

## **MultipliCity and SDGs: Community Management and Engagement Platform**

**Gabriela Fernandez**, Ph.D., Politecnico di Milano, Department of Architecture and Urban Studies, Milan, Italy; Co-founder, Metabolism of Cities, Brussels, Belgium, (corresponding author)

[gabriela.fernandez@polimi.it](mailto:gabriela.fernandez@polimi.it) | [www.metabolismofcities.org](http://www.metabolismofcities.org)

+39 (334) 718. 3462

Via Bonardi 3,

Milan, Italy 20133

**Paul Hoekman**, Co-founder, Metabolism of Cities, Brussels, Belgium

**Carolyn Bellstedt**, Metabolism of Cities, Brussels, Belgium

### **Abstract**

Metabolism of Cities (MOC) is an open source website with the aim to group together tools, publications, and data related to urban metabolism. Urban metabolism studies vary widely in terms of scope, methodology, choice of indicators, and research aims. Their results are published in a variety of formats such as scientific papers, administrative reports, and technical publications. This variety of scopes and formats makes it difficult to compare urban metabolism studies and identify urban metabolic patterns across different cities.

Through the MultipliCity Project, MOC seeks to develop an online stocks and flows data gathering and visualization open source urban metabolism platform, in which a great number of urban metabolism publications, data, visualizations etc. are collected to examine patterns and trends in urban resource use, waste generation and pollution across the globe. MultipliCity enables stakeholders to find metabolic data for their city and compare with other case studies for which data is available (for the same metabolic flow, year, region, etc.) in order to put in perspective and contrast data across cities. MOC makes sustainability of cities a key concern in the field of city planning, sustainable development, ecology and shares information and tools around urban metabolism with anyone interested in this field. By indexing and cataloguing publications from many journals, technical reports, books, by explaining the basics of urban metabolism, and by centralizing figures and research results into one central hub, this platform aims to provide an open, community-led resource that can help save time and encourage interest for those (citizens, academia, policymakers, urban professionals and industries) looking into understanding more about the metabolism of cities through data sharing.

A key component of MultipliCity is its crowdsourcing nature. The online stocks and flows data gathering and visualization platform was developed so that information can be uploaded by academics, students, city officials, and residents alike. This distributes the workload - in "traditional" research settings each researcher would engage in data collection with little outside assistance - and it also creates a greater sense of involvement and collaboration for all the stakeholders involved. This will allow a community to collect and use data in a way that's best for them, based on their evolving needs, in a process that emphasizes collaboration and advocate for the change they want to see. Metabolism of Cities has organized a number of "data-thons," which are data gathering and uploading events (generally half- or full-day events), often organized in collaboration with local community groups or universities. During these events, participants are

taught about urban metabolism and invited to find environment, social and economic data, photos, maps, reports, and other useful pieces of information that are available on their city of choice. MOC does not hold rigid guidelines, nor does one size fit all solutions. Instead offer practical, adaptable mechanisms and instruments, which address various development challenges. The resources empower local actors and channel global goals into local actions.

The search for the most appropriate tools and strategies for localizing the SDGs is critical to the design, implementation, review and success of the 2030 Agenda for Sustainable Development (UN, 2015). The MultipliCity platform focus is to be simple, providing applicable guidance in changing environments through raising awareness, advocate to create an enabling environment for the localization process, to support and ensure the SDGs integration in subnational strategies and plans among local and national actors. MultipliCity provides practical direction to stakeholders in assessing, planning, implementing and monitoring local policies, in accordance with the SDGs attainment strategies. The goal is to facilitate an articulated set of tools to support local stakeholders and their networks, under the leadership of local, regional, and national governments. By pointing out the best practices that are reliable and replicable in order to efficiently design, implement, and monitor policies through data management and engagement. Results suggest that, regardless of the institutional structure and data sharing within a city, participation in some interlocal networks promotes community wide sustainability initiatives.

## **Introduction**

Today, many local governments are promoting sustainability initiatives, ranging from progressive urban design, and sustainable development to climate protection, because of possible co-benefits, such as cost savings, associated with sustainability. To measure the transition towards a circular and sustainable economy, it is first necessary to measure all resource use and waste production flows of a city. A better knowledge of these flows can help propose more relevant policies and inform whether current initiatives have an impact on this transition. However, gathering reliable data is one of the most important and time-consuming activities. This not only limits research activities, but it also creates a significant threshold for stakeholders in using data on a more practical level. However, urban metabolism provides an incredibly useful lens to understand urban sustainability challenges, as it looks at a city as a system, trying to understand the linkages between different flows of the city. The inconsistency, time consuming, difficult to assess, and scattered nature of data furthermore complicate the uptake of urban metabolism tools and practices.

This study proposes the use of crowdsourcing as a possible mechanism to involve a large group of stakeholders in sharing already existing data. The MultipliCity platform aims to develop a global online community management hub that centralizes, visualizes, stores, and presents datasets related to urban resource use and waste flows (see Figure 1). The goal of this process is to bring together industry, government partners, academia, and community members to develop a framework to distil complex ideas and make compromises to contribute to a shared vision for the city. To collaborate on systematically improving the sustainability of cities, by creating and sharing urban metabolism knowledge and accelerating its implementation in policy and practice, through creating knowledge, sharing knowledge, applying knowledge and fostering a community.

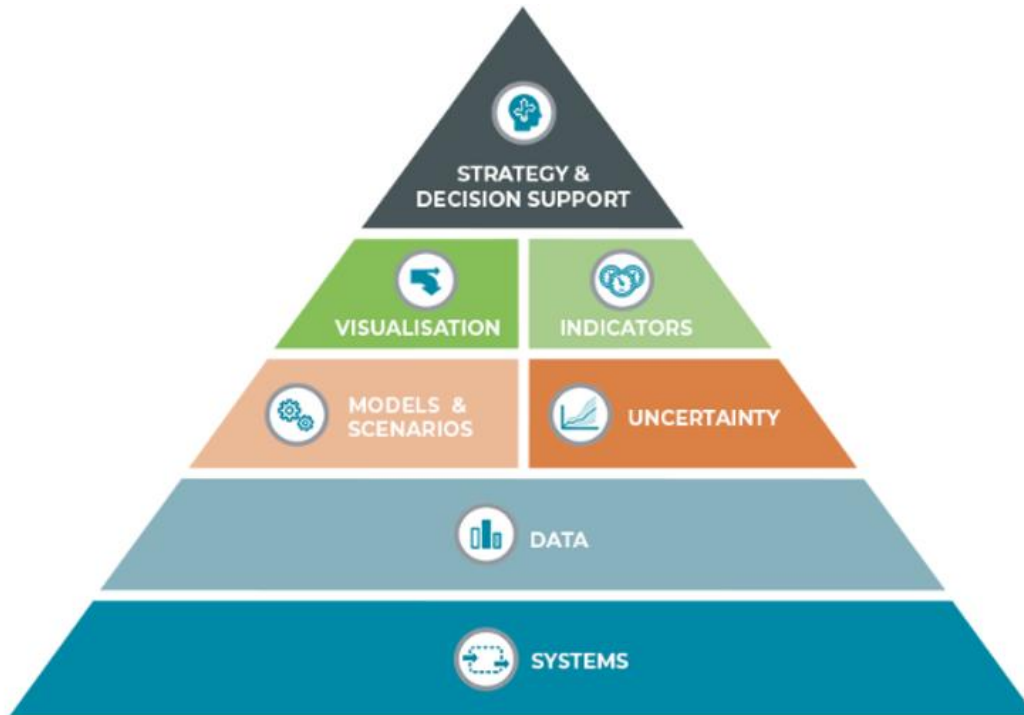


Figure 1. Strategies for sustainable resource management (MinFuture.eu)

### **SDGs and data sharing**

Amplifying citizens voices through better use of data sharing. The open data movement, the rise of crowdsourcing, new ICTs for data collection, and the explosion in the availability of big data, together with the emergence of artificial intelligence and the Internet of things is already transforming society (UN 2016). New sources of data, new technologies, and new analytical approaches, if applied responsibly, can enable more agile, efficient and evidence-based decision-making and can better measure progress on the United Nations Sustainable Development Goals (SDGs) in a way that is both inclusive and fair (UN 2015). Civic engagement is manifest both in the development of the sustainability program and as an explicit goal of the sustainability program. Crowdsourcing uses the collective wisdom of a crowd to achieve a solution to a problem that affects the crowd (visualizing tools on cities). The next section includes the MultipliCity project to develop awareness on resource efficiency in cities.

### **MultipliCity platform**

The MultipliCity platform is designed and developed by Metabolism of Cities (MOC) with the aim to group together tools, publications, visualizations, and data related to urban metabolism. MultipliCity is an innovative initiative that is being developed to centralize, visualize, and present datasets related to urban resource use and requirements. MultipliCity promotes awareness of the opportunities that sharing data presents for sustainable development and humanitarian action, develops high-impact analytics solutions for UN and government partners through its network of data science, and works to lower barriers to adoption and scaling. Figure 2 shows MultipliCity platform characteristics. The online stocks and flows data gathering and visualization platform is composed of a network of local volunteers (students, researchers, city officials, citizens, etc.)

which assists with the identification of relevant datasets, and MultipliCity takes care of indexing, processing, and standardizing the datasets. This allows for a large collection of data to become available, vastly improving access and allowing for a focused effort on analysis and experimentation, rather than on data collection.

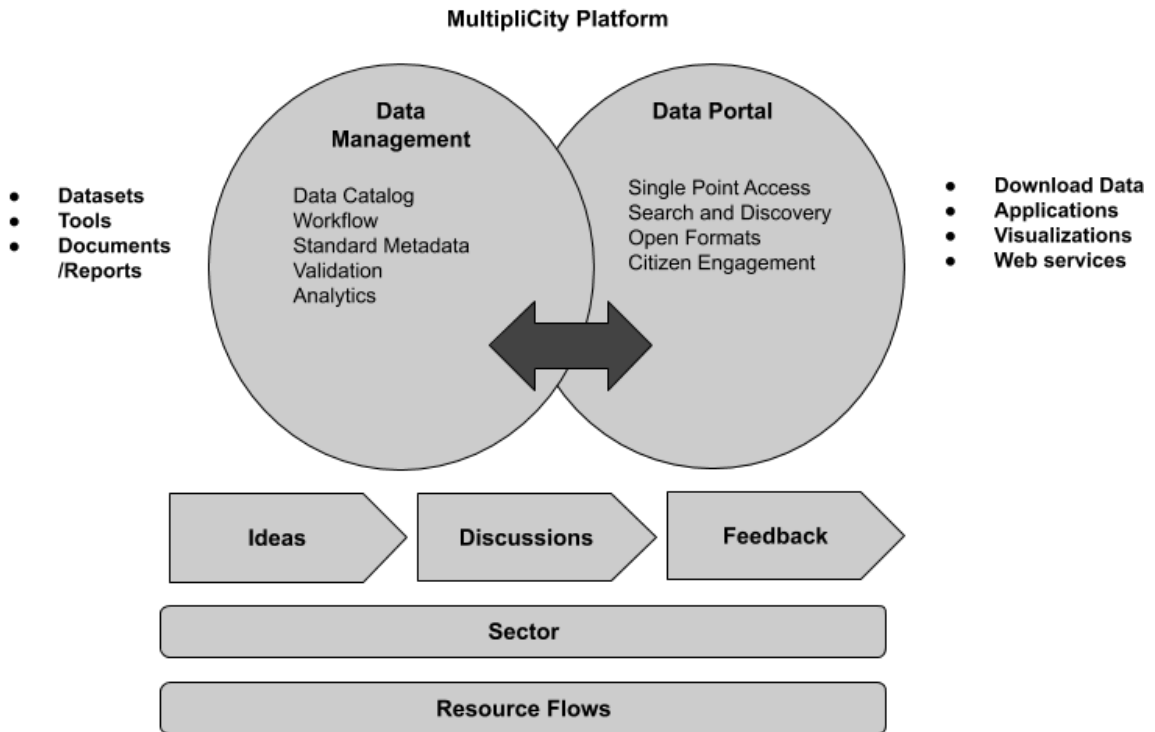


Figure 2. MultipliCity characteristics

Broad public participation leads to greater legitimization and acceptance of public decisions, greater transparency, and efficiency in public expenditures, and greater citizen satisfaction. Recent research, suggests that inclusion of stakeholders with varied interests and different backgrounds makes a plan comprehensive, acceptable, and more easily implementable. Researchers have long emphasized the importance of public participation in the planning process as a critical component to the successful implementation of any plan. Figure 3 and Figure 4, illustrates a screenshot of the MultipliCity platform - Cape Town's user friendly, community driven, resource flows using various visualizations and academic rigor as a potential decision making tool.

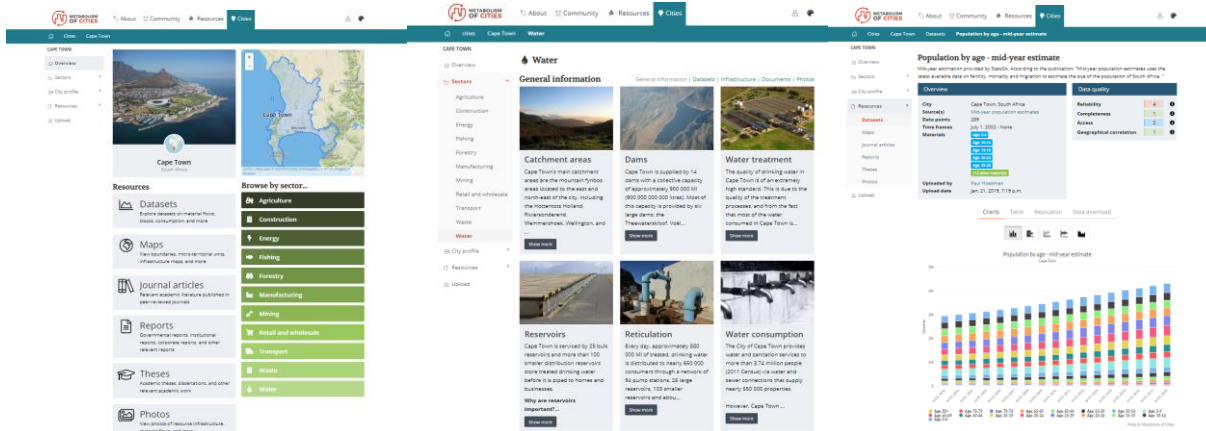


Figure 3. MultipliCity platform - Cape Town, South Africa resource flow data

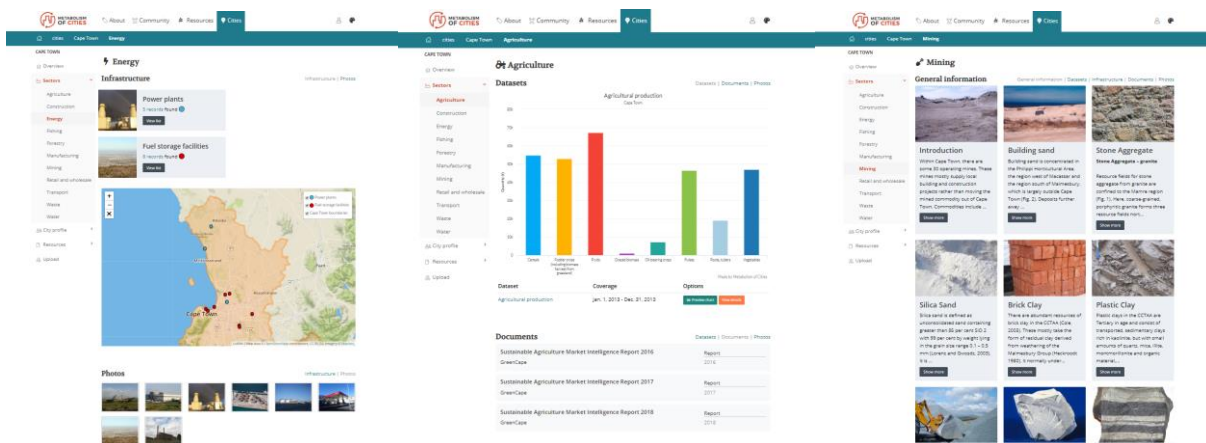


Figure 4. MultipliCity platform - Cape Town, South Africa material flows and geographic data

## Crowdsourcing

The MultipliCity Project, seeks to develop an open source online stocks and flows data gathering and visualization platform. In addition to visualizations the platform provides a great number of urban metabolism publications, data, tools, research, videos, etc. are collected to examine patterns and trends in urban resource use, waste generation and pollution across the globe. MultipliCity enables stakeholders to find metabolic data for their city and compare with other case studies for which data is available (for the same metabolic flow, year, region, etc.) in order to put in perspective and contrast data across cities. MOC makes sustainability of cities a key concern in the field of city planning, sustainable development, ecology and shares information and tools around urban metabolism with anyone interested in this field. By indexing and cataloguing publications from many journals, technical reports, books, by explaining the basics of urban metabolism, and by centralizing figures and research results into one central hub, this platform aims to provide an open, community-led resource that can help save time and encourage interest for those (citizens, academia, policymakers, urban professionals and industries) looking into understanding more about the metabolism of cities through data sharing.

The platform was developed so that information can be uploaded by academics, students, city officials, and residents alike. This distributes the workload - in “traditional” research settings each researcher would engage in data collection with little outside assistance - and it also creates a greater sense of involvement and collaboration for all the stakeholders involved. This will allow a community to collect and use data in a way that’s best for them, based on their evolving needs, in a process that emphasizes collaboration and advocate for the change they want to see. Metabolism of Cities has organized a number of “data-thons,” which are data gathering and uploading events (generally half- or full-day events), often organized in collaboration with local community groups or universities. During these events, participants are taught about urban metabolism and invited to find environment, social and economic data, photos, maps, reports, and other useful pieces of information that are available on their city of choice. MOC does not hold rigid guidelines, nor does one size fit all solutions. Instead offer practical, adaptable mechanisms and instruments, which address various development challenges. The resources empower local actors and channel global goals into local actions.

The search for the most appropriate tools and strategies for localizing the SDGs is critical to the design, implementation, review and success of the 2030 Agenda for Sustainable Development. The platform focus is to be simple, providing applicable guidance in changing environments through raising awareness, advocate to create an enabling environment for the localization process, to support and ensure the SDGs integration in subnational strategies and plans among local and national actors. MultipliCity provides practical direction to stakeholders in assessing, planning, implementing and monitoring local policies, in accordance with the SDGs attainment strategies. The goal is to facilitate an articulated set of tools to support local stakeholders and their networks, under the leadership of local, regional, and national governments. By pointing out the best practices that are reliable and replicable in order to efficiently design, implement, and monitor policies through data management and engagement.

### **Discussion and Conclusion**

More than ever, community engagement is highly needed in cities to provide individuals an opportunity to influence and even define public life through data sharing. It can help incorporate public concerns, needs, and values into the decision making process. As a result, there lies an importance to localize more sustainable development policies within city agenda. MultipliCity can be used as a practical application crowdsourcing tool and data sharing community. Our research builds on knowledge about stakeholder engagement and participatory processes which has demonstrated the importance of high quality, careful engagement that is flexible, iterative and sensitive to context. The platform demonstrate that community champions with their deep understanding of both community and environmental issues can act as a useful bridge between industry professionals and the wider community and suggest innovative solutions for community engagement and action. Future research, includes the evaluation of the crowdsourcing platform.

## References

MinFuture. 2019. Global material flows and demand-supply forecasting for mineral strategies. Retrieved from: <https://minfuture.eu/>

United Nations Sustainable Development Goals. 2015. Paris Agreement. Paris, France. Retrieved from: <https://sustainabledevelopment.un.org/?menu=1300>

United Nations. 2016. Big Data for Sustainable Development. Retrieved from: <https://www.un.org/en/sections/issues-depth/big-data-sustainable-development/index.html>