PARTNERING WITH NON-STATE ACTORS TO GOVERN NEXUS PROBLEMS AND PROMOTE CLIMATE ACTION IN SMART CITIES AND REGIONS

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ABSTRACT: While uncertainty remains about what a smart city "is," significant advances have been made in the technologies and applications that will underpin their roll out. In this paper, we argue that a smart city or region is not truly "smart" unless it places sustainability and quality of life at the center of the planning, governance, and innovation processes. The public sector lacks the resources to operate at this nexus alone, yet legitimacy challenges must be overcome to effectively draw on the capacities of non-state actors. By focusing on the Greater Phoenix Smart Region Consortium (The Connective), established in March 2019, we illustrate the role non-state actors play within the smart cities/regions space and highlight new types of partnerships to address climate change as part of their smart city vision. The regional and multi-stakeholder, participatory approach of The Connective offers lessons for advancing nexus governance in other jurisdictions.

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With projections from the United Nations that nearly seventy percent of the world's population may reside in urban settings by 2050, promoting sustainable development and human well-being will increasingly revolve around the capacities of local and regional governments.[1] Local governments can benefit in managing complex metropolitan zones with expanding populations in a changing

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1. U.N. Dep't of Econ. & Soc. Affs. Population Div., *World Urbanization Prospects: 2018 Update*, U.N. Doc. ST/ESA/SER.A/420, at 1–2 (2019), https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/files/documents/2020/Jan/un_2018_wup_report.pdf [https://perma.cc/JGC4-ZVHU].

climate through accessing and using good quality information to respond to evolving concerns across policy arenas. Meanwhile, emerging technologies have begun to enable municipalities to provide new public services and optimize existing ones by constructing physical and digital infrastructure and equipping it with tools to capture, store, aggregate, and process data.[2] These technological interventions can span numerous sectors and involve end uses from autonomous vehicles and smart intersections to smart streetlights and smart power grids.[3]

Substantial hype has developed around these "smart city technologies," although defining the core precepts of what makes a city "smart" is challenging and contested. The rise and contestation of smart city approaches has occurred in parallel with the growing need for cities to address nexus problems, or those governance challenges arising from (and because of) deeply interconnected sectors including water, energy, food, and climate change.[4] The deeply interconnected systems emerging from the nexus of these various sectors, stakeholders, and institutions create a complex and shifting policy environment that municipalities must grapple with as they govern.[5] Cities face urgent problems, especially in light of climate change and rapid urbanization. In turn, these problems add to growing pressures on the smart city discourse to consider not only what smart cities "are," but also who they are for and what they must do.[6]

In this Article, we argue that a smart city or region is not truly "smart" unless it places quality of life and sustainability at the center of the planning, innovation, and governance processes. However, the public sector may lack the resources and capacity to achieve this alone. Accordingly, local governments may benefit by cooperating with private, academic, and civil society entities to achieve public policy goals.[7] The next Parts provide context for smart city partnerships before turning to early lessons learned from pilot projects around the world regarding smart cities, sustainability, and outcomes in effectiveness and perceived legitimacy. Applying these lessons, we then turn to the Greater Phoenix Smart Region Consortium (the Connective) as a case study to illustrate the

2. *See, e.g.*, Rob Kitchin, *The Real-Time City? Big Data and Smart Urbanism*, 79 GEOJOURNAL 1 (2014); Andrea Zanella et al., *Internet of Things for Smart Cities*, 1 IEEE INTERNET THINGS J. 22 (2014).

3. *See* Zanella et al., *supra* note 2.

4. Morgan Bazilian et al., *Considering the Energy, Water and Food Nexus: Towards an Integrated Modelling Approach*, 39 ENERGY POL'Y 7896, 7986–87 (2011). *See generally* WORLD ECON. F., WATER SECURITY: THE WATER-FOOD-ENERGY-CLIMATE NEXUS (2011), https://www3.weforum.org/docs/WEF_WI_WaterSecurity_WaterFoodEnergyClimateNexus_2011.pdf [https://perma.cc/75R8-P36U].

5. *See* Xuemei Bai et al., *Six Research Priorities for Cities and Climate Change*, 555 NATURE 23 (2018); Nina Weitz et al., *Closing the Governance Gaps in the Water-Energy-Food Nexus: Insights from Integrative Governance*, 45 GLOB. ENV'T CHANGE 165, 165–66 (2017).

6. *See* BEN GREEN, THE SMART ENOUGH CITY: PUTTING TECHNOLOGY IN ITS PLACE TO RECLAIM OUR URBAN FUTURE (2019).

7. *See* Neil Gunningham, *Environmental Law, Regulation and Governance: Shifting Architectures*, 21 J. ENV'T L. 179, 201 (2009). *See generally* NEIL GUNNINGHAM & PETER GRABOSKY WITH DARREN SINCLAIR, SMART REGULATION: DESIGNING ENVIRONMENTAL POLICY (1998).

role non-state actors can play within the smart cities/regions space. Additionally, we will use this case study to highlight new types of partnerships to address climate change as part of their smart city vision.

I. NEXUS GOVERNANCE AND SMART CITY PARTNERSHIPS

The multidisciplinary roots of the smart city movement and contributions to its vision from diverse public, private, and civil society actors with varying interests likely drive much of the complexity. The idea of cities incorporating technology to enhance quality of life dates back over a century, though advances over the past two decades in affordable digital technologies and data availability have provided fertile ground for various visions of smarter cities.[8] Competing concepts of smart cities emphasize core elements such as the use of new technological tools for public services, local economies driven by entrepreneurship and innovation, renewed public participation in local government functions, or collaboration across urban sectors.[9] Increasingly, notions of smart cities have come to incorporate several of these elements, guided by more general principles of promoting equity, participation, and sustainability.[10]

Given this complexity, conceptualizing smart cities and regions requires recognizing them as interconnected technological, social, economic, and environmental systems.[11] Deploying technological interventions intended to render public services more efficient or effective without carefully considering these other elements can lead to poor outcomes or diminished legitimacy. The use of big data in smart cities offers a prominent example, as implementing methods to capture and use more data from residents can generate substantial privacy and security challenges. Therefore, "smartness"—as it is often conceived in terms of wielding cutting-edge digital technologies—is arguably not a normatively valuable goal in itself but merely the latest of many measures for localities to use in providing better services to their residents.[12] As local and regional governments begin to purchase smart city products or services from technology firms, policymakers should be attentive to resident safety, data privacy, existing inequities, and resilience and sustainability considerations, particularly in the context of seventeen sustainable development goals (SDGs) adopted by United Nations Member States in 2015.[13]

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8. *See generally* Margarita Angelidou, *Smart Cities: A Conjuncture of Four Forces*, CITIES, Sept. 2015, at 95. *See also* Joshi Sujata et al., *Developing Smart Cities: An Integrated Framework*, 93 PROCEDIA COMPUT. SCI. 902, 906 (2016).

9. Vito Albino et al., *Smart Cities: Definitions, Dimensions, Performance, and Initiatives*, J. URB. TECH.. Jan. 2015, at 3, 4–10.

10. *See* Anu Ramaswami et al., *Meta-Principles for Developing Smart, Sustainable, and Healthy Cities*, 352 SCI. 940, 941–43 (2016).

11. *See* Robert Goodspeed, *Smart Cities: Moving Beyond Urban Cybernetics to Tackle Wicked Problems*, 8 CAMBRIDGE J. REGIONS ECON. & SOC'Y 79, 83 (2015).

12. *See* GREEN, *supra* note 6, at 1–2.

13. *The 17 Goals*, U.N. DEP'T ECON. & SOC. AFFS., https://sdgs.un.org/goals [https://perma.cc/J4KG-8DKZ] (listing and describing the seventeen SDGs that range across substantive

The accelerating adoption of smart city technologies and an increasing number of municipalities self-identifying as "smart cities" also occurs as scholars and stakeholders place greater emphasis on nexus governance for issues of climate change and sustainable development. A nexus perspective acknowledges the interrelatedness of policy spheres, including climate, energy, food, water, and social justice and argues that interventions acting on one sector without a deep understanding of these links could exacerbate problems in other sectors.[14] Accordingly, policies targeting issues across sectors in tandem should lead to more robust, effective, and politically acceptable outcomes.[15] Therefore, advancing each of the seventeen SDGs may require linking each SDG to promote sustainable development through multisectoral action.[16] Municipalities seeking to be "smart" could address the SDGs one at a time, making safer, sustainable, and more resilient cities. Yet, nexus perspective advocates call for more comprehensive policy planning and implementation.[17] In many depictions of smart cities, the concept of a more coordinated and efficient municipality creates space to incorporate nexus thinking in local and regional policymaking.[18]

Multiple smart city technologies and strategies are advanced, at least in part, because of their potential to promote sustainable development.[19] Nonetheless, governance is needed to orchestrate these interventions. Technologies that can reduce water consumption, boost efficiency in energy grids, monitor air quality, decrease waste, and provide alternate and more efficient modes of transportation have significant potential for improving outcomes in their individual domains. However, ad hoc adoption of these smart city technologies without considering the nexus of policy spheres involved could itself produce suboptimal or counterproductive outcomes.[20] Further, managing these nexus issues in smart cities and regions will require finding proper balances of multiple policy and regulatory instruments to ensure smart city technologies advance SDGs

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topics from tackling poverty, hunger, and inequality to promoting access to clean water, climate action, and sustainability for cities).

14. Bazilian et al., *supra* note 4, at 7897; Weitz et al., *supra* note 5, at 171–72.

15. *See* Jianguo Liu et al., *Nexus Approaches to Global Sustainable Development*, 1 NATURE SUSTAINABILITY 466, 473–74 (2018).

16. Ingrid Boas et al., *Cross-Sectoral Strategies in Global Sustainability Governance: Towards a Nexus Approach*, 16 INT'L ENV'T AGREEMENTS 449, 455, 460 (2016).

17. For example, the U.N. Development Programme and World Bank describes "climate-smart cities" as municipalities seeking to mitigate and adapt to climate change in comprehensive manners, recognizing that sustainable and resilient cities should also have higher quality of life and more vibrant economies. *See* WORLD BANK GRP. ET AL., CATALYZING PRIVATE SECTOR INVESTMENT IN CLIMATE SMART CITIES 12 (2020).

18. *See generally* Francesca Artioli et al., *The Water-Energy-Food Nexus: An Integration Agenda and Implications for Urban Governance*, POL. GEOGRAPHY, Nov. 2017, at 215.

19. The city of Copenhagen is a case in point. *See, e.g.*, Michaela Brüel, *Copenhagen, Denmark: Green City Amid the Finger Metropolis*, *in* GREEN CITIES OF EUROPE 83, 83 (Timothy Beatley ed., 2012).

20. *See* Rebecka Ericsdotter Engström et al., *Connecting the Resource Nexus to Basic Urban Service Provision—With a Focus on Water-Energy Interactions in New York City*, SUSTAINABLE CITIES & SOC'Y, May 2017, at 83, 88.

without posing unacceptable risks in their own right.[21] While national and supranational governments can provide recommendations and guidance for how municipalities coordinate smart city plans around nexus problems,[22] governance primarily occurs at local and regional levels.

However, practice and research on smart city governance is still emerging, so addressing nexus issues with smart city interventions will require evaluating and managing governance challenges in this space more broadly. Smart city governance approaches place emphasis on different structural elements, such as participants, goals, evaluative metrics, processes, or contexts. Varying smart city approaches can make it challenging to coherently determine and compare the successes and failures of smart cities and their governance across.[23] The prominence of "one-size fits all narratives" in smart city governance discourse risks overgeneralizing from particular cases or exporting contested normative configurations,[24] heightening the need for policymakers to be responsive to local context and constituencies when designing and implementing smart city interventions.

Despite the variance across sites, some crosscutting concerns do arise in smart city governance. In particular, smart city settings raise privacy issues through goals that prioritize the collection of greater quantities of data in more places, the increase of knowledge from aggregating big data, and the ability to process this data to augment public service provision. These practices in turn incite concerns around surveillance, transparency, fairness, and exacerbated marginalization which are likely refractory to simple notice and consent regimes.[25] Finding an equitable distribution of risks and benefits raises further concerns, especially with the involvement of private actors in smart cities and mounting skepticism toward practices of extracting financial value from personal and population data.[26] Leveraging smart city approaches to tackle nexus

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21. On considerations for building policy mixes for nexus governance, see Cameron Holley & Amanda Kennedy, *Governing the Energy-Water-Food Nexus: Regulating Unconventional Gas Development in Queensland, Australia*, 59 JURIMETRICS J. 233 (2019). *See generally* GUNNINGHAM & GRABOSKY WITH SINCLAIR, *supra* note 7.

22. *See, e.g.*, DEP'T OF THE PRIME MINISTER & CABINET, AUSTRALIAN GOV'T, SMART CITIES PLAN 21–22, 24–27 (2016), https://www.infrastructure.gov.au/cities/smart-cities/plan/files/Smart_Cities_Plan.pdf [https://web.archive.org/web/20210414121251/https://www.infrastructure.gov.au/cities/smart-cities/plan/files/Smart_Cities_Plan.pdf].

23. Robert Wilhelm Siegfried Ruhlandt, *The Governance of Smart Cities: A Systematic Literature Review*, CITIES, Nov. 2018, at 1, 1.

24. *See* Rob Kitchin, *Making Sense of Smart Cities: Addressing Present Shortcomings*, 8 CAMBRIDGE J. REGIONS ECON. & SOC'Y 131, 132 (2014).

25. *See* Robert Brauneis & Ellen P. Goodman, *Algorithmic Transparency for the Smart City* 20 YALE J.L. & TECH. 103, 123–24 (2018); Karen Yeung, *'Hypernudge': Big Data as a Mode of Regulation by Design*, 20 INFO. COMMC'N & SOC'Y 118, 119 (2017); *see also* RUHA BENJAMIN, RACE AFTER TECHNOLOGY: ABOLITIONIST TOOLS FOR THE NEW JIM CODE 80–81 (2019); Julie Cohen, *What Privacy Is for*, 126 HARV. L. REV. 1904, 1930 (2013).

26. *See generally* JULIE E. COHEN, BETWEEN TRUTH AND POWER: THE LEGAL CONSTRUCTION OF INFORMATION CAPITALISM (2019); SHOSHANA ZUBOFF, THE AGE OF SURVEILLANCE CAPITALISM: THE FIGHT FOR A HUMAN FUTURE AT THE NEW FRONTIER OF POWER (2019); *see also* GREEN, *supra* note 6, at 26.

problems will require responding to these broader challenges. Additionally, local environmental conditions and political attitudes will continue to influence effective and acceptable interventions.

Moreover, the smart city model has incorporated public-private partnerships (P3s) into the core governance strategy. As the public sector often lacks the resources and expertise to develop and implement smart city programs alone, municipalities have turned to the private sector to supply products, services, and expertise in designing and implementing smart city interventions. Generally, municipalities as public entities can wield regulatory power through contracting with private actors,[27] after accounting for applicable procurement procedures. Creating P3s with technology firms provides an opportunity for cities to leverage their substantial buying power to secure contractual terms promoting policy goals, both separate from and in combination with more direct modes of state-based regulation.[28] In particular, P3s offer the potential of combining the public interest with private capacities to provide timely and accountable public services.[29] Furthermore, P3 success depends on the quality of services provided and budgetary savings as well as perceived legitimacy, transparency, and achievement of public policy goals.[30] Within P3s themselves, successful performance will also likely depend on the level of trust and quality of cooperation among actors in the partnership.[31]

Further, just as avoiding sectoral fragmentation is critical to managing nexus problems,[32] avoiding fragmentation between multiple municipalities in a shared region will be critical to effective nexus governance in smart cities and regions. Orchestration of multiple government actors within a metropolitan area is by no means a new phenomenon or challenge,[33] but the limited capacity of smart city technologies to readily flow across municipal borders renders regional fragmentation a particular problem for implementation. Multi-stakeholder models of P3 governance, which involve public entities, civil society, and private actors, have raised interest as a method of achieving coherent smart city policy that centers the public interest and human well-being.[34] Such multi-stakeholder

27. Hugh Collins, *Regulating Contract Law*, *in* REGULATING LAW 13 (Christine Parker et al. eds., 2004).

28. Jon Stern, *Regulation and Contracts for Utility Services: Substitutes or Complements? Lessons from UK Railway and Electricity History*, 6 J. POL'Y REFORM 193 (2003); Jon Stern, *The Relationship Between Regulation and Contracts in Infrastructure Industries: Regulation as Ordered Negotiation*, 6 REGUL. & GOVERNANCE 474 (2012).

29. *See generally* Graeme A. Hodge & Carsten Greve, *On Public-Private Partnership Performance: A Contemporary Review*, 22 PUB. WORKS MGMT. & POL'Y 55 (2017).

30. *See generally id.*

31. Rianne Warsen et al., *What Makes Public-Private Partnerships Work? Survey Research into the Outcomes and the Quality of Cooperation in PPPs*, 20 PUB. MGMT. REV. 1165, 1166–69 (2018).

32. Weitz et al., *supra* note 5, at 166.

33. Vincent Ostrom et al., *The Organization of Government in Metropolitan Areas: A Theoretical Inquiry*, 55 AM. POL. SCI. REV. 831, 831 (1961).

34. Virgilio Almeida et al., *Humane Smart Cities: The Need for Governance*, IEEE INTERNET COMPUTING, Mar.–Apr. 2018, at 91, 91–92.

bodies can also play a role in coordinating the actions of local governments in a shared region.

Despite the potential value of P3s, including multi-stakeholder bodies, these arrangements also pose challenges and risks that local and regional governments must acknowledge and manage if they are to use these institutions for smart city interventions on nexus problems. Partnerships will not deliver on promises of efficiency and productive use of private expertise by default.[35] Rather, such partnerships require careful management to ensure public goods are derived alongside private benefits.[36] The costs of establishing a P3 contract may be deceptively high, which can grant private actors, aiming to de-risk their contributions to partnerships, leverage over governments seeking to avoid the political fallout of a project failure.[37]

The democratic legitimacy of partnerships can also suffer when they unreasonably restrict subsequent governments or when their formation and implementation is opaque, such as through limited competition, noncompliance with disclosure requirements, or by failing to provide opportunities for public hearings or input.[38] Particularly in the smart city context, large multinational technology firms participating in P3s with resource-strained local or regional governments may create substantial power dynamics, or the perception of power dynamics, in favor of private actors.[39] Building and maintaining trusting and committed relationships within partnerships can help diffuse these tensions, but other structural protections for the public sector or direct inclusion of civil society actors may also be required.[40] As P3 models spread across jurisdictions, especially through transnational private actors engaging in partnerships in multiple regions or states, further concerns arise that P3s models could be insufficiently tailored to the needs of each location's policies, politics, and environment.[41] Ensuring transparency and accountability by structuring meaningful

35. *See* Derick W. Brinkerhoff & Jennifer M. Brinkerhoff, *Public-Private Partnerships: Perspectives on Purposes, Publicness, and Good Governance*, 31 PUB. ADMIN. & DEV. 2, 2 (2011).

36. *See id.*

37. Joanne Evans & Diana Bowman, *Getting the Contract Right*, *in* THE CHALLENGE OF PUBLIC–PRIVATE PARTNERSHIPS: LEARNING FROM INTERNATIONAL EXPERIENCE 62, 70–78 (Graeme Hodge & Carsten Greve eds. 2005); David Parker & Keith Hartley, *Transaction Costs, Relational Contracting and Public Private Partnerships: A Case Study of UK Defence*, 9 J. PURCHASING & SUPPLY MGMT. 97, 98 (2003); Aidan R. Vining et al., *Public-Private Partnerships in the US and Canada: "There Are No Free Lunches"*, 7 J. COMPAR. POL'Y ANALYSIS 199, 199 (2005).

38. Graeme Hodge, *Public Private Partnerships and Legitimacy*, 29 UNSW L.J., no. 3, 2006, at 318 (2006); Paul Landow & Carol Ebdon, *Public-Private Partnerships, Public Authorities, and Democratic Governance*, 35 PUB. PERFORMANCE & MGMT. REV. 727, 740–44 (2012).

39. Sara Barns et al., *Digital Infrastructures and Urban Governance*, 35 URB. POL'Y & RSCH. 20, 27–28 (2017).

40. Aidan R. Vining & Anthony E. Boardman, *Public-Private Partnerships: Eight Rules for Governments* 13 PUB. WORKS MGMT. & POL'Y, 149, 149–61 (2008); *see also* GUNNINGHAM & GRABOSKY WITH SINCLAIR, *supra* note 7.

41. Chris Holden, *Exporting Public-Private Partnerships in Healthcare: Export Strategy and Policy Transfer* 30 POL'Y STUD. 313, 329–30 (2009). *See generally* JOHN BRAITHWAITE & PETER DRAHOS, GLOBAL BUSINESS REGULATION (2000).

public participation into P3s will be critical for perceived legitimacy outcomes and for integrating local needs and concerns into the partnerships.

II. LESSONS LEARNED FROM SMART CITY PARTNERSHIPS

Several notable, self-described "smart city" pilot projects have emerged around the world, offering opportunities to assess their successes and shortcomings. Even those projects that did not prioritize sustainability and climate action hold potential lessons for how smart city interventions can or should be structured, different models of partnering, and how that structure impacts perceived legitimacy and accountability.[42]

Beginning in 2009, Amsterdam (Netherlands) established a smart city P3 with two technology firms to further the city's goal of reducing greenhouse gas emissions.[43] This initial project has expanded into a multi-stakeholder partnership including public, private, university, and civil entities dedicated to reducing emissions and improving quality of life by collaboratively piloting technological interventions in multiple sectors.[44] Pilot projects have covered a range of initiatives such as smart infrastructure streetlights to reduce energy consumption, tools to encourage and manage pedestrian traffic and public transit, and open data initiatives. The Amsterdam Smart City partnership emphasizes participation as a key element of the program, striving to educate residents and private actors on how to use new tools to reduce energy consumption and inviting them to play a role in developing new solutions.[45] A growing evidence base supports the idea that public engagement and trust in public and private partners of P3s facilitates improved policy outcomes.[46] While the Amsterdam partnership has stressed transparency, limited available empirical data suggests that residents still have an imperfect understanding of how data are collected and used, and by whom, demonstrating room to improve perceived legitimacy.[47]

Denmark's capital Copenhagen has similarly launched a number of smart city partnerships with a priority on climate action, supporting the city's policy

42. Smart city frameworks may not always explicitly include sustainability considerations, demonstrating room for a heightened focus on SDGs in smart city governance. *See* Hannele Ahvenniemi et al., *What Are the Differences Between Sustainable and Smart Cities?* 60 CITIES 234, 238 (2017).

43. Eur. Parl., Directorate General for Internal Policies, *Mapping Smart Cities in the EU*, at 289, IP/A/ITRE/ST/2013-02 (Jan. 2014).

44. *See Organisations*, AMSTERDAM SMART CITY, https://amsterdamsmartcity.com/network [https://perma.cc/L6NZ-XSRK].

45. Margarita Angelidou, *Four European Smart City Strategies*, INT'L J. SOC. SCI. STUD. Apr. 2016, at 18, 21–22.

46. For an empirical study from the Netherlands, see Michiel Kort & Eric-Hans Klijn, *Public–Private Partnerships in Urban Regeneration: Democratic Legitimacy and Its Relation with Performance and Trust*, 39 LOCAL GOV'T STUD. 89, 90 (2013).

47. Shazade Jameson et al., *People's Strategies for Perceived Surveillance in Amsterdam Smart City*, 40 URB. GEOGRAPHY 1467, 1471 (2019).

goal of carbon neutrality by 2025.[48] The Copenhagen Solutions Lab, a public entity created by the city, manages and coordinates these multiple partnerships spanning sectors from transportation to environment. For example, the Street Lab and EnergyBlock are two distinct P3s between Copenhagen and different sets of technology firms that test pilot projects in smart infrastructure (e.g., parking and lighting) and sustainable energy applications, respectively.[49] The Copenhagen Solutions Lab has also worked to engage with the public by soliciting resident input on how to improve cycling infrastructure, facilitate postgraduate training for students, and open city data to public view.[50] Coordinated efforts at climate policy in Copenhagen have led to successful linkages of public and private actors at the water-climate nexus while incorporating citizen input to drive priorities.[51]

In the United States, New York City (NYC) embarked on an open data project in 2012 with a local law requiring municipal agencies to publish myriad, de-identified datasets for easy public access by 2018.[52] Driven by the open government movement, policymakers sought to bolster transparency and legitimacy while also enabling private, academic, and civil society actors to use data to benefit local communities and the economy. The NYC Open Data platform has since enabled a number of public and non-state driven initiatives. For example, it has facilitated city agencies to better identify infrastructure to replace as a way to conserve water. It has also enabled residents to create a map of the city rating the difficulty of social distancing measures by using data on sidewalk width.[53] Pursuing smarter cities through open data projects such as NYC Open Data can enable residents to innovate and be entrepreneurial, which contributes to a more participatory or "bottom up" vision of smart cities.[54] However, researchers such as Sarah Barns note that the presence of an open data platform will not drive participation without further action from local policymakers.[55]

In 2015, Kansas City (in the U.S. state of Missouri) announced it would form a P3 with Sprint and Cisco, two U.S.-based telecommunications firms, to boost "integrated city management," "a better quality of life," and "economic

48. CITY OF COPENHAGEN, COPENHAGEN: SOLUTIONS FOR SUSTAINABLE CITIES 47 (3rd ed. 2014).

49. Mike Cooray et al., *Connected Cities: Driving Digital Transformation in Complex Ecosystems*, EUR. BUS. REV., Nov.–Dec. 2018, at 67, 68–69.

50. Mike Cooray & Rikke Duus, *Technology Is Not Enough to Create Connected Cities—Here's Why*, CONVERSATION, (Aug. 23, 2017, 10:19 AM), https://theconversation.com/technology-is-not-enough-to-create-connected-cities-heres-why-82740 [https://perma.cc/5AQA-4YYC].

51. Lars A. Engberg, *Climate Adaptation and Citizens' Participation in Denmark: Experiences from Copenhagen*, *in* CLIMATE CHANGE IN CITIES 139, 157 (Susan Hughes et al. eds., 2018).

52. *Read the Open Data Law*, N.Y.C. (Mar. 7, 2012), https://www1.nyc.gov/site/doitt/initiatives/open-data-law.page [https://perma.cc/Q4Z2-G64Z].

53. N.Y.C. OPEN DATA, OPEN DATA FOR ALL 2020 REPORT (2020), https://opendata.cityofnewyork.us/wp-content/uploads/2020/09/2020_OpenDataForAllReport_Full.pdf [https://perma.cc/4CY4-PENE].

54. Sarah Barns, *Mine Your Data: Open Data, Digital Strategies and Entrepreneurial Governance by Code*, 37 URBAN GEOGRAPHY 554, 566 (2016).

55. *Id.* at 567.

development."[56] The partnership would provide free internet access in the downtown area, interactive kiosks, and pursue smart infrastructure for items like streetlights, traffic intersections, and sewer systems. The companies provided financing and laid infrastructure and, in return, gained exclusive access to data collected by the new technologies rather than receiving direct financial compensation.[57] This private-oriented data governance plan has prompted privacy concerns related to those raised for the similarly structured LinkNYC program in New York.[58] Additionally, the project legitimacy was blunted by the absence of a transparent procurement process in establishing the P3 and the moves toward installing smart city technologies for policing lower income areas without substantial local community engagement.[59] In 2019, the city closed its subsequent request for proposals regarding the expansion of the smart city project without selecting a private partner. Instead, the city opted to develop a more comprehensive plan for the project before seeking partners.

The Sidewalk Toronto smart city project in Ontario, Canada, constituted a P3 between the public development agency Waterfront Toronto and technology firm Sidewalk Labs (a subsidiary of Alphabet, Google's parent company). Waterfront Toronto's 2017 request for proposals called for a "climate positive approach" to urban development with "technology-enabled, inclusive, connected communities."[60] The agency awarded Sidewalk Labs the contract and established the P3 in October 2017. However, even in its initial phases the project was plagued by transparency and accountability issues. Public outcry resulted from the limited public scrutiny in how Waterfront Toronto selected Sidewalk Labs and how the P3 would govern and allocate land rights, infrastructure issues, service privatization, and data concerns.[61] Ultimately, with damaged perceived legitimacy and little infrastructure built, Sidewalk Labs decided to terminate the P3 arrangement in May 2020.

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56. Kansas City, Mo., Ordinance 150,287 (Apr. 16, 2015) (Authorizing the City Manager to Execute a Strategic Collaboration Agreement with Cisco Systems, Inc. for the "Smart + Connected Communities" Project), http://cityclerk.kcmo.org/liveweb/Documents/Document.aspx?q=5A3MLFgZqyyAfgVPvkrygjr9NYzRiBXoW9e%2bFJPxtYOjFOVqGPZTRJPRs%2bWGsyiJ [https://web.archive.org/web/20210311132432/http://cityclerk.kcmo.org/liveweb/Documents/Document.aspx?q=5A3MLFgZqyyAfgVPvkrygjr9NYzRiBXoW9e%2bFJPxtYOjFOVqGPZTRJPRs%2bWGsyiJ].

57. TIFFANY DOVEY FISHMAN & MICHAEL FLYNN, DELOITTE, USING PUBLIC-PRIVATE PARTNERSHIPS TO ADVANCE SMART CITIES 7 (2018), https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Public-Sector/gx-ps-public-private-partnerships-smart-cities-funding-finance.pdf [https://perma.cc/6VW6-MYLJ].

58. Ira S. Rubinstein & Bilyana Petkova, *Governing Privacy in the Datafied City*, 47 FORDHAM URB. L.J. 755, 801 (2020).

59. *See* Timothy Williams, *In High-Tech Cities, No More Potholes, but What About Privacy?*, N.Y. TIMES (Jan. 1, 2019), https://www.nytimes.com/2019/01/01/us/kansas-city-smart-technology.html [https://perma.cc/NR2L-UQVL]; *see also* Hodge, *supra* note 38, at 323–24.

60. WATERFRONT TORONTO, REQUEST FOR PROPOSALS: INNOVATION AND FUNDING PARTNER FOR THE QUAYSIDE DEVELOPMENT OPPORTUNITY 6, 8 (2017), https://quaysideto.ca/wp-content/uploads/2019/04/Waterfront-Toronto-Request-for-Proposals-March-17-2017.pdf [https://perma.cc/Z73D-LLZF].

61. Ellen P. Goodman & Julia Powles, *Urbanism Under Google: Lessons from Sidewalk Toronto*, 88 FORDHAM L. REV. 457, 458 (2019).

These and other smart city initiatives provide several lessons applicable for nexus governance. If local and regional governments elevate these goals, like Amsterdam Smart City and its partners have done, smart city partnerships have the potential to advance policy and innovation that addresses climate change, creates interrelated sustainability, and maintains wellness domains. Yet, not every initiative labelled as a smart city will prioritize climate action and even those which do may need a body, such as the Copenhagen Solutions Lab, to coordinate action across multiple municipal domains. Public participation and the inclusion of civil society actors also depends on whether smart city partnerships are structured to encourage and invite participation, which Amsterdam models with its deliberate efforts to educate and include residents. Further, public participation can be supported by open data projects, such as NYC Open Data, if intentional action is taken to bolster participation. Similarly, smart city projects must earn perceived legitimacy, transparency, and accountability and should avoid opacity in the process of establishing and administering programs, such as those seen in Sidewalk Toronto and Kansas City.

III. SMART REGION, NOT SMART CITY

The successes and failures, however defined, of smart city initiatives from around the world highlight the limitations of the models deployed to date. Their focus on one jurisdiction fails to recognize that challenges such as access to 5G networks, for example, cannot be solved by one city or town alone. To be truly "smart" and address large scale challenges associated with quality of life—water scarcity, energy efficiency and mobility, to name a few[62]—local governments must work collaboratively across city boundaries for the benefit of all. Interoperability across jurisdictions is fundamental to a city becoming "smart," requiring a coordinated and holistic approach to a city's—or region's—smart city ambitions. Moreover, as initiatives such as Sidewalk Toronto illustrate, smart cities must focus on developing solutions for everyday challenges faced by their residents rather than simply framing their work as being about technology.[63] Especially when private technology firms constitute one of the key drivers of an initiative, efforts to keep the public interest at the center of a smart city program is critical to maintaining public support and political acceptability of the project.[64]

Against the backdrop of ongoing lessons learned from existing smart city projects, the last several years have seen several "smart region" projects launched around the world. Self-described smart region initiatives have

62. On the nexus between these various quality of life challenges, see generally Bazilian et al., *supra* note 4.

63. *See* GREEN, *supra* note 6, at 155; Kitchin, *supra* note 24.

64. Goodman & Powles, *supra* note 61, at 486–87; *see also* Parker & Hartley, *supra* note 37, at 98, 101; Hodge, *supra* note 38, at 324.

emerged in locations such as Île-de-France (Paris Region),[65] South East Queensland in Australia (including Brisbane),[66] and the Greater Phoenix region in the U.S. state of Arizona.[67] These programs differ notably in their geographical scope as well as the number and type of government (and private) units involved. The program variations are attributable in part to the widely varying definitions of the term *region* both across and within sectors or disciplines. Yet these programs share the overarching goal of extending the smart city model by linking local governments in smart city partnerships and coordinating smart city decision-making across these multiple municipal units. This Part reviews the Arizona smart region as a case study to explore the potential design elements of smart regions and their benefits and pitfalls.

A. Arizona Case Study

Recognition of the need to approach smart cities differently prompted leadership within the Greater Phoenix region to rethink their approach to becoming a "smart city." A long-standing philosophy of collaboration across jurisdictional and sectoral boundaries in Arizona provided the ecosystem for such innovation in governance to occur. As articulated by Maricopa County Board of Supervisors, Bill Gates, and Dominic Papa, vice president for Smart States Initiatives at the Arizona Commerce Authority,

> The problem is, many innovative technology solutions are simply too expensive to implement for a single local government. But what if nearly every government body in the nation's fastest-growing county worked together? And what if we could also leverage the country's most innovative school? And some of its most tech-savvy businesses?[68]

At the heart of this reframing was the concept of regional collaboration, as well as scale. In 2018, regional leaders driving the smart region concept saw an opportunity to bring twenty-two cities and towns (the County) together with key solution-focused assets under a permanent institutional framework. The Greater Phoenix area sought a regional approach that would actively orchestrate the

65. LA RÉGION ÎLE-DE-FRANCE, SMART RÉGION INITIATIVE (2017), https://www.iledefrance.fr/sites/default/files/2019-05/smart_region_initiative.pdf [https://perma.cc/GMC2-A3PS].

66. TRANSFORMING SEQ: THE STATE OF QUEENSLAND (QUEENSLAND TREASURY), THE SEQ CITY DEAL PROPOSITION (2019), https://s3.treasury.qld.gov.au/files/TransformingSEQ_CityDeal Proposition_Final_2.pdf [https://perma.cc/S8XK-25W9]; South East Queensland City Deal Statement of Intent, Aust.-Queensland-Council of Mayors, Mar. 15, 2019, https://www.infrastructure.gov.au/cities/city-deals/south-east-queensland/files/seq-statement-of-intent.pdf [https://web.archive.org/web/20210407061302/https://www.infrastructure.gov.au/cities/city-deals/south-east-queensland/files/seq-statement-of-intent.pdf].

67. GREATER PHX. SMART REGION CONSORTIUM, BUILDING THE WORLD'S MOST INNOVATIVE AND CONNECTIVE REGION (2019).

68. Bill Gates & Dominic Papa, *Can Government Solve Big Problems with Limited Funds? Yep. Here's How We're Doing It*, AZ CENTRAL (Jan. 23, 2020, 1:51 PM), https://www.azcentral.com/story/opinion/op-ed/2020/01/23/connective-joins-government-problem-solvers-metro-phoenix/4533685002/ [https://perma.cc/UGC3-L5H9].

smart city activities of local governments and stakeholders, promote interoperability, and allow for rapid adoption of solutions at scale. Some smart city partnerships have previously enabled municipalities in a region to participate, such as Amsterdam.[69] Nonetheless, the comprehensive "smart region" design is among the first in a new set of initiatives extending beyond the municipal level, involving a broader set of partners.[70]

These insights on the value of regional integration led to the inception of the Smart Region Consortium (subsequently named the Connective) for the Greater Phoenix metropolitan area. In crafting the broad framework for the entity, regional leaders took valuable insights from questions over the legitimacy and accountability of Sidewalk Toronto, including a seeming absence of citizen engagement.[71] Without community representation at the highest level, success could not be guaranteed.[72] Leaders deemed academia a second fundamental pillar to the regional consortium because of its research and codevelopment capacity, along with workforce development. Economic development and metropolitan planning were viewed as the third and fourth pillars necessary to create a credible and robust framework for advancing a smart region initiative.

These four pillars guided the process of establishing a permanent governance framework for the entity. Between July 2018 and March 2019 leadership from four entities drafted and refined the Agreement that would provide the legal framework for the Consortium. The entities included

1. the Institute for Digital Progress (iDP), a Phoenix-based 501(c)(3);
2. Arizona State University (ASU), through its Center for Smart Cities and Regions (CenSCR);[73]
3. the Greater Phoenix Economic Council (GPEC); and
4. the Maricopa Association of Governments (MAG).

Further, this Consortium sits under the umbrella of the Partnership for Economic Innovation (PEI), a nonprofit entity that would serve as the fiscal agent for the entity (the Partners). One representative from each of these organizations would serve on the Executive Leadership team, whose primary function would be to serve as the management team for the purposes of ensuring fiscal viability and monitoring short- and long-term success of the entity.

Development of the governance structure was done against a backdrop of continual socialization by the Partners with local mayors and their economic

69. *See Organisations*, *supra* note 44.

70. *See The Connective: A Smart Region Consortium*, CONNECTIVE, https://www.greaterphxconnective.com/ [https://perma.cc/K6UU-6NVK].

71. Ron Starner, *Working Smart: The Connective Brings Many Entities Together to Solve Regional Challenges*, *in* GREATER PHOENIX: GREATER TOGETHER 30, 31 (2020), https://www.gpec.org/2020-publication/ [https://perma.cc/VY3R-GNGC].

72. Ramaswami et al., *supra* note 10.

73. One of the authors of this Article, Diana M. Bowman, in her capacity as the Co-Director for the Center for Smart Cities and Regions (CenSCR) was the ASU lead for the design and execution of The Connective and currently sits on the Executive Leadership team for ASU.

development teams, chief innovation officers, city managers, residents, and private sector parties within the Greater Phoenix region. For many local stakeholders, the concept of having a large public research university as a key member of the initiative was important. Specifically, the involvement of ASU brought its resources—in the form of faculty, staff, students, and institutional resources—but also four campuses across the Greater Phoenix region that could be used for pilot projects. The ability for the university to test technological solutions, fail, retest, and evaluate in a limited, local environment prior to the development within a city or town was seen as a way to minimize political risk for elected officials wishing to explore the procurement of solutions.

After approximately eighteen months of refinement and socialization the Agreement was fully executed in March 2019. As articulated in the Agreement, the purpose of the Consortium is to "connect local governments and other public institutions with innovative technology solutions. This will be accomplished by helping local governments identify challenges to be solved and issuing calls for innovation."[74] This framing, driven by problem statements identified by public actors—cities and towns—is in stark contrast to many of the smart city initiatives seen to date.[75]

The governance model set out in the Agreement creates the structure for a funded multi-stakeholder P3. It clearly articulates the role and composition of the Executive Team and Leadership Council, and it addresses annual industry and community budgets, dues commitments, voting rights, membership tiers, and member benefits. For example, each member of the Leadership Council, comprised of the communities of the region, has one vote regardless of their financial tier, and the Executive Leadership team is vested with the power to approve budgets, formulate policy decisions and may establish Special Committees as needed. The Agreement also sets out the scope of work, including the process by which a collaborative research program with ASU and industry partners will be built out, and the validation and testing process within innovation sandboxes across the region. Regional leaders deemed transparency about these governance structures, processes, and goals to be fundamental to the operation of the Consortium to avoid many of the accusations levelled at Waterfront Toronto and Sidewalk Labs.[76] The structure of the Consortium, officially named The Connective,[77] includes the following objectives that revolve around the goal of enhancing the quality of life:

- Regional Convening
- Regional Opportunity Projects

74. Project Services Agreement, Ariz. State Univ., Greater Phx. Econ. Council, Institute for Digital Progress, Maricopa Ass'n of Gov'ts, & the P'ship for Econ. Innovation for the Smart Region Consortium, Ex. A, at 7, Mar. 26, 2019.

75. Structuring adequate protections for public actors and public interests in partnerships may be critical to their success. *See* Vining & Boardman, *supra* note 40, at 156–59.

76. Goodman & Powles, *supra* note 61, at 467; *see also* Hodge & Greve, *supra* note 29, at 63, 66.

77. *The Connective*, *supra* note 70.

- Research
- Validation & Testing
- Best Practice Sharing
- Competency Framework
- Implementation
- Solutions at Scale.[78]

The Connective, promoted by its advocates as "[t]he world's smartest and most connected region through unprecedented, intentional collaboration,"[79] was officially launched in November 2019. This introduction came with the support of twenty-two cities and towns, Maricopa County, and four founding private sector participants considered fundamental to the Consortium achieving its objectives—Dell Technologies, Cox, Sprint, and SRP.[80] As articulated by its members, the vision of this Connective is to "[t]ransform the Greater Phoenix region into a global leader in public-sector governance and private sector innovation to support sustainable, resilient, healthy, and equitable communities and neighborhoods."[81]

Members commit to a shared mission: to "build connections and collaborative relationships for advanced strategies and connected solutions which promote safe, healthy, and thriving communities for all within our region."[82] Importantly, the local government authorities do not give up any decision-making authority to the regional entity, nor are they required to adopt any proposed solution piloted by other members of the Connective. Such decision-making remains vested with the cities and towns themselves, with the governance structure of the Connective adopting an opt-in approach to pilots and procurement activities.[83]

Consistent with the idea that the objectives and priorities of the Connective would be defined by the members themselves—not the Partners—the first three months of operations were focused on the collective development of the P3's objectives.[84] Connective members defined five core objectives:

- Improve Quality of Life
- Drive Equity

78. GREATER PHX. SMART REGION CONSORTIUM, *supra* note 67, at 5.

79. *Id.* at 1.

80. *See The Connective Launches to Build the Nation's Largest and Most Connected Smart Region in Greater Phoenix*, GREATER PHX. ECON. COUNCIL (Nov. 15, 2019), https://www.gpec.org/news/the-connective-launches-to-build-the-nations-largest-and-most-connected-smart-region-in-greater-phoenix/ [https://perma.cc/97XP-JDEY].

81. GREATER PHX. SMART REGION CONSORTIUM, *supra* note 67, at 5.

82. THE CONSORTIUM: A SMART REGION CONSORTIUM, GREATER PHX.: BUILDING THE WORLD'S MOST INNOVATIVE & CONNECTIVE REGION 5 (2019).

83. This structural element should enable municipalities to continue to make decisions reflecting their local interests, potentially reducing concern for overwhelming regional or private interests distorting local public needs. *See* Hodge & Greve, *supra* note 29. *See generally* Vining & Boardman, *supra* note 40.

84. Bolstering the democratic legitimacy of P3s and ensuring public benefits flow from partnerships are critical to their success. *See generally* Brinkerhoff & Brinkerhoff, *supra* note 35; Hodge, *supra* note 38.

- Enhance Revenue
- Promote Sustainability and Resilience
- Support Economic Competitiveness.[85]

In particular, sustainability and resilience were viewed as fundamental to the program of work given the physical location of the Greater Phoenix region.

"Impact categories," under which pilot projects are nominated and selected, similarly highlight the focus on sustainability for Connective members and the Greater Phoenix region. Three of the five categories—circular economy, recycling and resilience, and transportation/mobility—involve various dimensions of a sustainability agenda. Further, while the movement from pilot projects to implementation of solutions at scale can be logistically challenging or even unrealistic for some smart city agendas, the multi-stakeholder membership of the Connective should offer the collective capacity and access to resources to promote scalability. For example, ASU is home to the oldest and largest School of Sustainability in the United States, with relevant experience and resources for contributing to solutions in each of these categories. Additionally, SRP, one of the founding industry partners, is a "community-based not-for-profit water and energy company . . . to more than 2 million people living in central Arizona."[86] The ability of local and regional leaders to draw on the experience and capacity of non-state actors including ASU and an established utility company arguably provides the potential for a high level of collaboration for addressing these challenges.[87]

Over the past two years, the COVID-19 pandemic unquestionably impacted the Connective's ability to define and roll out their first series of technology-driven pilot projects. For example, the program of work pivoted to partnering with ASU's Knowledge Exchange for Resilience (KER) and the British Standards Institute (BSI) to build out a smart region data dashboard to provide greater transparency around key indicators and allow for benchmarking opportunities. Indicators that promote resiliency and sustainability, including those relating to water, energy, building management, waste management, and climate change, are core metrics for the purpose of creating a smart region. By partnering with BSI in this process, one of the world's leading national standards-setting bodies, the Connective aims to define, test, and create the global standards for creating a smart and sustainable region. While seemingly stretching the definition of what constitutes a "smart city/region" initiative, the Connective partnered with Mastercard, through Mastercard's City Possible initiative, to provide cities and towns with real-time spending data to assist in their annual budget process.[88]

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85. *The Connective*, *supra* note 70.

86. *General Information About SRP*, SRP, https://www.srpnet.com/menu/about/generalinformation.aspx [https://perma.cc/ZCS6-K6SE].

87. *See A History of Service*, SRP, https://www.srpnet.com/about/history/timeline.aspx [https://perma.cc/GM7T-RWC2]. Although, of course, an adequate level of trust between actors within the partnership is a critical factor to sustain for effective cooperation towards public policy goals. *See* Warsen et al., *supra* note 31.

88. *Smart-Region Partners Collaborate with Mastercard to Provide Crucial Spending Data*, THUNDERBIRD SCH. GLOB. MGMT., https://thunderbird.asu.edu/about/news-events/asu-smart-region-partners-collaborate-mastercard-provide-crucial-spending-data [perma.cc/447A-ELZJ].

B. Discussion

While empirical data on policy outcomes are still forthcoming, the structure of the Connective, and the process used to craft it, presents lessons on how smart region initiatives can promote inclusive and robust governance of nexus problems. The coordinated structure of many municipalities in a "smart region," rather than a solitary smart city, shows early promise for more efficient and harmonized "smart" interventions to common issues faced by the region, especially those that do not respect jurisdictional boundaries. Similarly, the inclusion of public, private, academic, and civil society entities as core stakeholders in establishing the initiative, agenda setting, and implementation should bolster perceived legitimacy. This inclusion should enable active participation by design and promote effectiveness by pooling resources, expertise, and insights across sectors, actors, and locations in the region. Multi-stakeholder participation, reflecting a diverse set of interests, resulted in a robust agenda for the Connective's smart region partnership. This comprehensive agenda shows early promise for linking multiple SDGs and addressing interrelated nexus issues simultaneously through an orchestrated regional approach, supported by the capacities of the initiative's non-state actors.

However, even the best structure for a governance framework cannot immunize that instrument from issues of power dynamics, politics, and erosion of its public policy goals.[89] For example, while the regional structure may present new opportunities to include civil society and academic voices, the mere presence of third-party actors in regulatory and P3 governance structures cannot, in itself, guarantee more accountability or positive policy outcomes.[90] Further, bringing multiple types of actors together for collective decision-making will not necessarily enhance transparency of the substantive and procedural elements of the multi-stakeholder P3. Instead, enhanced transparency must be actively and continuously sought out by the Connective and its partners. A regional structure for the initiative may also raise potential issues of regional objectives or private preferences crowding out the needs and goals of the most local-level actors at the city and town level.[91] While this effect should be limited by the voluntary nature of the Connective, the impacts of the multi-stakeholder initiative on regional and local agenda setting could still privilege certain policy issues while deprioritizing others that some local actors may deem more valuable.

These potential issues highlight that P3s and multi-stakeholder institutions can also bring downfalls by appearing representative externally while, inter-

89. *See* CRISTIE FORD, INNOVATION AND THE STATE: FINANCE, REGULATION, AND JUSTICE (2017); Christine Parker & Fiona Haines, *An Ecological Approach to Regulatory Studies?*, 45 J.L. & SOC'Y 136, 141 (2018).

90. *See* Cristie Ford, *New Governance in the Teeth of Human Frailty: Lessons from Financial Regulation*, WIS. L. REV., 441, 447, 471 (2010).

91. *See* Holden, *supra* note 41, at 316.

nally, power is distributed unevenly and may privilege private actors to the detriment of the public interest.[92] As smart region initiatives move forward, it will be vital to monitor internal power issues between the different types of actors within the initiative, as both the effectiveness of the smart region approach and its perceived legitimacy may suffer in the absence of suitable accountability measures.[93] The monitoring of internal power issues is particularly necessary for multi-stakeholder entities such as the Connective—especially where there is a pay-to-play component. Further, multi-sectoral targets of the Connective add to its potential benefits but may also complicate efforts to ensure comprehensive accountability and transparency across such a large agenda. This early analysis suggests that the regional, multistakeholder structure of the Connective shows preliminary promise, but ongoing work to monitor and promote transparency and accountability across issues—from natural resource management to data privacy—will be critical in the coming years. To date, planned initiatives in the Connective will be, as noted above, launched in response to the priorities articulated by the cities and towns. Yet, as programs are rolled out, engaging directly with the community through numerous approaches, and having local voices heard and reflected in the decision-making, will be critical for ensuring that the proposed approaches and solutions are reflective of community needs and policy preferences.

The smart region model offers instrumental and institutional advantages over more limited, smart city models, particularly when third-party actors such as civil society organizations and academic actors are drawn into the multi-stakeholder P3s. However, these theoretical benefits and early perceived successes of the Connective should be tempered by an understanding of potential downfalls in accountability, transparency, and—ultimately—perceived legitimacy for the smart region approach. The potential for power differentials within the multi-stakeholder institution to privilege the policy or agenda preferences of some actors over others, including private over public and regional over local preferences, raises significant issues meriting ongoing monitoring by entities both internal and external to the Connective itself.

These early lessons from the Connective and other nascent smart region concepts can have impacts beyond their individual regions or even their national jurisdictions.[94] Empirical study suggests contractual provisions and frameworks

92. *See, e.g.*, Brinkerhoff & Brinkerhoff, *supra* note 35; Hodge & Greve, *supra* note 29; Vining & Boardman, *supra* note 40, at 156–59.

93. *See, e.g.*, Barns et al., *supra* note 39; Brinkerhoff & Brinkerhoff, *supra* note 35; Hodge & Greve, *supra* note 29.

94. While the regional, multi-stakeholder model is promising, care should be taken to tailor this model to individual locations with their varied constituencies, interests, environments, and needs, to avoid overgeneralizing from the Greater Phoenix region's experience. *See* Holden, *supra* note 41, at 313–14; Kitchin, *supra* note 24; Ruhlandt, *supra* note 23.

can spread environmental norms transnationally by influencing how future contracts in other jurisdictions are negotiated and administered.[95] Similarly, the coordinated design of smart region partnerships, the participatory structure and processes involved, and standards developed for implementation could act as models for future regions seeking "smart" governance strategies for nexus issues. The emergence of subnational governments engaging in "paradiplomacy" on issues including climate change[96] allows for various networks within individual smart cities to share insights[97] and provide templates or forums for lessons on smart regions across jurisdictional borders. Multi-stakeholder smart region models of governance may become more widespread through these mechanisms should early case studies show positive policy and normative outcomes. Yet, ultimately, these smart region models must be considered with care to ensure these interventions adequately reflect local, stakeholder, and environmental needs and concerns.

95. Natasha Affolder, *Looking for Law in Unusual Places: Cross-Border Diffusion of Environmental Norms*, 7 TRANSNAT'L ENV'T L. 425, 426 (2018).

96. *See* Joana Setzer, *Testing the Boundaries of Subnational Diplomacy: The International Climate Action of Local and Regional Governments*, 4 TRANSNAT'L ENV'T L. 319, 319–20 (2015).

97. *See, e.g.*, NORDIC SMART CITY NETWORK, https://nscn.eu/ [https://perma.cc/4HKK-AWBT].