

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Figure 1. Benefits of circular development

Source: Williams (in Press), produced by Draught Vision Ltd.

1. Increase the provision of accessible and connected green spaces in cities

The provision of accessible and connected green infrastructure should be encouraged in cities post-COVID-19. This will help improve air quality, reduce heat stress and noise pollution, and create spaces for

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recreation and relaxation. It will have significant mental and physical health benefits, which could help post-COVID-19 recovery. It could also increase the resilience of the urban population to future pandemics by addressing the health co-morbidities that increase mortality rates amongst those with the disease (i.e. respiratory, cardiac problems, type II diabetes and obesity) (Hallegatte et al., 2011).

Green spaces must be accessible (within 1 km of people's homes) to have a significant effect on the mental and physical health of urban inhabitants (Maas et al., 2009). This is particularly important for children, the elderly and people from lower socio-economic groups, who spend the most time close to home. Currently, 44% of Europe's urban population lives within 300m of a public park (Zulian et al., 2018). However, there is still a great deal of variation in access to green space across socio-economic groups. The elderly, poor and children often have the worst access. Increasing access to these vulnerable groups should be a priority.

The provision of green infrastructure can also encourage active lifestyles amongst the wider population (Janssen and Rosu, 2015). During the pandemic there has been a rise in the numbers walking and cycling in cities. The creation of green corridors with integrated active transport networks would help reinforce this practice. Active lifestyles reduce obesity, levels of stress and improve the mental health of city dwellers, helping to mitigate acute problems produced by the pandemic while increasing long-term resilience. The connectedness of green space is important for encouraging active transport. Green corridors are also beneficial for regulating the urban climate (for cooling and water management) and increasing biodiversity.

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Table 1. Policies, examples and levers

Policy	Loop	Adapt	Regenerate	Examples		Levers for implementation
Increase provision of green accessible and connected green space			✓	Green corridors	Barcelona, London, Lisbon, Vienna	Spatial plans, building code, temporary planning permissions, web platforms linking landowners with urban farmers, release of municipally owned land, co-provision of green infrastructure; funding for skills training
				Urban Forests	Vienna, Berlin	
				Urban farming (commercial and community)	Lisbon, Paris, London, Vienna, Berlin	
				Green Roofs and living walls	Paris, Amsterdam	
				Pocket parks	Amsterdam, Vienna	
Increase food security for the urban poor	✓			Food reuse schemes – food banks, community kitchens, solidarity cafes, apps	Freegan Pony and solidarity fridges (Paris); Brixton Pound Café and social supermarkets (London); Real Junk Food Project (Berlin); "Too good to go" app and "Taste before you waste" (Amsterdam)	Legislation to ensure supply; subsidies for actors to produce meals and redistribute food to the urban poor.
			✓	Encourage urban farming amongst low income groups	BENE, Berlin; Hortas Urbanas, Lisbon; Sustain's "Roots to Work" programme, London	Public funding for skills training and provision of resources (plants, equipment); release of municipally owned land; use the spatial plan to require the inclusion of space for community farming in new housing development.
Create adaptive and recyclable urban environments	✓			Recyclable infrastructure	Amsterdam, Berlin (Re4 Project)	Circular tendering and land issue, data platforms for monitoring and exchange, space for materials storage.
	✓			Circular construction processes	Amsterdam, Paris, London, Glasgow	Circular tendering and land issue, data platforms for monitoring and exchange, space for materials storage.
	✓	✓		Recyclable pop-up buildings	Ladywell (London)	Temporary planning permissions; temporary leases; temporary space brokers; municipally owned land;
	✓	✓		Adaptive reuse	Les Grand Voisins & Cinq Toits (Paris); HAWSE project (London)	Temporary planning permissions; temporary leases; temporary space brokers; municipally owned land; design competitions (e.g. Paris Reinvented)
Encourage circular economic activities	✓			Circular industries	Circular Construction & Bioeconomy in Amsterdam	Spatial plan, and circular tendering with land issue, private investment and public subsidies, data platforms.
			✓	Urban farming, forestry, conservation	Commercial urban farming (e.g. ParisCulteurs); Lisbon urban farms. London, Vienna Urban Forests and Vertical Urban Forest Milan	Spatial plan, web platforms linking landowners with user groups, release of municipally owned land, public procurement, public investment.
		✓		Pop-up economy	Pop-up Berlin, Go-PopUp, Popplaces.com, My Pop Corner	Vacant properties/land; temporary permissions and leases; data platforms and brokers, private investment.
	✓			Circular Businesses	Circular Innovation Programme (Amsterdam), LWARB Accelerator Programme (London), Paris City of Makers.	Vacant properties/land; temporary permissions and leases; data platforms and brokers, public procurement, private and public investment.

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The designation of space for green infrastructure in spatial plans, underpinned by local policies (e.g. the Parisculteurs initiative) and public funding for ongoing maintenance are needed (Table 1). Managing and maintaining green infrastructure could provide employment opportunities in cities, across a range of skills. However, a lack of financial resources within some municipalities could prove problematic. Here, greater engagement of communities and businesses in the co-provision of green infrastructure in residential and commercial spaces could begin to help address this problem.

2. Increase urban food security for vulnerable groups

For the urban poor, the pandemic has exacerbated food insecurity. This could be addressed through systems of food waste reuse and urban food production. Structures for recovering and redistributing food (reuse – looping) tend to be informal and reliant on donations and volunteers. During the pandemic many failed. If food systems are to become more resilient to face future shocks, this informality will need to be addressed. More robust systems for donation, collection and distribution will be required.

Paris is at the vanguard of food reuse schemes. French legislation has made it illegal for supermarkets and food markets to dispose of good quality products. This legislative framework is essential to formalise the food supply. Not-for-profit organisations redistribute the food. In Paris, this has produced a variety of projects including solidarity cafes (e.g. Freegan Pony), food banks, community kitchens and solidarity fridges (e.g. Les Frigos Solidaires). Similar projects have emerged across other European cities (Table 1). However, more robust systems for redistributing food are needed during pandemics, which will require funding.

Urban food security might also be addressed by urban farming. During the pandemic there was a rise in Parisians buying food directly from commercial urban farmers. Recently, Paris adopted a city-regional approach to food production, enabled by the regional plan and Parisculteurs initiative. The latter aimed to increase roof-top farming, using a portal connecting landowners with farmers. However, farming is still very limited in Paris. It is allowed only on small, temporary, interstitial sites (Demailly and Darly, 2017). Community farms also compete with commercial ones, reducing access to fresh food for the urban poor.

In contrast, Lisbon has supported urban agriculture since Portugal's economic crisis of 2010–14. It has focussed particularly on the unemployed, elderly and low-income groups through the designation of municipally owned plots for community farming. The municipality also supported informal farms that were already on municipally owned land. This approach has helped to increase food security amongst the most vulnerable groups in the city, but more support is needed, such as land allocation through spatial plans, skills training and funding for vulnerable groups (to purchase tools and plants).

A more formalised approach to food security comes from Amsterdam. The Power-to-Protein project extracts ammonia from sewage to create

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high-value proteins. These are then converted to food and feedstock. It has been estimated that the system could provide residents in Amsterdam with 35% of their primary protein requirement (Van der Hoek, et al., 2016). This seems a very neat solution both to increasing food security and valorising waste. However, indications of the transfer of SARS-CoV disease from wastewater could make this approach risky (Bolger et al., 2020).

Legal frameworks for food reuse/recycling, funding for distribution and to support farming amongst vulnerable groups, along with the allocation of space in plans for urban farming, food storage, recycling and redistribution centres will be required to provide more robust urban food systems.

3. Create adaptive and recyclable urban environments

The pandemic has bought about changes in economic activities within cities. This may produce some redundancy in existing urban infrastructure, leading to wasted resources and associated greenhouse gas emissions. Ensuring new infrastructure is recyclable will help to address the problem.

A systematic approach to recycling the urban fabric is being adopted in Amsterdam. The municipality has introduced circular tendering and land issue, which encourage construction companies to produce recyclable buildings. In Berlin, the Re4 project is creating adaptable/recyclable buildings with intelligent structures and flexible floor plans. The buildings also use prefabricated, reversible elements that are derived from recycled materials.

In Amsterdam, circular tendering encourages construction companies to source recycled materials for building. The logistics of adopting such an approach is enabled in the city-region by the Circle Scan (a system that monitors the flows of construction materials), PUMA (a database which identifies the location of precious metals in existing buildings) and logistics centres (where recycled construction materials can be stored). In combination these instruments facilitate circular construction.

It is important that the urban fabric can respond quickly to the changing demands placed on it. For example, during the pandemic there was an urgent need to accommodate the homeless. Recyclable, pop-up buildings provide one option (e.g. the Place/Ladywell, London). Pop-up, modular constructions limit waste and, being mobile, can be moved between temporary sites.

In existing building stock, adaptive reuse may offer a more viable way to avoid redundancy. A more systematic approach to temporary, adaptive reuse is emerging in European cities, which should be encouraged. Brokers and websites enabling the temporary reuse of buildings and sites have emerged (e.g. in Paris and London). Temporary permissions have also increased support for the practice amongst building and site owners, who now see the economic advantages. Design competitions for the adaptive reuse of vacant buildings have also been used to support the practice (e.g. Paris Reinvented).

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Reusing empty buildings could help address acute accommodation problems exacerbated by the pandemic. For example, empty youth hostels and hotels were used to accommodate the homeless in London and Berlin. Empty buildings can also be re-purposed to provide more permanent accommodation. For example, empty garages on housing estates can be used to provide pop-up bedsits for the chronically homeless (HAWSE in east London).

Ensuring new infrastructure is recyclable and adaptable (using design codes, tenders and land allocation) and developing systems to enable the adaptive reuse (e.g. temporary planning permissions) and recycling of existing stock (e.g. data platforms) is essential to avoid redundancies and waste in post-pandemic cities. It also enables cities to adjust quickly to the new problems resulting from pandemics.

4. Encourage circular activities to rebuild the urban economy

During the pandemic more people began to work from home and shop online. If these trends continue post-pandemic the impact on commercial, retail and hospitality activities in cities will result in a reconfiguration of space. The pandemic may also reduce land and property speculation in cities, which would decrease values, enabling lower-value uses (e.g. circular industries, green infrastructure, pop-up activities) to emerge. COVID-19 could, thus, provide an opportunity to begin on a new circular development path. Municipalities will need to identify space for these activities through their spatial plans. Instruments like temporary permissions and circular tendering with land issue could also aid in implementation.

Businesses and industries adopting circular principles had already emerged in cities pre-pandemic. It is important that they are supported post-pandemic where possible through private investment. However, public subsidies (perhaps through the investment of public pension funds) and procurement could also be used to support circular businesses and industries. Certainly, long-term financial support will be required for the circular transformation to be successful, possibly under-pinned by the European Green Deal.

Circular industrial ecologies could emerge in such an environment. However, it will be dependent on the proximity of industrial actors, as resource loops must be closed locally if they are to be economical. Spatial plans could allocate land within the city-region for circular industrial activities to enable this. This would have significant economic and environmental benefits. It is estimated that circular construction in Amsterdam could produce 700 jobs and be worth €85m per year. The bio-economy could generate an additional 12,000 jobs and €150m per year. They would also reduce CO_2 emissions by 500,000 and 800,000 tonnes annually, respectively (Bastein et al., 2016).

The availability of cheaper land also enables the integration of green infrastructure and productive landscapes into the urban fabric. This offers diverse employment opportunities, reflecting the range of eco-system services: forestry, conservation, agriculture, park management, water management, carbon sequestration, recreation, health and tour-

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ism (ten Brink et al., 2017). The pop-up economy is also likely to flourish in these conditions. For example, the pop-up uses that appeared on vacant sites and in buildings in Berlin underpinned the "creative city" strategy for economic regeneration. It has been estimated that pop-up activities are worth more than to £2.3 billion to the UK economy and employ over 26,000 people in the sector. The temporary nature of pop-up activities also increases their ability to adapt to shocks.

Finally, empty space could be converted to provide affordable accommodation in cities. This could help to tackle social inequalities and homelessness. It could also encourage local commute patterns, if new employment opportunities are provided alongside affordable housing. This approach should encourage people to walk or cycle to work, thus addressing the rise in car-use and the need to reduce public transport ridership during the pandemic.

Investment is needed to support the growth of the new sectors that underpin circular development. This will produce a range of jobs requiring a variety of skill sets. Training will also therefore be required. Spatial planning can intervene in markets to enable low-value activities that are central to circular development to emerge.

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