



Sewers and Urbanisation in Jordan: Key Findings for Policymakers

Jack Duncan, Salma Shaheen, Ghina Kheir

Key messages:

- *Sewer networks are economic infrastructure as well as public health systems.*
- *Expanding sewer coverage increases urban density, productivity, and access to jobs.*
- *In Jordan, only 66% of residents are connected to sewerage; transport inefficiencies cost 6% of GDP annually.*
- *Research shows that a 1% increase in sewer access leads to a 6% increase in neighbourhood density.*

Why It Matters for Jordan:

- *Sewer expansion can help deliver on national strategies: (1) Economic Modernisation Vision: one million new jobs by 2033. (2) National Water Strategy (2023–2040): 80% sewerage coverage by 2030.*
- *In Zarqa, universal sewer access within 4km of the centre could raise central population by 35% and boost productivity by 1.75%.*

Policy Takeaways:

- *Prioritise sewer expansion in urban centres and job hubs to maximise productivity and wage gains.*
- *View sewer investment as a complement to transport policy, reducing reliance on costly infrastructure projects.*
- *Implementation will require targeted financing, municipal coordination, and sustainable wastewater management.*

This is a summarised version of the policy brief; the full policy brief can be found [here](#).

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The Urbanisation Challenge

In many developing countries, rural residents can often double or triple their incomes by moving to cities. Within cities, people often realise large increases in their income by moving closer to the city centre, where higher-paying formal sector jobs are available. And yet, the urban share of the population in many developing countries is below that of more developed countries.

One possibility is that cities in developing countries are so polluted and congested that doubling or tripling income is insufficient to compensate for the forgone pleasures of rural life. According to the World Bank, about one-third of the residents of cities in developing countries lack access to even rudimentary sanitation facilities, and about the same amount live in informal settlements. Given the high densities common in cities in developing countries, it requires only a little imagination to see why people might rather stay in the countryside.

The Challenge in Jordan

Jordan presents a distinctive urbanisation context, with 85% of its population already urban—well above most developing countries. However, the country faces acute infrastructure constraints that limit the benefits of urban living: transport inefficiencies cost \$3 billion annually (6% of GDP), whilst only 66% of residents are connected to sewerage systems. These challenges directly impact Jordan's economic development goals, as both the National Water Strategy (2023-2040) and Economic Modernisation Vision prioritise urban infrastructure improvements to create sustainable, productive cities.

Sewers as urban development

Recent IGC research asks whether improving access to residential sanitary sewers can allow cities in developing countries to accommodate more people by making higher population densities more tolerable. The researchers investigated this question using a novel method that compares neighbourhoods on opposite sides of drainage basin divides across 92 cities in developing countries, including Jordan.

The study finds that people are willing to live at much higher densities in neighbourhoods with sewer access than without. Providing sewer access for an extra 1% of neighbourhood households causes about a 6% increase in neighbourhood population density.

This blog post discusses why this matters, the implications of these results for Jordan, and what it means for sewers in the context of other urban infrastructure investments.



Benefits of Sewers: Beyond Public Health

It is well known that sewers primarily began as a response to the poor public health of dense urban environments. Even today, there is evidence that sewers, particularly in combination with better water supplies, reduce infant mortality. Studies find that water and sewer access reduced infant mortality by about 25%, with some interventions showing even larger effects.

However, in addition to the public health benefit, this new research demonstrates that sewer access leads to much higher urban densities. These higher densities create three important economic benefits that haven't been fully considered before:

- **By increasing density, sewers allow more people to live in cities access urban jobs.** When people move from rural areas to cities, they typically double their income. By expanding sewers more residents can boost their incomes by moving.
- **Denser cities make workers more productive.** According to research, for every 10% increase in density, wages increase by approximately 0.5%. This productivity gain applies to all city residents, not just those who have moved.
- **Higher-paying, formal sector jobs tend to be located in the centre of the city.** By allowing more people to live within walking distance of the city centre, sewer networks increase access to central jobs, just as transit infrastructure does. This creates higher wages and more tax revenue.

In short, sewers enable higher densities in the centre of cities, giving more people access to higher paying jobs, and increasing the productivity of all workers in the city centre, leading to higher wages for workers and more tax revenue for government.

Results

The researchers estimate that providing sewer access to an additional 1% of households in a census tract causes an increase in tract population density of about 6%. They conduct two exercises to demonstrate how important this effect is.

In the first, they provide sewer access to an additional 1% of households living in the densest parts of the city. The density increase this creates is almost the same size as the density decrease that occurs when a major highway is built through a US city (highways reduce density by making it easier to live further from the centre).

In the second exercise, they imagine providing universal sewer access to all neighbourhoods within walking distance (4km) of the city centre. The resulting increase in central population means that, in many cities, about the same share of city population gains walking access to the central city as gained access to central Bogotá because of the Transmilenio BRT system, one of the most successful BRT systems in the world.



Results for Jordan

The researchers performed these same two calculations for each of the Jordanian cities in their data:

Zarqa (Population: 598,000)

- Currently, 86% of central basin households have sewer access
- Adding sewer access to 1% more households would increase population density by 8%
- Providing universal sewer access within 4km of the city centre would increase the central population by 35%

Al-Quwaysimah (Population: 269,000)

- Currently, 80% of central basin households have sewer access
- Due to lower current coverage, this city shows even larger potential benefits from sewer expansion

Economic Impact

Using the agglomeration benefit alone, the 8% density increase from modest sewer expansion in Zarqa would generate productivity gains of approximately 0.4% for all residents in the affected areas. For universal central access, the 35% population increase would generate productivity gains of approximately 1.75% for all central residents. This would be in addition to any benefits of people moving from lower paying sectors.

Implications for Urban Policy

Investments in more extensive sewer networks are almost surely beneficial, but they preclude other investments. In practice, the benefits of improvements to the sewer network will vary with the extent of the existing network and with the population density of sewered and unsewered areas in each city.

Beyond their effect on public health, sewers cause increases in urban density that facilitate movement to more productive employment and generate agglomeration benefits. To the extent that central residential areas are not completely sewered, improvements in central sewer access can serve much the same purpose as transit infrastructure.



Conclusion

In Jordan's context, this research demonstrates that sewer investment offers a path to address multiple policy challenges simultaneously. As the country works towards the National Water Strategy's target of 80% sewerage coverage by 2030, improved sewerage access can reduce the country's extreme transport inefficiency costs whilst supporting the Economic Modernisation Vision's goal of creating one million new employment opportunities by 2033. Rather than viewing sewers solely as public health infrastructure, policymakers should recognise their role in economic development - bringing more workers within walking distance of urban job centres and reducing the need for costly transport investments.

The research also suggests that strategic placement of sewer infrastructure can enhance these benefits: expanding coverage near city centres and major employment areas may generate greater agglomeration effects and productivity gains than expanding coverage uniformly across all areas.

Given Jordan's constrained fiscal resources, this should revise upwards the priority given to sewer access by policymakers.

The full research project for **Sewers and informal settlements in cities in developing countries** can be found [here](#).